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ABSTRACTS OF INDIVIDUAL PRESENTATIONS

Abbott, Nichole (University of Colorado Denver)

[189] *Recontextualizing Social Identity in West Mexican Museum Collections*

Rampant looting and faking has long stymied archaeological interpretations of the mortuary art from West Mexico. Recent developments in authentication allow us to ask new questions about the identities of the ancient people that occupied the area from approximately 1000 B.C.E. to 1000 C.E. Inspired by architectural evidence showing important differences and similarities across the region, I have looked for related variations in markers of social identity among mortuary art used in shaft tombs during the Late Formative to Early Classic period. These portrait-like hollow bodied ceramic figures are popular among collectors but have been of little use to researchers, as they have been stripped of their provenience through looting or marred by the presence of fakes. My research attempts to re-contextualize museum items without context by tying their symbolic markers of identity to those found on excavated pieces. By comparing excavated collections from different sub-regions of West Mexico to those authenticated pieces held in US museums, markers of social identity can be discussed in relation to geographic origins, thus giving us a fuller picture of who the artists and their audience were, how they represented themselves in art, and what roles they may have played in their society.

Abbott, David (Arizona State University)

[321] *Reconstructing the Prehistoric Social Organization of Central Arizona: Electron Microprobe Results from "Phyllite Land"*

The upland zone north of the Phoenix Basin of central Arizona contained various prehistoric villages and farmsteads mostly situated along intermittent drainages. This northern territory was rich in natural resources, but it was one with limited agricultural potential. If and how the upland settlements cooperated with one another and were organized into communities is poorly known. The upland zone is jokingly known to archaeologists as "Phyllite Land" because virtually all of the pottery made and used across that region was tempered with platy phyllite fragments, which bound well with the clay. The mineralogical uniformity of the temper has frustrated pottery provenance studies that rely on compositional variability. A program of chemical characterization of the clay fraction as well as of individual particles of phyllite temper with an electron microprobe is revealing pottery-exchange networks, which highlight patterned social connections among the upland residents and their ties to Hohokam irrigation-based communities to the south. A summary of methods and results from several previous and ongoing studies is presented.

Abell, Natalie and Eugenia Gorogianni (University of Akron)

[5] *Industry and Interaction: Craft Producers as Agents of Culture Change in Bronze Age Ayia Irini, Kea, Greece*

Studies of exchange in the Bronze Age Aegean focus overwhelmingly on the interaction of states and elites. Changes in material culture often are ascribed to vague processes of "influence" or "emulation," while the roles of non-elite, non-state agents in affecting change in local values and traditions are minimized, if not entirely overlooked. This paper offers an alternative approach. Using evidence for contact between local and non-local craft producers at the trade hub of Ayia Irini on the island of Kea, we suggest that some of the most significant changes in local ways of doing things at that site over the Middle and Late Bronze Age were conditioned by the interaction between potters, weavers, and other craftspeople. We argue that the adaptation of foreign technologies and objects into local practices by craft specialists not only affected the kinds of things being produced, but also had material consequences on the people who made and used them.

Abraham, Shinu Anna [35] see Gullapalli, Praveena

Acevedo, Agustín (CONICET - UBA)

[104] *Rock Art at La Gruta Locality (Patagonia, Argentina)*

The rock art of La Gruta locality (Santa Cruz province, Patagonia, Argentina) has been described and

interpreted, in brief and partial form, by different researchers since the 50s. Since 2006, the research team led by Dr. Nora Franco has begun to carry out systematic archaeological work in the area, focusing on two lagoons spaced approximately 1.2 km from each other, with volcanic and sandstone outcrops, where rock art has been identified. Excavations carried out within the locality show evidences of human presence since the Pleistocene-Holocene transition until the Late Holocene. In this poster we present the analysis of the rock art recorded in seven sites, including the images that were described by other researchers and those arising from our own surveys. Results from the comparative study show differences not only in the number of rock art sites and in the frequency of motifs, but also clear differences in the most frequent motif types (three digits versus negative hands) in the techniques (positive painting vs. negative painting) and in the superimpositions recorded on each lagoon. These differences have implications for the discussion about the existence of variable ways of marking the space with rock art motifs in a small area.

Ackerly, Neal (Dos Rios Consultants, Inc.)

[71] *Dabbling with Descartes: Contingent Knowledge and Evil Demons in Archaeology*

Knowledge is always contingent to one degree or another depending on facts and the interpretation of facts. This is no less true of archaeology than any other discipline. At the same time, Descartes' notion of evil demons suggests the possibility that there are untoward forces lurking in our cognitive processes that will mislead us in our perceptions about what constitutes a fact. The implications of being misled are obvious. This paper briefly explores the impact of evil demons on contingent knowledge in the conduct of archaeological research.

Acosta, Guillermo (Universidad Nacional Autonoma de Mexico)

[118] *Early Agriculture Modes of Production in Mesoamerica: New Insights from Central and Southern Mexico*

The revolution in food production is a recurring theme in archaeology. The relationship between changes in economic and social relations of production and changing social structure from hunter-gatherers to food producers were profound and defined all subsequent class societies. This paper evaluates the mode and tempo of these changes with published data and new research carried out in Chiapas, Oaxaca, Veracruz and the Basin of Mexico. Although the cultivation and domestication of plants began during the early Holocene (ca. 10,000 to 8,000 B.C.), it was only from 6,000 to 5,000 B.C. that a radical change in the modification of the environment occurred and the use of domesticated plants as staple food is first documented. These subsistence changes cannot be explained solely through an analysis of the mode of production and it is necessary to also consider the mode of reproduction of early agricultural communities.

Acuna, Oscar [57] see Rivera, Mario

Acuña, Mary Jane (Washington University in St. Louis)

[61] *Bundles of Kingship and Wealth: The Iconography on Structure 5C-01-sub 4 at El Achiotal, a Frontier Site in Northwestern Petén*

Located along the western frontier of the central karstic uplands and on the edge of the northwestern wetlands of Petén, Guatemala, El Achiotal was an important Late Preclassic center that participated in the regional political dynamics of the Maya lowlands. Although well within the lowland territory, I argue that El Achiotal was a frontier center operating on a westward communication network bridging the west with the core sites of the uplands through the wetland drainage system down to the San Pedro Martir River. A small center, the iconography decorating the main temple locus is unique in style, but conceptually mainstream for the Late Preclassic period. The iconographic content of the murals makes reference to the practice of bundling. Bundling in reverence to the ancestors and divine kingship, as well as bundling of preciosities and jewels representative of ingots of value and wealth, and important symbols in the political economy and interregional interaction.

Acuña, Mary Jane [128] see Freidel, David

Adair, Mary (University of Kansas)

[220] *Dating the Arrival of the Common Bean (*Phaseolus vulgaris*) in the North American Central Great Plains*

The common bean (*Phaseolus vulgaris*) originated in Central and South America and dispersed

northward into North America during prehistory. Accelerator mass spectrometry dates (AMS) on charred bean macro remains from 10 central Plains tradition sites located in Kansas, Missouri and Nebraska suggest that this cultigen was adopted by farmers as early as the late 12th to early 13th century. As the last tropical cultigen to spread northward onto the Plains, it was added to an existing suite of farm crops, including maize, squash, chenopod, little barley, marshelder, sunflower, and maygrass. The dates add to our understanding of the timing and pathway by which beans dispersed throughout the interior of North America.

Adam, Kate [230] see Cole, Michelle

Adams, E (University of Arizona) and Samantha Fladd (University of Arizona)

[7] *Preceramic Migration and Landscape Formation along Lower Chevelon Canyon, Northeastern Arizona*

Late Archaic and Early Agricultural period petroglyphs near the Little Colorado River in northeastern Arizona bear close resemblance in form and content to well-known panels along the San Juan River on the Arizona/Utah boundary. It is not clear if these similarities are due to diffusion through periodic social gatherings or to seasonal or permanent migration between the two areas. Recent survey of the region around lower Chevelon Canyon within the Little Colorado River basin has identified dozens of preceramic sites and projectile points that can help inform us on which, when, and where groups were located when creating the Chevelon glyphs. These data can be used to address issues of population movement, exchange, identity, effect of the introduction of domestic plants, and establishment of social landscapes from the Middle Archaic through Basketmaker II, 5500-1500 B.P.

[7] Chair

Adams, Jacob (Washington State University) and Sam Coffman (University of Alaska Museum of the North)

[10] *Testing the Accuracy of Minimum Analytical Nodule Analysis (MANA) Using PXRF: An Experimental Approach*

Minimum Analytical Nodule Analysis (MANA) is a technique that segregates lithic raw materials into subsets of the aggregate assemblage based on color, texture, fossils, and other useful macroscopic characteristics. Lithic assemblages that have diverse raw materials that can be separated are often subjected to this sort of analysis to infer the minimum number of nodules, which informs on the technological processes that impact the lifecycle of an artifact. MANA represents a useful tool that many researchers implement into their work. It is unclear how accurate this technique is, due to many rocks sharing similar macroscopic attributes that may be lumped together, even though their provenance differs. To test the accuracy of MANA we conducted an experiment that included: a knapper producing an artificial assemblage from various raw material types, a classic MANA analysis, and a trace element analysis using Portable X-Ray Fluorescence (PXRF) technology to test the accuracy of the MANA analysis. Both techniques, classic MANA analysis and PXRF, show advantageous and disadvantageous to deducing the minimum number of nodules in an assemblage.

Adams, Matthew (W.F. Albright Institute of Archaeological Research) and Adam Prins (Durham University)

[65] *Digital Archaeological Fieldwork and the Jezreel Valley Regional Project*

Developing digital techniques for archaeological documentation has long been a priority of researchers around the world, but the challenges of deploying innovative workflows prevented measurable progress. Fortunately, recent years have seen a significant rise in the availability of previously inaccessible technologies. Since its inception in 2010, the JVRP has sought to develop digital technologies that are both cost-effective and scalable to site- and regional-level research. The JVRP is a long-term, multi-disciplinary survey and excavation project investigating the history of human activity in the Jezreel Valley from the Paleolithic through the Ottoman period. This project strives for a total history of the region using the tools and theoretical approaches of such disciplines as archaeology, anthropology, geography, history, ethnography, and the natural sciences, within an organizational framework provided by landscape archaeology. In order to effectively address these research goals, the JVRP has developed workflows for new and existing technologies such as archaeological databases, photogrammetry, 3D modeling, PXRF, and RTI. Our workflows are field-deployable and use affordable software and hardware. Considered collectively, these methodologies have allowed the JVRP to efficiently produce accurate, timely, and publishable data that is immediately accessible for collaboration by outside researchers and the public.

Adams, Elizabeth [247] see Durand Gore, Kathy

Adán, Leonor (Dirección Museológica, Universidad Austral de Chile), Simón Urbina (Instituto de Historia y Ciencias Sociales, Universidad Austral de Chile) and Mauricio Uribe (Departamento de Antropología, Universidad de Chile)

[27] *El espacio público en aldeas formativas tarapaqueñas (Norte de Chile)*

Los desarrollos formativos (900 a.C.-900 d.C.) en los valles tarapaqueros cuentan entre sus innovaciones, la construcción de conglomerados habitacionales, asociados a una cultura silvícola como al aprovechamiento de recursos del Pacífico. Nuestros estudios han permitido destacar la relevancia de las expresiones formativas tarapaqueñas como sociedades tradicionales locales con una identidad territorial marcada, que no fue afecta a la impronta Tiwanaku como se ha estudiado en áreas vecinas de Arica y San Pedro de Atacama. El estudio aborda las modalidades del espacio público en Pircas-1, Caserones-1, Guatacondo y la aldea Ramaditas. Se analiza la relevancia de la dispersión de asentamientos con arquitectura en los inicios del período y la manera en que estas arquitecturas integran espacios comunes o públicos, asociado a formas económicas y religiosamente. Seguidamente nos referiremos a diferentes modalidades del espacio público, considerando emplazamiento y posición arquitectónica, escala, materialidades y estrategias constructivas, que nos permiten, integrando información estratigráfica, incorporar aspectos acerca de la práctica social y vida cotidiana que tuvo lugar en patios y plazas. Se sugiere cierta evolución en el rol social del espacio público, acorde con la estructuración de un orden social y político más homogéneamente implantado hacia los inicios del período Intermedio Tardío.

Adcock, Sarah E. (University of Chicago) and Benjamin S. Arbuckle (University of North Carolina at Chapel Hill)

[205] *Animal Economies, Power, and Autonomy in Central Anatolia: A View of the Late Bronze-Iron Age Transition at 9ad1r Hoyuk*

In this paper we examine the nature of the Late Bronze-Iron Age transition at 9ad1r Hoyuk, a small site on Turkey's central Anatolian plateau. Specifically, we use this localized context to better understand the negotiation of power between center and hinterland in complex societies and the ability of small sites to operate autonomously within larger social systems. To do so, we monitor faunal evidence for changes in the organization of practices related to the production, processing, and distribution of both antemortem and postmortem animal resources across the Late Bronze-Iron Age divide. We look for potential shifts in social practices associated with this period of political upheaval, and we consider the extent to which the institutionalized political order mattered for provincial economies. Did imperial collapse affect the ways in which the people of 9ad1r Hoyuk made sense of their lives, and how might these changes—if there were changes at all—have been expressed materially?

Adovasio, James (Mercyhurst Archaeological Institute MAI), JM Adovasio (Mercyhurst University Archaeological Institute MAI) and DR Pedler (Mercyhurst University Archaeological Institute MAI)

[69] *Late Pleistocene Occupation(s) in Eastern North America*

Examination of the timing, methods of movement, routes, and origins of human migration into the hitherto unpopulated Western hemisphere has engaged archaeological inquiry for over 150 years. The last of the Pleistocene migrations by fully modern humans, and arguably the last of the great earthbound human migrations, this journey covered thousands of kilometers over the course of several thousand years, well after the movement of modern humans out of Africa (ca. 50,000 B.P.) and central and eastern Asia (ca. 45,000-40,000 B.P.). Upon their arrival, these first migrants then appear to have quickly spread throughout the entire (and then completely unknown) hemisphere within a matter of just a few thousand years, adapting to a complex and variable array of local climates, landscapes, and biota while also exhibiting concomitantly diverse technologies and lifeways on the landscape in very widely distributed locations. This paper examines and summarizes the evidence for the earliest human occupation(s) in Eastern North America and includes assessments of older discoveries like Meadowcroft Rockshelter and Cactus Hill as well as more recent research at diverse terrestrial and submerged loci.

[114] *Discussant*

Adovasio, JM [69] see Adovasio, James

Ævarsson , Ulli [29] see Woollett, Jim

Agarwal, Sabrina [103] see Miller, Melanie

Agbe-Davies, Anna (UNC-Chapel Hill)

[296] *Archaeology Should *BE* or the Double Consciousness of Historical Archaeology*

This is a paper about historical archaeology and the African diaspora. Historical archaeology is, could be, like W.E.B. DuBois's seventh son, "born with a veil and gifted with second-sight." The status of an academic field in no way compares with the ordeal of the American Negro. Nevertheless, in this paper I argue that we, too, measure our worth "by the tape of a world that looks on in amused contempt and pity." What is our relationship to history, to anthropology, to material culture, to texts, to the people who pay for our work and the people whose ancestors we imagine? In considering these questions, the power of the second-sight becomes ever clearer.

Agostini, Mark (Abbe Museum (Smithsonian Affiliate))

[172] *Comparative Analysis of Indigenous Ceramic Technology for Two Coastal Maine Sites*

This poster presents a preliminary analysis of a donated indigenous ceramics collection excavated at the Pearsen site, which spatially correlates to the Maine State Museum investigations of the Goddard site, a large shell-free multicomponent site at the mouth of Penobscot Bay, Maine. Analysis of sherd temper type, surface treatment and decorative styles is used to first establish occupation periods at the site, and second to infer patterns of seasonality. These analyses contribute to our understanding of prehistoric cultures from Maine, and assess what appears to be differing subsistence strategies from specific local settlements at a given prehistoric time.

Agostini, Silvano (MiBACT)

[180] *Studies of Black-Gloss Pottery from Monte Pallano (Italy) II: Petrography*

This is the second of a series of four papers that report multi-faceted studies of a collection of 200 sherds of black-gloss pottery (a type of fineware that was used for dining and wine consumption from the 5th century B.C.E.-1st century B.C.E.) excavated from the Monte Pallano ridge in the Abruzzo region of eastern Italy. Petrological approaches, based an analytical protocol developed by the Geological and Paleontological Service of the Superintendency for Archaeological Heritage of Abruzzo-Italy, are applied to the identification and characterization of local and "imported" ware fabrics, placing them within the geological context of the Sangro valley and surrounding production areas. Variables studied include: minerals, fragments of sedimentary and igneous rocks, chamotte, fossils, "pedorelitti" if present, and other such petro-fabric typology, percentage and size of temper, paste typology (MPC-TCA), color/colors on thin section with parallel nichols view interior and exterior finishing surfaces of vessels, etc. Multivariate statistical methods reveal characteristics and differences between pottery groups to distinguish the different pastes relative to the composition (MPC), and the production technology (TCA).

Aguilar, Ana Cristina [93] see Morales-Arce, Ana

Aïcha, Bachir Bacha and Llanos Jacinto Oscar Daniel

[146] *A Paracas Society Perspective from the Basins of Callango and Ocuaje, Ica, Peru*

The main objective of this paper is to present the archaeological research we have carried out at two sites of relevance for the understanding of the Paracas culture (400 B.C.-100 A.D.): Animas Bajas located in the basin of Callango and Cerro Cordova located in the basin of Ocuaje. The work carried out: systematic survey, topographic mapping, excavations, architectural conservation work and analysis of materials, provides new light on understanding the Paracas culture, which has traditionally been based on ceramics or funeral textiles that are usually stripped of their archaeological contexts. Our work focused on the analysis of the architecture at the two excavated sites, and the study of settlement patterns, is gradually recognizing that the lower Ica valley, was the main area of political- religious interaction of the Paracas people. The material culture recovered in archaeological contexts also supports this premise.

Aikens, C. Melvin (University of Oregon)

[148] *Discussant*

Aimers, Jim (SUNY Geneseo), Elizabeth Haussner (SUNY Geneseo) and Thomas Guderjan

(University of Texas at Tyler)

[123] *An Expedient Pottery Technology and Its Implications for Ancient Maya Trade and Interaction*
Coconut Walk Plain (sometimes called Coconut Walk Unslipped) was defined by Valdez et al. based on a ware from Graham. This is a coarse, fragile, and inconsistently-shaped pottery which has not been subject to detailed study until now. It is found in large quantities at sites on Ambergris Caye (especially Marco Gonzalez and San Juan). The type is most common in the Terminal Classic along coasts and rivers, but seems to have antecedents from at least the Early Classic (e.g., along the Sibun River). In this paper we report on stylistic, functional, and petrographic analysis of this pottery type and the implications of these findings for interpretations of coastal trade and interaction.

Aimers, James [302] see Sagebiel, Kerry

Aitchison, Kenneth

[100] *Moderator*

Aiuvalasit, Michael [91] see Neely, James

Aiuvalasit, Michael (Southern Methodist University)

[237] *Using Geoarchaeology to Expand the Interpretive Potential of Water Management Features: Investigations at the Purrón Dam in Tehuacán, México, and Ancestral Puebloan Reservoirs in the Jemez Mountains, New Mexico*

From Percival Lowell's canals on Mars to Karl Wittfogel's hydraulic empires, water management features have long been interpreted as markers of social complexity. Yet, as Jim Neely has championed, establishing the chronology and use-life of water management features before interpreting their social significance is critical. Two dramatically different case studies highlighting the contributions that geoarchaeology can make towards understanding these features are reviewed. Stratigraphic investigations of an 8+ m sedimentation sequence impounded behind the Purrón Dam in Tehuacán, México, the largest prehistoric dam in the Americas, provided opportunities to date construction sequences and reconstruct the use-life of this feature. New dates pushed back the date of the dam's completion from the Late Formative/Early Classic (ca. 150 B.C.–A.D. 250) to the Middle Formative (ca. 650-150 B.C.), which has significant ramifications for regional models of the rise of social complexity. Conversely, preliminary studies of 0.5 m thick deposits from small water catchment features associated with mesa-top Ancestral Puebloan communities in the Jemez Mountains, New Mexico show that these features archive paleoenvironmental records, can be dated, and hold the potential to provide insights into patterns of community aggregation during the Classic Period (A.D. 1325-1600).

Ajithprasad, P. [124] see Chase, Brad

Akins, Nancy [18] see Moore, James

Akins, Nancy (Office of Archaeological Studies, Museum of NM)

[247] *A Tale of Two Basins: Bioarchaeology of the Galisteo and the Southern Tewa Basins*

Located in adjacent areas of north-central New Mexico, the Galisteo and Tewa Basins have distinct environments and occupational histories. As a result, the Prehispanic occupants had different subsistence patterns, mortuary practices, physical attributes, and health profiles. From the Late Developmental period (A.D. 900-1100) on, a growing indigenous population in the southern Tewa Basin adapted to increasing population densities through migration and changes in subsistence strategy, but with relatively little alteration of other cultural attributes like mortuary practices. Occupation of the Galisteo Basin began in the Coalition period (around A.D. 1200) period and the earliest sites and populations share few subsistence and biological traits with their contemporaries in the adjacent basin. This presentation looks at developments within each basin and considers how the environmental differences and cultural histories may have influenced biological variation.

Akkermans, Peter (Leiden University, The Netherlands), Johan van der Plicht (Leiden University) and Olivier Nieuwenhuyse (Leiden University)

[201] *Climate Change, Culture Change? The 8.2 Ka Climate Event and the Transformation of Neolithic*

Communities in Upper Mesopotamia

The so-called "8.2 ka Climate Event" is one of the most pronounced Holocene climate change events, observed in ice-cores as well as marine, lacustrine, and terrestrial records across the northern hemisphere. For the Middle East, climate models and proxy data suggest severe drought conditions about 8200 years ago. The 8.2 ka event is frequently linked to societal collapse and the demise of local Neolithic communities. However, recent excavations at the site of Tell Sabi Abyad in Syria provide solid evidence for continuous settlement during the 7th millennium B.C. and spanning the 8.2 ka event, in association with many cultural and economic transitions. Although the 8.2 ka climate event probably was among the forcing factors behind these changes, the results of the fieldwork counter the "collapse of cultures" stance with which the archaeological record is currently replete. The Neolithic communities of Upper Mesopotamia set into motion a series of mitigating adaptations, which made them well able to cope with drought and other inconveniences caused by the 8.2 ka event.

Akköprü, Ebru [249] see Mouralis, Damase

Akoshima, Kaoru (Tohoku University)**[217] Escaping the Confines of Use-Wear Identification: High Power, Low Power, and Raw Materials in Lithic Microwear Analysis**

The paper examines theoretical and practical aspects of use-wear research toward a more integrated field of lithic analysis. The high magnification method already has 40 years of history. Its emphasis was laid on micro-polishes for worked materials identification. It experienced the serious "polish controversy" during 1980s, but it remains as a standard technique today. On the other hand, the low magnification method has been influential in North America, e.g., the work by G. H. Odell, as is also witnessed in recent studies in China. The variety in lithic materials led to a more complex situation. The seeming dichotomy between the methods needs to be fused to a recombinant practice of synthetic "micro-traceology". Strength and weakness of different microwear techniques are scrutinized, and an alternative use of combined method is proposed. The data base of Tohoku University Microwear Research Team in Japan since 1976 is utilized for the objective. Experimental approach as "Middle Range Theory" constitutes the inferential framework, but more attention should be paid to actual incongruity between experiments and observed phenomena. The concept of technological organization will play an essential role for reconciliation. Case studies from the Upper Paleolithic of Northeast Japan are discussed in this perspective.

Al Nahar, Maysoon (Associate Professor)**[71] Tell Abu es Suwan: Neolithic typology and technology**

Tell Abu es Suwan is one of the Neolithic Mega-sites of Jordan, located east of the ruins of Roman Jerash, and north of modern Amman. Four seasons of excavation revealed continuous occupation during the MPPNB, LPPNB PPNC and Yarmoukian periods. These excavations produced enormous numbers of chipped stone artifacts from 45 units. The lithic assemblages from Tell Abu Suwan included many distinct pieces that correspond with the Neolithic period and its subdivisions. Moreover, it represents a series of manufacturing stages of the lithic technology.

[236] Chair**Alaica, Aleksa (University of Toronto)****[219] Human-Animal Relations during the Late Moche Period of Coastal Peru: Assessing Relational Ontologies and Material Shifts over Time**

Recent research conducted on the north coast of Peru at the Late Moche site (A.D. 650-850) of Huaca Colorada indicates important associations between ritually charged spaces and animal interments. The mortuary contexts yield ritualized and curated burials of camelids, dogs and guinea pigs, supporting the notion that human-animal interaction was situated within a relational ontology that was specific to the communities of the Jequetepeque Valley. The contexts within which both human and animal beings were found may indicate that they were perceived as socially and spiritually co-dependent. Animals were not objectified offerings or simple economic resources but dynamic, ideological, and imbued with profound meaning. This paper will argue that social, political and cultural identities in the pre-Columbian Jequetepeque Valley as well as the larger Moche world developed through close, often intimate relationships with places, animals and things.

Aland, Amanda (Southern Methodist University) [121]

The Inka in the Chao Valley, North Coast of Peru

Prior to conquest by the Inka Empire, the Chimú ruled the valleys of the north coast of Peru. At the end of the 15th century, the Inka state moved into the area and exercised rule to differing degrees in the region. In contrast to the northern valleys of Peru's north coast where a significant amount of Inka material culture was incorporated into provincial life, in the southern valleys, only small proportions of Inka materials are present in Inka-period occupations. Data from the site of Santa Rita B in the Chao Valley, a lower-order administrative site during both Chimú and Inka times, suggest that the Inka governed through local elites and seem to have approached this area through indirect rule. The material manifestations of Inka political power can be seen in the architecture at SRB to limited degrees, as well as through the presence of Inka-influenced ceramic and sumptuary goods. Overall, Inka material culture appears to have been incorporated into the site's assemblage, but the way these materials were incorporated and what they represented about Inka rule were manipulated by local peoples to suit their needs.

Alarcón Zamora, Gerardo

[197] *The Temporal Range of Buildings in the Architectural Core of a Village in Costa Rica's Central Caribbean Region: Guayabo de Turrialba*

The emergence of complex villages, as a result of the development of chiefdoms in Central America, was an extended process that took place over a long period time across the region and even within individual sites. But the recent evidence from Guayabo de Turrialba indicates that, although the site was continuously occupied from A.D. 600-660 until A.D. 1260-1300, the period of greatest construction activity occurred between A.D. 830 and 1280. It was between these latter centuries that the structures at Guayabo de Turrialba's site core were built. Most dates at the site correspond to the years between A.D. 900 and 1100, and could therefore be related to the increase and nucleation of the population in Costa Rica's Central Caribbean region, which was a result of the development of complex societies in this area. The timing of these events at Guayabo de Turrialba implies specialization of production, as materialized in the building of monumental architecture such as basements, pavements, terraces and hydraulic control systems. The intensity of construction reflects consolidation of hierarchy at the site during this time.

[197] Chair

Albert, Peter [13] see Wagner, Ursel

Albert, Rosa-Maria (ICREA/University of Barcelona)

[39] *Discussant*

Alberti, Benjamin (Framingham State University) and Severin Fowles (Columbia University)

[159] *Dense Gestures: Ecologies of Rock and Art in Northern New Mexico*

In the rugged canyons of northern New Mexico, basalt boulders are slowly worked upon by complex ecologies. Wind deposits clay particles; sun-heated surfaces allow microbes to fuse clay with iron and manganese producing a dark desert patina; algae and fungi produce brilliant lichen colonies that expand in patterned formations and eventually eat away rock faces together; and run-off leaves mineral deposits and staining. For millennia, indigenous rock artists participated in the ecological transformation of these surfaces—pecking, scratching and grinding into the patina to produce images of human and animal tracks, enigmatic dots and meandering lines. Drawing on Indigenous and anthropological thinking, we argue, first, that the effect of the actions of humans and environment on rock were of the same ontological order, and were perceived as such; and, second, that the coming into being of places where gestural outcomes accumulated in dense, deepening clusters was an outcome of reading the effects of such human and environmental agencies. This, in turn, was as a means of knowing and being known by sites and learning from them. The outcome of multiple gestures repeated over time, significant places were produced and represented as much by a thoughtful world as by busy humans.

Alcántara, Cuauhtemoc

[293] *Espacios arquitectónicos de Tuzapan en la Huasteca Veracruzana.*

La región Huasteca se ubica al noreste del centro de México, donde conviven actualmente una gran diversidad de grupos sociales entre los que se encuentran teenek, nahuas, otomíes, totonacos, entre otros. Geográficamente hablando la zona abarca cinco estados de la actual república mexicana que son Querétaro, Hidalgo, San Luis Potosí, Veracruz y Tamaulipas. Para el periodo posclásico Tardío (1200-1521 d.C.) estos grupos representan una serie de rasgos estilísticos definidos como la Cultura Huasteca

rasgos plasmados en la cerámica, escultura y arquitectura. Precisamente esta última es el objeto de estudio del presente trabajo, el cual pretende describir e inferir acerca de los usos de los diferentes espacios arquitectónicos localizados durante los recorridos de campo realizados en el proyecto de Salvamento Arqueológico "Coyula, Humapa, Cacahuatengo" en el sitio de Tuzapan, también llamado la Mesa de Cacahuatengo ubicado en en el actual estado de Veracruz. El asentamiento se localiza en una meseta de origen volcánico, el sitio presenta una serie de conjuntos arquitectónicos los cuales que reflejan las diversas actividades, siendo uno de los más importantes de la región.

Alcaraz , Ana Paula [6] see Martinez, Gustavo

Alconini, Sonia [104] see Thomas, Andrea

Alconini, Sonia (University of Texas at San Antonio)

[121] *Ritual Banquets and Sacred Sounds in the Southern Andes: The Yamparas and the Inka*
In this presentation I discuss continuities and discontinuities in local ritual practices in the Yampara territory, and Inka effects on interregional exchange networks. Located in the southeastern Bolivian Andes, this region was part of the Charcas confederation. Specifically, this paper explores the importance of copper bells and terrestrial shells in the elaborate ritual banquets of the region, the importance of sacred music in such rituals, and the ways in which access to such valuable goods was maintained despite the Inka conquest. This paper also discusses the strategies used by the native elite in the maintenance of their status and power, both at social and religious levels.

Aldeias, Vera (Max Planck Institute for Evolutionary Anthropology)

[116] *A Micromorphological Perspective on Shell Midden Formation: The Case of the Mesolithic Site of Cabeço da Amoreira*

The shell midden archaeological record is typically characterized by an intricate stratigraphic succession, generally underlined by a significant anthropogenic component. Thus far, the complex stratigraphy of middens has been difficult to decipher and few studies have focused on the microstratigraphic record of midden formation. The present paper on the Cabeço da Amoreira sequence discusses ongoing geoarchaeological and micromorphology studies that have been geared to investigate aspects pertaining to site formation, the degree of assemblage integrity and the nature of anthropogenic signatures at the site. The preliminary results attest to the intensity of anthropic depositional processes and their impact on sedimentary lateral variability. The role of the microscopic level of analyses to access behavioral activities and taphonomical aspects is shown to be additionally relevant in shell midden investigations.

Alden, John

[329] *People, Potters, or Pots: The Transmission of Stylistically Similar Ceramics in the Late Uruk*
Archaeologists have long puzzled about how best to interpret the appearance of stylistically similar ceramics and ceramic complexes between neighboring or distant regions. Do such finds represent interregional exchange, movements of individual people or populations, the activity of itinerant potters, or some form of broadly shared socio-cultural activity? An INAA trace element analysis of a collection of ceramic tools used by Late Uruk era potters allows us to address the question of whether itinerant ceramic specialists were active in the Late Uruk, moving within and between broad regions and serving as a motive force in the transmission of the Late Uruk ceramic complex. By focusing on the tools used by ceramic specialists rather than the vessels themselves, we are able to directly address questions about the activities of specialized potters in Late Uruk society. In terms of the Uruk Expansion, the results of our study suggest that the broad interregional similarities in Late Uruk ceramics are more likely related to the movement of ideas than to movements of products or people.

Alden, John [329] see Alizadeh, Abbas

Aldenderfer, Mark (University of California)

[1] *Discussant*

Alexander, Rani (New Mexico State University)

[72] *Norias, Cenotes, and Rejolladas: Changes in Yucatán's Hydrogeologic Landscape after the*

Spanish Invasion

The introduction of the noria (waterwheel) on the Yucatan peninsula after the Spanish invasion revolutionized the use of karst hydrogeologic solution features known as cenotes and rejolladas. In this paper we draw on Michael Schiffer's framework for studying technological differentiation to analyze changes in the design of water lifting devices and the groups who used them from 1546 to the present. We consider how adoption of the noria shaped changes in agroecology, animal husbandry, and the production of cash crops, such as dyes, sugar, and henequen. We also examine how the architectural and spatial contexts in which norias were embedded reflect variation in aesthetics and power relations between native and non-native groups.

[72] *Chair*

Alexander, Rani [330] see Bianco, Briana

Algaze, Guillermo

[329] *Discussant*

Alhambra, Dominique, Stephen Lensink (University of Iowa) and Teresa Rucker (University of Iowa)

[77] *The Negatives and Positives of Preserving Iowa's Archaeological Photographs*

The photographic collection at the Office of the State Archaeologist (OSA) at The University of Iowa (UI) documents the history of the last half-century of archaeological research in Iowa and serves as a record of the cultural artifacts associated with many historically significant sites. The archaeological community relies on this indispensable set of records to fully understand and interpret the history and prehistory of the over 2,000 archaeological sites documented by these photographs. Since the photographs represent the only copies of critical visual field information, their degradation, accidental destruction, or theft would result in irreparable loss of scientific and historic research data for these sites. In 2008, the OSA began a two-phase project to enter the records into a bibliographic database and convert slide, negative, and print format images into high-resolution, archival quality digital files. Scans are available through two online portals: I-SitesPro includes access to the full collection for professional archaeologists, and the UI Digital Library provides general public access excluding confidential site information and culturally sensitive material. Scanning is ongoing and will grow the collection to over 80,000 digital images by the project's end.

Aliphat, Mario (Colegio de Postgraduados Campus-Puebla. México) and Laura Caso Barrera (Colegio de Postgrados Campus-Puebla)

[191] *Ethnic and Political Identity in the Southern Maya Lowlands*

The indigenous regions and territories in the Southern Maya Lowlands suffered severe changes after the Spanish conquest. It is extremely difficult to understand the political, ethnic and economic alliances between peoples, regions and territories in this area on the eve of the Spanish conquest. The arrival of the Spaniards to the region changed drastically the ethnic and political categories between the different Maya groups, making their cultural and territorial demarcations even more confusing. The Spaniards couldn't understand if the peoples they encountered were different ethnic groups or if they were factions of a single group. Some Colonial documents refer to the Itza as the "Itza nation". We discuss in this paper if the Itza can be considered as an integrated polity or not, as well as the role played by their parcialidades. We further attempt to analyze the relationship of the Itza with their Maya neighbors such as the Lacandon, Manche Chol, Mopan and Xocmo.

Alizadeh, Karim (Harvard University)

[92] *Approaches to Social Complexity in Kura-Aras Culture: A View from Köhne Shahar (Ravaz) in Chaldiran, Iranian Azerbaijan*

Despite decades of studies on so-called Kura-Aras/Early Transcaucasian Culture and increase of our knowledge about many aspects of it, yet the nature of this phenomenon has been a mysterious aspect and difficult to address. Indeed, there are some fundamental questions about the Kura-Aras Culture that remain for further investigations. Several reasons might have been listed here but one of them could be the nature of data and record at disposal. One of fascinating Kura-Arasian sites, Köhne Shahar (Ravaz) in Chaldiran area in Iranian Azerbaijan, suggests some promising data. Based on preliminary investigations at this site, I will show that the site has great potential to address these fundamental

questions. Although Köhne Shahar (Ravaz) is not a typical Kura-Arasian settlement and rather represents a unique one, however, understanding internal social structure of the community at the site may lead us to other aspects of the Kura-Arasian society in general.

Alizadeh, Abbas, John Alden (University of Michigan) and Leah Minc (Oregon State University)

[329] Testing the Evidence: A Follow-up Study of Late Uruk and Proto-Elamite Ceramics from Tal-e Geser, Iran

Several years ago, the authors carried out an INAA analysis of ceramics from Tal-e Geser, a site in the Ram Hormuz Plain of Southwestern Iran. The results were provocative: the Geser material seemed to include a large component of pottery that was manufactured somewhere else and then carried to Geser. The main component of the introduced material had trace element signature comparable to Tepe Farukhabad in the eastern end of the Susiana Plain, but the imported ceramics included at least one sherd with a trace element signature matching southern Mesopotamia. The initial study's results also showed changing patterns of ceramic imports at Geser between the Late Uruk and Proto-Elamite periods. Most interestingly, it identified three Proto-Elamite era sherds from highland Iran with what appears to be a Geser trace element signature. These results were unusual enough that we felt they needed to be tested with a second stage set of samples. This paper presents the results of that study.

Alleen-Willems, Russell (Diachronic Design)

[258] "But Is It Academic?" Reflections on a Year of Archaeology Blogging

Good news: web platforms like Wordpress, Tumblr, and Google's Blogger make starting an archaeology blog incredibly easy! Bad news: once you start a blog, you actually have to create content and post it online. As with academic writing, maintaining good writing discipline is of key importance, but creating for a blog also requires a lot of different skills. I have started three blogs, abandoned two of them, and created content on digital archaeology for over a year. Here is what I learned as a neophyte blogger about how my targeted audience may not be the same as my actual audience, how to keep going after the first post, where academic writing fits in, and how to stop worrying and learn to press the "publish" button.

Allen, Kathleen [172] see Willison, Megan

Allen, Kathleen (University of Pittsburgh) and Samantha Sanft (Cornell University)

[172] The Organization of Lithic Tool Production and Use at Two Sixteenth-Century Iroquoian Sites

Fieldwork at two Cayuga sites, Parker Farm and Carman, has shown differences in both the intensity of occupation and spatial structure of the settlements, suggesting the sites may have differed in function and degree of permanence. Results from a previous analysis on stone tools indicate overall similarities in the categories of tools recovered from both sites, but also significant differences in the relative proportions of tool types. In our current research, we examine the spatial distribution of these lithic tools and the co-occurrence of various tool types within specific site areas to further investigate the spatial organization of activities once occurring at these sites. Are activities segregated in separate locations? Does gender affect the distribution of lithic tools? Are some tasks consistently performed in similar locations? An analysis of the spatial structure of stone tools will provide a better understanding of the behavior responsible for the differential patterns of occupation at these sites.

Allentuck, Adam [236] see Maher, Lisa

Allison, James (Brigham Young University)

[262] The Chronology of Fremont Farming in Northern Utah

Fremont maize cultivation in northern Utah occurred at the northernmost extent of prehistoric Native American horticulture west of the Rocky Mountains. Fremont chronology currently relies almost entirely on a large database of radiocarbon dates, but most of the existing dates are on wood charcoal subject to old wood problems; dated charcoal also often has unclear associations with maize or other cultural materials. Recent efforts to directly date archaeological maize from museum collections have helped refine the chronology of Fremont horticulture. These new dates indicate that the timing of the earliest appearance of maize varies across northern Utah, and that in some areas maize horticulture continues later than previously thought.

[262] *Chair*

al-Nahar, Maysoon [236] see Olszewski, Deborah

Alonzi, Elise (Arizona State University), Tommy Burke (National University of Ireland, Galway) and Ryan Lash (Northwestern University)

[106] *Investigations at Saint Colman's Abbey: An Early Medieval Irish Insular Monastery*

Saint Colman's Abbey is situated on the eastern end of Inishbofin, an island off the coast of Co. Galway, Ireland. The site currently consists of a 14th-century church and a modern graveyard that remains important to the local population. However, the Venerable Bede reported that the settlement was first established ca. A.D. 667 by an Irish saint who fled England after a church synod repudiated the Irish method of monastic practice. Recent field survey was undertaken to identify features on site that could be associated with this earlier phase of monastic activity. This multi-year survey has revealed several extant components common to Irish early medieval monasteries, including a circular enclosure wall, leachta or prayer stations, medieval cross-slabs, and a possible mill pond. These components are compared to architectural, spatial, and religious elements of other early medieval monasteries, such as those on Inishmurray, Co. Sligo and High Island, Co. Galway. The identification of these features reveals how the material culture of early monastic practice has provided a framework for local lay worship over many centuries.

[106] *Chair*

Alt, Susan (Indiana University Bloomington)

[110] *Building Cahokia: Transformation through Tradition*

Architecture was used to mark purpose and meaning at Cahokia in ways that were unique in pre-Columbian North American societies. Temples, meeting houses, sweat lodges, charnel houses, and other sacred structures as well mundane houses and storage huts, each with its own architectural signature, populated Cahokian settlements and ritual centers. Here, I present new evidence from Emerald Mound, a Cahokian center, and other towns in the region that documents how the new architectural forms were invented through engagement with and citation of the traditional. I further suggest that these novel architectural forms, their emplacement, and their organization created a new relational field that engendered a new worldview and a new power of place and persons.

Altaweelel, Mark [257] see Marsh, Anke

Altschul, Jeffrey (Statistical Research, Inc./SRI Foundation)

[1] *Moderator*

Alva Meneses, Ignacio [219] see Arcuri, Marcia

Alvarado Viñas, Luis (Escuela Nacional de Antropología e Historia), Linda R. Manzanilla Naim (Universidad Nacional Autónoma de México), Rocío Berenice Jiménez González (Universidad Nacional Autónoma de México) and Abril Ivonne Gutiérrez Pérez (Escuela Nacional de Antropología e Historia)

[25] *Identity in a Multiethnic Neighborhood Center of Teotihuacan: Cephalic Modification, Headdresses, and Facial Paint*

During 13 field seasons of extensive excavations by Linda Manzanilla and her team in the neighborhood center of Teopancazco, Teotihuacan, Mexico, skeletal remains from 129 individuals were recovered. We discuss in this paper evidence from this dataset of cranial modification. For example, 38 individuals had been decapitated, some covered with cinnabar, and seven individuals demonstrate evidence of cephalic or cranial deformation. Cephalic modification seems to have been a visible marker of ethnic identity, and a means of differentiating people within a multiethnic society. In such a multiethnic community, where several languages were probably spoken, visual signs such as cranial modification and face paint may have been important visual signs for social differentiation and identification.

Álvarez, María (INCUAPA-CONICET, Facultad de Ciencias Sociales, UNICEN, Olavarría), María Gutiérrez (INCUAPA-CONICET, Facultad de Ciencias Sociales, UN) and Cristian Kaufmann

(INCUAPA-CONICET, Facultad de Ciencias Sociales, UN)

- [6] *The Role of Hog-Nosed Skunk in the Subsistence of Hunter-Gatherers of the Pampean Region of Argentina*

Hog-nosed skunks (*Conepatus chinga*) are native carnivores with crepuscular and solitary behavior. They are notorious for their anal scent glands, which serve a defensive purpose. Although skunk bones are not very common in archaeological sites, the degree of interaction between skunks and pampean hunter-gatherers has not been discussed in detail. The objective of this paper is to present and discuss evidence of this species in Paso Otero 4 (PO4, pampean region of Argentina) and to evaluate its presence at a regional scale in order to more broadly discuss the role of skunk in human prehistory. Moreover, information from chronicles and historical documents were compiled to generate hypotheses about the potential use given to this resource during the Holocene. In PO4, 13 hog-nosed skunk specimens were recovered and dated between ca. 8900 to 4600 years B.P. Cut marks, thermal alteration, and tooth marks on these remains were identified. A detailed evaluation of tooth marks was conducted and double arch punctures and crescent-shaped pits which are characteristics of human chewing were recognized. Results enable us to propose that this animal was an occasional prey for hunter-gatherers and was more common in the local faunal repertoire than previously believed.

Álvarez, Myrian [118] see Briz I Godino, Ivan

Alvitre, Cindi [142] see Martinez, Desiree

Amador, Fabio Esteban [33] see Rissolo, Dominique

Amador, Fabio (National Geographic Society) and Marlon Escamilla (Universidad Tecnológica de El Salvador)

- [197] *Imaging a Language: New Visual Approaches to Document Ancient Writing Systems in El Salvador*

New visualization tools allow a different approach to documenting and contextualizing ancient writing systems. Gigapan technology allows the capture of graphic elements in ways that the detail is never lost despite the scale of the image, allowing the researcher to move in and out and between elements without losing contextual perspective. Furthermore, the same technology can be used to propose movement and structure within the visual realm to convey possible visual stories as intended by the ancient artist. Although these methods are new and exploratory, they offer a fresh approach to recording methods and interpretative representations of the graphic elements that on their own have little to no apparent meaning.

Amador, Julio (UNAM)

- [248] *The Cave within the Hill: Sacred Symbolism of Landscape and Rock Art Figures Belonging to Rainmaking Ceremonies in the Sonoran Desert*

This paper intends to define the relationships that could have existed between the exercise of political and religious power, the construction of monumental sites, and landscape symbolism—associated with a cosmological system, derived from the mythological cosmogony—in Cerros de Trincheras in the Sonoran Desert of northwestern Mexico. The analysis of archaeological evidence, regional ethnography and ethnohistory allows us to formulate certain hypothesis and to propose a systematic comparative study of concepts and cultural practices that have its origin in Mesoamerica and were shared by the cultures of the American Southwest. These include: astronomic observations, construction and alignment of architectonic structures, ritual calendars and productive activities. In this specific case, religious symbolism of hills and elevated sites, linked to rain and abundant crops petition rituals, is emphasized. This must have been an essential ritual function of the hill sites that are found in the dry environment of the Sonoran Desert, where water is the most precious good that allows the subsistence and prosperity of a society depending on agriculture.

Ambrose, Stanley [40] see Zimmermann, Emily

Ambruster, Carol, Tony Hull (University of New Mexico) and Elizabeth Jewell (University of Phoenix)

- [141] *An Early Navajo Sun Watching Site in Chaco Canyon: Critical Evaluation Using Monte Carlo Null Test Criteria*

We have found direct evidence of Navajo seasonal sun watching at an early Navajo site in eastern Chaco Canyon. The core and much of the periphery of the site out to approximately +/- 0.5 km has been surveyed. It is well known that historical and present-day Navajo place importance on sunrise, often orienting the door of a newly constructed hogan to the direction of the rising sun on that day. The Navajo language includes multiple words for degrees of sunrise. However, reports of solstice and equinox observations are rare in the literature. We believe this is the earliest Navajo site denoting both awareness and precise observation of the equinoxes and both solstices. We make this assertion based on three tests: (1) Iconography consistent with seasonal observation; (2) Multiple viewing points defining alignment with solstices and equinoxes; and (3) Monte Carlo evaluation for false positives given the parameters of the site. Both our research design and the results of these tests will be given for winter and summer solstices and the equinox.

Ambrústolo, Pablo [69] see Franco, Nora

Ames, Kenneth (Portland State University)

[30] *The Social Lives of Projectile Points: Inter and Intrahousehold Variation in Projectile Point Forms in Lower Columbia River Plankhouses*

Macroscale temporal and spatial variation in projectile point form has long been of keen interest to North American archaeologists. Where microscale variation is observed, exploring it can be hindered by small samples. Two adjacent communities on the Lower Columbia River floodplain have strong multilevel, microscale variation in projectile point form. The combined sample for both sites is approximately 3200 points. The two are contemporary (ca. A.D. 1400-1830), 8 km apart and occupied by the same ethnic group. Households at both resided in enormous plankhouses. Meier contained a single structure, while Cathlapotle had six. Excavations at Cathlapotle focused on houses 1 and 4. Four of the Cathlapotle structures were divided internally into compartments while the Meier house was internally open. As previously shown, the sites contain the same projectile point types, but in significantly different proportions. At Cathlapotle, houses 1 and 4 have different frequencies of types (House 4 has the same type as Meier), while the three excavated compartments of House 1 display very different frequencies of points among them, including rare points virtually absent elsewhere. These households and segments differ in status and while there was community level production specialization, there was fluidity at the household and household levels.

[1] *Discussant*

Ames, Kenneth [173] see Letham, Bryn

Ames, Christopher (McGill University, Department of Anthropology), April Nowell (Department of Anthropology, University of Victoria), James T. Pokines (Department of Anatomy and Neurobiology, Boston University) and Carlos E. Cordova (Department of Geography, Oklahoma State University)

[223] *New Evidence of Paleolithic Occupation in the Shishan Marsh, Jordan: Report on the 2013 Field Season of the Azraq Marshes Archaeological and Paleoecological Project*

The Azraq Marshes Archaeological and Paleoecological Project (AMAPP) is a team of international researchers studying the importance of the Azraq wetlands for hominin populations throughout the Pleistocene. Located ca. 200 km east of the Mediterranean coast in Jordan's eastern desert, the Azraq wetlands—the Druze Marsh in the north and the Shishan Marsh in the south—have provided a consistent water source in what is otherwise a hyper-arid environment. Ongoing research since 2009 indicates that the northern wetland acted as a desert refugium for hominins during adverse regional conditions, whereas during more humid periods when the marshes expanded in size, populations moved into the surrounding landscape along the banks of rivers. Results from the 2013 field season suggest the southern wetland is equally important to the regional settlement history. Initial excavation in the Shishan Marsh identified a high intensity (more than 500 lithics > 2 cm per cubic meter) Middle Pleistocene occupation horizon characterized by bifaces and flakes in relatively pristine condition. The associated faunal assemblage, although fragmentary, is indicative of savannah adapted species, such as large Equus, small Gazella, and rhinoceros. Future research will expand the excavation to determine the precise timing and nature of Paleolithic occupation at the site.

[223] *Chair*

Ames, Christine [77] see Trocolli, Ruth

Amick, Daniel**[69] Late Pleistocene Archaeology of the North American Great Plains**

What was once considered the Pleistocene gateway to the Americas has become relegated to interior continental hinterland. Evidence of pre-Clovis occupations exist but remain inscrutable in many ways. The entryway role of the ice-free corridor during MIS 2 (Late Wisconsinan) seems minimal at best, meaning that initial colonists of this region did not enter from the north. Those who eventually reached this deep interior of North America found verdant grasslands with a rich faunal biomass. Colonization proceeded rapidly with the appearance of Clovis and Folsom groups in this region. The relationship between the pre-Clovis and Clovis archaeological records remains unclear, but Clovis groups seem to be immigrants into this province (perhaps from the southeast). Clovis inhabitants may have been pre-adapted for exceptional success in this savannah environment because of distinctive technological and settlement strategies which promoted colonization through rapid landscape learning. In contrast, Folsom groups seem to represent a distinctive regional response to the emergence of the bison dominated Terminal Pleistocene grasslands. The origins of these highly distinctive Folsom adaptive strategies seem rooted in earlier Clovis patterns in the interior grasslands. Both groups were required to cope with shifting environmental conditions offering unique regional opportunities as well as constraints.

Amrhein, Laura (University of Arkansas-Little Rock)**[167] Sacrifice, Sexuality, and Power in Late Classic Maya Ceramics**

This paper will provide an analysis of a selection of Late Classic Maya ceramics with a focus on sacrifice through gendered ritual and sexuality. While focusing on gendered depictions of sacrifice (some seemingly sexualized or erotic), of further consideration is the role additional characters such as animals, assistants, dancers, and deities play in these artistic programs. In some examples, the idea of reciprocity is apparent.

Ancona Aragón, Iliana [305] see Plank, Shannon

Anderson, Kirk (Museum of Northern Arizona)**[18] The Physical Landscape and Paleoclimates of the San Juan Basin**

The San Juan Basin in northwest New Mexico is a semi-arid landscape characterized by sandstone mesas dissected by ephemeral drainages. Rainfall is unreliable and temperatures extreme. Yet, it is home to the Chaco culture, one of the largest, most complex regional centers of pre-contact North America. The NGWSP project area includes two linear transects on either side of Chaco Canyon, essentially providing a random sample of archaeological sites and associated geomorphic landscapes. We explore the settlement patterns in this region in terms of geomorphic characteristics and associated landforms. Indeed, alluvial, eolian, colluvial, and mesatop sites each provide challenges and opportunities to a successful livelihood in terms of farming practices. A high-resolution record of dendroclimatically reconstructed paleoclimates aids in our investigations.

Anderson, Patricia (CNRS, Nice, France)**[22] Fiber Use in Northern and Central Tunisia by Sedentary and Semi-Nomadic Populations**

An ongoing ethnoarchaeological study in 2 different regions of Tunisia shows some similarities and some distinctive differences in use of fiber. Most commonly, the leaves of two wild grasses used in each region undergo different harvest and treatment processes for making objects: *Ampelodesmos mauritanica* (called diss), located only in Northwestern Tunisia, is used by the sedentary agricultural/pastoralist population, and *Stipa tenacissima* (called Alfa), found only in the central high steppic region, is used by both sedentary herders/farmers and by seminomadic herders. Although some objects made from both kinds of grass are similar (ropes, baskets, double baskets for transporting materials on animal back, mats, etc.), there are some important differences, including what they were used to transport. Other differences are that in the central region, Alfa leaves are woven on a loom to produce a distinctive thick mat (hassir) used in homes, but never during transhumance periods, and sedentary and semi-nomadic herders make bags and tents from goat hair. In the Northwest the robust stems of diss are used for making roofing mats, and even furniture, and cereal stems are used to make large circular structures for storing grain in rooms.

[22] Chair

Anderson, Cheryl (University of Nevada, Las Vegas) and Kathryn Baustian (University of Nevada, Las Vegas)

[28] *Linking Health and Marriage Practices among Commingled Assemblages: A Case Study from Bronze Age Tell Abraq, UAE*

Tell Abraq (2200 B.C.-100 A.D.) is the largest prehistoric site on the southern coast of the Arabian Gulf. A mortuary tomb at the site was used for a 200 year period (2200-2000 B.C.) and a minimum of 276 adults and 127 subadults were commingled in the tomb. Analysis of 175 adult second cervical (C2) vertebrae resulted in the discovery of potentially a rare pathology: congenital agenesis (non-development) of the dens. Seven (4%) of the 175 C2 vertebrae presented this pathological anomaly, raising questions about the reasons for such a high prevalence.

Previous analysis (Baustian 2010) of subadults from the tomb revealed very high rates of pre-term and neonatal mortality (31.4%, n = 40). Circumstances leading to the death of such a large number of infants were explored, demonstrating that only some infants died as a result of infectious disease. As an alternative explanation, consanguineous marriage (long prominent in the region) was suggested as a factor in the high rates of infant death. These two independent studies reveal that commingled assemblages are still capable of providing nuanced information about social processes of the living community. In this instance, it is possible to infer how marriage practices may have impacted human health in this community.

Anderson, David S. (Roanoke College / Radford University)

[31] *The Role of E-Group Architecture in the Development of Maya Astronomical Knowledge*

When Frans Blom mapped Group E at the Maya site of Uaxactun, Guatemala, in the 1920s, he noted an alignment between the three buildings on the eastern side of the group and the pyramid on the group's western edge. He documented that if an observer stood on the steps of the pyramid they could witness the sun rising over each of the three eastern buildings on the Equinoxes and the Summer and Winter Solstices. As archaeological research continued in the Maya region, similar groups began to be documented and referred to as E-Groups. Yet, while other E-Groups appeared similar, they lacked the precise alignments found at Uaxactun. Over the years, archaeoastronomers have proposed alternative alignments, but generally these proposals have resulted in interpretations that work for some, but not all, E-Groups. As a result, most scholars have pulled away from Blom's observatory hypothesis. This paper seeks to revivify the observatory hypothesis by proposing that the earliest E-Groups served as generalized observatories focused on the ecliptic, rather than specific solar observatories, and as a result, these structures could have been used to produce the data which underlie the astronomical tables found in the later Postclassic Maya codices.

Anderson, David [36] see Wells, Joshua

Anderson, David G. (University of Tennessee)

[151] *Using CRM Data for "Big Picture" Research*

The vast quantity of information generated by CRM archaeology has revolutionized our understanding of the past human occupation of North America. In most regions the numbers of recorded sites, reports, and collections have grown a hundredfold since 1974, resulting in information and materials maintained by a myriad of state, federal, and public and private institutions. Managing this information so that it may be used to address research and management questions has proven a major challenge that people throughout the profession have risen to in innovative ways. Archaeological data is being employed at an array of geographic and temporal scales, and linked with a wide range of data categories encompassing aspects of physiography, climate, and biota, in the past and at present. Predictive and settlement modeling projects at the locality to subregional scale examining thousands of sites are commonplace, and regional and continental scale analyses of past population distributions are emerging, facilitated by projects like DINAA, NADB, Open Context, PIDBA and tDAR. Documenting and accessing collections data online, and using geophysical and remotely sensed data at increasingly larger scales, are other examples of big picture research in the exploration of big questions that is becoming common practice in American archaeology.

[81] Chair

Anderson, J. Heath (Minnesota State University)

[275] *Obsidian Consumption in the Tula Region after Teotihuacán's Decline: A View from Cerro Magoni*

Over the past 30 years, Dean Healan's work in Mesoamerican obsidian studies in general, and obsidian production, distribution, and consumption in the Tula region in particular has revealed, among other things, valuable insights about the relationships between politics and economic exchange. Specifically, his work on Epiclassic obsidian from Tula Chico has given scholars the first indications of how the Epiclassic economies differed from their Classic period antecedents and, ultimately, an important perspective on the processes involved in the regeneration of complex society in the form of the Toltec state. In this paper, I share new data from Cerro Magoni, an Epiclassic site that, along with Tula Chico, might have been politically comparable to Tula Chico. I discuss the implications of obsidian consumption in the Tula region as a way to conceptualize the relationships between economic, social, and political processes involved in the formation of the Toltec state.

Anderson, Meredith (University of Iowa)

[287] *Re-examining Teotihuacan's Classic Period Obsidian Network through Patterns of Consumption: A View from the Hinterlands*

Research on the economic development of the prehistoric state and its relationship to its hinterlands offers insight into how and to what extent politically complex societies functioned and were sustained. Examination of trade networks, in particular, has been instrumental in addressing important archaeological questions, specifically with regard to the role of the state and the extent of its governance over raw materials. Teotihuacan, along with its outlying markets and associated hinterlands, became Mesoamerica's principal economic force during much of the Classic Period. That Teotihuacan's obsidian market played a role in its development is generally accepted. What is less clear is how significantly the obsidian trade contributed to Teotihuacan's expansion. Using X-ray fluorescence sourcing, this study assesses the procurement strategies demonstrated at several rural sites situated on or near major proposed trade routes, with the expectation that site function correlates to distinctive procurement strategies, specifically with regard to the types of obsidian artifacts found on site, their sources, chronology, and context.

Anderson, Derek (Mississippi State University), Ryan Young (Mississippi State University) and Amber Plemons (Mississippi State University)

[315] *A Debitage Analysis of the Clovis and Early Archaic Components at the Topper Site*

Recent excavations of the upland portion of the Topper site in Allendale County, South Carolina have focused on areas with dense Clovis and Taylor occupations. In this study, we attempt to characterize the unique aspects of, and quantify the differences between, lithicdebitage from the two components, and to identify assemblages from other areas of the site that lack temporally diagnostic artifacts. To this end, mass analysis of the entire assemblage from one 4-x-4-m block, as well as attribute analysis of mapped flakes, was employed. This debitage analysis complements and is aided by ongoing research on the Clovis and early Archaic materials from the upland portion of the site, including lithic refitting, spatial analysis, detailed analysis of tools, and radiocarbon dating.

Anderson Langlitz, Meredith [332] see Smith, Alexander

Andolina, Darren [316] see Atwater, Chloe

Andrade, Agustín (Zona Arqueológica de Monte Albán, INAH)

[238] *Nuevas exploraciones en tumbas prehispánicas en el estado de Oaxaca*

En el estado de Oaxaca se han localizado en los últimos meses, diversas tumbas de origen prehispánico, las cuales han presentado diversos estilos arquitectónicos, así como diversos componentes de las mismas. En el presente ponencia se expondrán los hallazgos recientes que se han realizado en diversas partes del estado.

Andrefsky, Jr., William [208] see Harris, Kathryn

Andrew, Holly (University of Oklahoma) and Bonnie Pitblado (University of Oklahoma)

[152] *Engaging and Empowering Citizen Archaeologists through the Co-Creative Process: A Case Study Involving the Oklahoma Anthropological Society*

Like many avocational archaeological groups across the nation, the Oklahoma Anthropological Society (OAS) has struggled in recent years to meet the needs and interests of community members. To address

this challenge, in spring 2013, OAS leadership requested our help to revitalize the group's membership and its recently shelved archaeological certification program. To ensure a co-creative approach to the reshaping of OAS, our approach to providing assistance began with an ethnographic study of the OAS membership—using methods including participant observation, individual interviews, and survey administration—to establish member values and goals. We then compiled these data and used them to develop concrete proposals for a revised OAS certification program and for reaching out to a broader cross-section of Oklahoma citizens than had traditionally been the case. Finally, we offered the proposals back to OAS membership for comments and suggestions for improvement, and revised the ideas accordingly. Our paper overviews the methods and results of this collaboration between professional and avocational archaeologists and reflects upon the success of our co-creative effort to improve public archaeology programs and educational opportunities in the state of Oklahoma.

Andrews, Brian (Rogers State University)

[24] *Folsom in the Mountains: Over a Decade of QUEST Research in the Upper Gunnison Basin, Colorado*

Like other areas of the Rockies, the Upper Gunnison Basin contains a rich late Pleistocene archaeological record, especially for the Folsom period. Research supported by the Quest Archaeological Research Fund began in 2002 at the Mountaineer Folsom site, and has revealed one of the richest and most spatially extensive Folsom sites in North America. The most striking feature of the site is a complex of contemporaneous habitation structures which, along with other evidence, suggests that the site served as a relatively long-term overwinter residential site. Excellent horizontal preservation at the site has provided a source of data that can be used to examine site structure, technological organization, and social dynamics. Quest funds have also been used to investigate other late Pleistocene sites in the Basin (including the Lanning and Flat Top sites) and to collect and analyze the paleoenvironmental data needed to construct a framework in which the Paleoindian archaeological record can be situated. From these studies we have learned that, far from being peripheral, the central Rockies were a core area for Folsom groups in North America.

Andrews, Anthony (New College of Florida)

[72] *Discussant*

Andrews, Bradford [160] see Godfrey, Kipp

Andrews, E. Wyllis (Tulane University)

[190] *Discussant*

Andrieu, Chloé (CNRS Université Paris I La Sorbonne)

[253] *Commoditizing the Sacred: The Exchange of Jade Blanks in the Maya Lowlands*

Despite the fact that jade was one of the most precious materials for the Maya, very little is known about the way it was worked and exchanged. By reanalyzing the jade collection from Cancuen, a Late Classic production center in the Peten region of Guatemala, I show that most of the production from this workshop was exported to recipient sites as preforms, that is to say as objects that could be easily commoditized. These blanks were exchanged and transformed into meaningful items in the recipient sites, where they changed status and were then gifted between elites. Such organization shows the complexity of wealth goods production and exchange in the ancient Maya world.

Andrus, Fred [219] see Gagnon, Celeste

Angelbeck, Bill (Douglas College) and Ian Cameron (Ursus Heritage)

[160] *Hunter's Best Friend: An Analysis of Dogs and Independent Hunters in the Coast Salish Area of the Northwest Coast*

Dogs have been an immense help for hunters in the past, just as they continue to be for contemporary hunters. In this essay, we maintain that dogs would have become increasingly important for hunters after the widespread adoption of the bow and arrow. We examine this possibility for Coast Salish cultures of the Northwest Coast, comparing canine faunal results before and after 1600 B.P., when the bow and arrow came into broad use throughout the Salish region. Ethnographically, Coast Salish hunters using the bow and arrow hunted alone or in pairs, a scenario that was less likely prior to 1600 B.P. when

hunters collectively hunted using atlatls and darts. We postulate that hunting dogs greatly facilitated this shift towards individualistic hunting, for their ability to track and corner prey. We present the ethnographic evidence for hunting dogs associated with independent hunting from numerous Coast Salish cultures. Furthermore, we will detail our analysis of the faunal record, which reveals that domesticated dogs increased substantially as a portion of the faunal record after 1600 B.P. Accordingly, hunting dogs helped enable greater autonomy for Coast Salish hunters, as much as the bow and arrow technology.

Ankele, William (University of Oklahoma) and Bonnie L. Pitblado (University of Oklahoma)

[334] *Incised Stones from the Chance Gulch Site, Gunnison County, Southwest Colorado*

Chance Gulch is a multi-component campsite located in the Gunnison Basin of southwestern Colorado, with evidence for prehistoric use ranging from the late Paleoindian through historic eras. The upper 5-10 cm at the site comprise and compress occupations spanning the Late Prehistoric time frame to the present and yielded an assemblage of about a dozen incised stones. Similar stones have rarely, if ever, been documented in Colorado, and their closest analogs (as other papers in this session attest) appear to be most commonly recovered in the west—particularly in Utah and Nevada. In this talk, we focus on characteristics of the Chance Gulch incised stones that include their stratigraphic context, raw material types, design elements, manufacturing technique, and microscopic signatures. We offer inferences regarding the stones' possible function(s) and cultural affiliation and contemplate why they occur at the Chance Gulch site and not others—at least not to our knowledge—in the Southern Rocky Mountains.

Anne, Haug [325] see Bergsvik, Knut Andreas

Anschuetz, Kurt [289] see Bocinsky, R. Kyle

Antonelli, Caroline [140] see Farstad, Kendra

Antonelli, Caroline (University at Albany - SUNY) and Robert Rosenswig (University at Albany - SUNY)

[337] *Lidar and Settlement Survey of Izapa, Mexico*

Izapa was a major Pacific coast site containing hundreds of stelae with distinctive carved iconography. However, nothing was ever documented beyond the site center leaving regional population patterns unknown. To fill this gap in our knowledge, the Izapa Regional Settlement Project targeted three adjacent environmental zones for survey. Regional-scale LiDAR data were collected from the piedmont and low hills to document settlement while ground-truthing dated them. In addition, on the coast plain, pedestrian survey took advantage of extensive drainage canals to document hectares of prehispanic settlement.

These LiDAR and pedestrian survey data are used to infer how relative population changes correspond to the political organization at Izapa. Both coastal plain and low hills were densely populated by the Conchas phase when La Blanca was the largest center in the Soconusco, but the piedmont was only sparsely populated. Then, after 850 B.C. the coastal plain was virtually abandoned and occupation shifted to the piedmont where Izapa was built; and population levels persisted in the intervening low hills. Population nucleated around Izapa at its Late Formative apogee and then the site was abandoned during the Terminal Formative period, but population levels on the piedmont rose overall but with more dispersed settlement.

Antoniou, Anna (University of Michigan) and Anthony Graesch (Connecticut College)

[173] *The Persistence and Organization of Chipped Stone Tool Production among Stó:lō-Coast Salish Households in Southwestern British Columbia: the Analytic and Interpretive Significance of Small Debitage*

Despite an enduring analytic emphasis on lithic technology in archaeological studies of southwestern British Columbia, the interpretive significance of debitage smaller than 6.2-mm mesh—a standard of field archaeology in the region—has not been fully explored. Full retention and laboratory sorting of screen residue generated during subsurface investigations at Welqamex (DiRi-15), has yielded lithic assemblages comprising as much as 70% of flakes and shatter captured only with 3.22 (or smaller) mesh. We argue that these small assemblages are critical to the inferential reconstruction of daily practices and labor organization at the household level. This poster highlights the results of aggregate and individual flake analyses that incorporate these small-debitage assemblages. We present preliminary

findings addressing diachronic change in the organization and variability of residential-based chipped stone tool production practices following Stó:lō-Coast Salish incorporation of iron tools, muskets, and other technologies into household material culture.

Antoniou, Anna [230] see Hall, Katherine

Antonites, Alexander

[4] *Political and Economic Interactions in the Hinterland of the Mapungubwe Polity, ca. A.D. 1200-1300, South Africa*

The thirteenth-century A.D. was a period during which northern South Africa, southern Zimbabwe, and eastern Botswana saw the development of a centralized authority seated on the town of Mapungubwe. To date, research has tended to view the hinterland around Mapungubwe as inconsequential in the larger social, political and economic transformations that resulted in centralized authority. New research on communities located in the northern Soutpansberg mountains—a region on the southern margins of Mapungubwe's influence—suggests a reappraisal of this hinterland as inert and un-influential in regional dynamics. Contrasting patterns of consumption and production between the Mapungubwe hinterland and heartland suggest that hierarchy formation in the heartland co-occurred with the horizontal expansion of social relations through networking strategies in the hinterland. Evidence suggests that political power at Mapungubwe was counterpoised between maintaining generalized subsistence production within the heartland and more intensive efforts to acquire trade goods produced by communities on the margins of the state. The distribution of prestige items suggests that these communities were able to use their position to acquire trade goods usually considered restricted to elite spheres of society in the heartland.

Antonites, Annemari (Yale University)

[40] *Animal Exploitation in the Limpopo Valley, South Africa*

This paper presents the zooarchaeological results from Schroda, a 10th-11th century regional center associated with the rise of complex societies in southern Africa. At around 1000 A.D., Schroda's influence declines due to a shift in regional sociopolitical dynamics. The effect of this shift is apparent in a number of material culture categories, including the animal bones. I consider the social implications of continuity and change in the daily exploitation of animals during this regional development.

Anyon, Roger [32] see Reynolds, Richard

Anyon, Roger (Pima County CRHPO)

[66] *Changing Perspectives on Pithouse Period Occupations in the Mimbres Region*

When the Mimbres Foundation began research in the 1970s, little more was known about the pithouse period occupations than Emil Haury's pioneering work of the 1930s that defined the Mogollon archaeological culture. Pre Classic Mimbres archaeology was known, but understanding was limited. The Foundation's research identified a previously unknown pithouse period associated with plain ceramics, refined the chronology of the pithouse occupations associated with slipped and painted ceramics, and provided a rudimentary understanding of pithouse period social dynamics. In the past four decades, as a result of much new research, our comprehension of the pithouse periods has improved dramatically. It is now clear that pre Classic social interaction, social identity, and community organization was dynamic, complex and fluid. Pithouse period populations underwent fundamental shifts in the ways they organized themselves, their sedentariness, their organization and community cohesiveness, and their connections with populations near and far. We evaluate the impacts of the Mimbres Foundation, the current state of research, and prospects for the future of Mimbres region pithouse period archaeology.

[66] *Chair*

Anzellini, Armando [105] see Toyne, Jennifer Marla

Aoyama, Kazuo, Hitoshi Yonenobu (Naruto University of Education, Japan), Takeshi Inomata (University of Arizona), Kazuyoshi Yamada (Waseda University) and Hiroo Nasu (The Graduate University for Advanced Studies)

[158] *Archaeological and Paleoenvironmental Investigations in and around Ceibal, Guatemala*

This paper discusses the results of archaeological and paleoenvironmental investigations in and around Ceibal, Guatemala, in order to examine diachronic changes of Maya sociopolitical organization in relation

to environmental changes. In 2011, 20 series of sediment cores were obtained from the deepest parts of several lakes in the southwestern and central Petén. In particular, annually laminated lake sediments (varves) were confirmed from Lakes Petexbatún, Las Pozas, and Quexil for the first time in the Maya area. The laboratory analysis of the samples allows us to reconstruct the high-resolution past environment and climate changes during the Preclassic and Classic periods.

Aporta, Claudio**[73] Land, Snow, Ice, and Water: Reflections on the Physical Nature of Inuit Routes**

Routes have been marginally considered by archaeologists looking at patterns of residence and migration of Arctic occupation. Migration routes have been broadly postulated (as direction and locations of movement), in order to make sense of key findings in archaeological sites, through envisioning migration trajectories of paleo-Eskimo and Thule groups. This paper will argue that serious consideration of contemporary Inuit trails could help gain a better understanding of Arctic human geography and human history. This paper will: (1) discuss the physical nature of Inuit summer and winter Inuit routes; (2) analyze the physical markings of Inuit routes on open water, snow, ice, and land; and (3) reflect on the historical and geographical dimensions of these routes, and what these findings mean for understanding human occupation of the Arctic.

Aquino, Valorie (University of New Mexico), Douglas J. Kennett (Pennsylvania State University), Norbert Marwan (Potsdam Institute for Climate Impact Research), Sebastian F. M. Breitenbach (Eidgenössische Technische Hochschule (ETH)) and Yemane Asmerom (University of New Mexico)

[201] Climate Volatility and the Classic Period Maya Political Landscape

Multiple studies in the past 20 years support the hypothesis that environmental change—particularly severe, protracted droughts and deforestation/soil degradation—contributed to widespread abandonment of Classic Period Maya polities (A.D. 300–900). Questions remain about the specific magnitude and geographic extent of these environmental perturbations, as well as how complex environmental processes affected the local resilience or vulnerability of social, economic, political, and ideological systems. Archaeological and historical data indicate, however, that the long-lived Classic Maya tradition of divine kingship unraveled between A.D. 750–900, along with the asynchronous disintegration of the polities they governed. The legitimacy of these divine kings was based upon assertions of unique supernatural and ritual authority; thus, the predictability of rainfall and crop yields were vital factors in strengthening, preserving or eroding community support. In this paper, we present a climatic volatility index for the Classic Period derived from a high-resolution speleothem paleoclimate archive from the southern Maya lowlands. Based on a comparison of this index to the available data on dynastic histories, subsistence strategies and site expansions/contractions, we argue that climate volatility played an important and under-appreciated role in destabilizing Classic Period systems of governance.

Aragon, Leslie (Desert Archaeology, Inc.), Connie Darby (Desert Archaeology, Inc.) and T. Kathleen Henderson (Desert Archaeology, Inc.)

[43] Canal Junction, What's Your Function? A New Type of Water Control Feature in Hohokam Canals

For over a millennium, Hohokam farmers in the Salt River Valley employed impressive engineering skills to construct their extensive canal systems. During the spring of 2012, Desert Archaeology, Inc. conducted a data recovery project near the headwaters of Canal System 2, the largest prehistoric irrigation network on the north side of the Salt River. Five main trunk canals, along with 12 smaller distribution canals, were identified over the course of field work. A surprising find was the occurrence of large, first-order distribution canals that branched from a main trunk canal. Excavation at one of these junctions revealed a well-preserved adobe and cobble weir that reinforced the junction and controlled the elevation at which water entered the branch. This water control feature is presently unique among Hohokam irrigation structures; its presence suggests an even greater understanding of hydraulic engineering by the Hohokam than was previously known. In this poster, we summarize the preliminary results of the project and discuss the implications of this new type of water control feature in the prehistoric Southwest.

Arakawa, Fumiyasu [42] see Patterson, Winona

Arakawa, Fumiyasu (New Mexico State University), Nathan Goodale (Hamilton College) and

Douglas Harro (Earth Works)**[289] Village Ecodynamics II South Lithic Research**

As part of a long-term study of resource material use in the American Southwest, this research focuses on tool-stone procurement patterns and the morphology of projectile points in the VEP II south study area during the Late Coalition/Early Classic period (A.D. 1275–1400) and Middle/Late Classic periods (A.D. 1400–1540). This research begins by showing the proportion of debitage made of three broad raw material types—obsidian, chert, and basalt—discovered from several sites in the study area. Second, the proportion of obsidian debitage, calculated by these three raw materials, is projected by isopleth maps to identify sites that contain a higher frequency of obsidian during these time periods. Finally, we investigate whether morphological variations of obsidian projectile points recovered in the study area reveal modes of cultural transmission during these time periods.

Araujo, Astolfo [69] see Okumura, Mercedes

Araujo, Astolfo (Museum of Archaeology and Ethnology - USP)**[69] Late Pleistocene / Early Holocene Human Occupations in Brazil: An Overview and Future Research Directions**

In the last decades, the number of well-dated Paleoindian sites and paleoenvironmental studies in Brazilian territory grew considerably. This made possible a real integration between archaeological and paleoenvironmental data, regarding the understanding of occupation and abandonment scenarios, as well the construction of models of site preservation that take into account the response of geomorphic agents. In this paper I will present recent paleoenvironmental data, showing their interplay with the Early Holocene archaeological record in Eastern South America, and suggesting some future research directions.

[69] Chair

Arav, Reuma [65] see Nadel, Dani

Arbour, Chelsee (Memorial University of Newfoundland) and Anthony Jenkinson (Tshikapisk Foundation)**[325] Tshetshuk, Kamestastin: Interior/Coastal Connections in the Maritime Archaic Period of Québec/Labrador**

This paper presents new data on Maritime Archaic occupation at Kamestastin Lake in the barren grounds of Nitassinan (Québec/Labrador peninsula), the heartlands of the Mushuau Innu. Investigations of Maritime Archaic occupation in the Québec/Labrador peninsula have provided evidence of coastal and interior exploitation practices, elaborate burial patterns, diagnostic tool traditions, and social networks intimately tied to the procurement of Ramah chert. While coastal occupation has been a significant focus of Québec/Labrador research over the last five decades, the Maritime Archaic presence in the interior has received much less attention. Ongoing archaeological investigations in the Kamestastin region over the past 15 years have revealed the presence of roughly 260 sites and findspots, including 39 potential Maritime Archaic sites. Several of these early sites are part of complexes connected to important caribou crossing places. Recent excavations at Tshetshuk (GICs-25), an Archaic period habitation site associated with one of these complexes, has produced a number of interesting links to contemporaneous interior and coastal occupations. This paper addresses how this new information can assist in the investigation of the relationship between contemporaneous coastal, interior, and Archaic sites further west, as well as toward better understanding patterns of interior occupation.

Arbuckle, Benjamin (University of North Carolina at Chapel Hill)**[162] Hunting in Near Eastern Prehistory: Status or Subsistence?**

Hunting was an important and theatrical socio-political activity in the ancient Near East associated with both elite masculine status and religious practice. Elite hunting expeditions, often memorialized on stone and in song, targeted impressive and dangerous game in which elites visually displayed their control over wild animals in art, clothing, and by stocking animal parks. Wild animals were also given and received as gifts among elites and texts indicate the presence of specialists dealing in wildlife trade. Despite the prominence of elite hunting activities in the art and texts of the Bronze and Iron Ages we have very little understanding of the relationship between status and hunting in earlier periods where hunting is usually labeled as a subsistence activity. In this paper, I explore the relationship between hunting and status in prehistoric Anatolia and ask whether the royal hunts of Bronze Age kings were presaged in the Chalcolithic or even Neolithic periods.

Arbuckle, Benjamin S. [205] see Adcock, Sarah E.

Archer, Jorge and Veronica Ortega-Cabrera

- [293] *La muerte en el Barrio Oaxaqueño, de la antigua ciudad de Teotihuacan. Una interpretación bioarqueológica de los recientes hallazgos en el Tlailotlacan*

En este trabajo se presentaran los últimos avances sobre los recientes hallazgos en el Barrio Oaxaqueño de la antigua ciudad de Teotihuacán, los cuales han aportado nuevos datos sobre las costumbres funerarias y el modo de vida de esta población. En particular nos referiremos a los depósitos funerarios o tumbas, localizadas en dos conjuntos arquitectónicos (TL1 y TL11), en los que hemos registrado patrones de uso que indican la reutilización del espacio funerario, además de prácticas no reportadas y ajena a la cultura "Teotihuacana".

Arcuri, Marcia (University of São Paulo) and Ignacio Alva Meneses (Projeto Arqueológico Huaca Centarrón-Collud Zarpán)

- [219] *Discutindo a origem e o desenvolvimento dos Estados na costa norte andina: cinco mil anos de ocupações no Cerro Ventarron (Lambayeque, Peru)*

Ventarrón situa-se em área de conformação geográfica bastante particular no contexto desértico da costa norte peruana, no estado de Lambayeque. A localidade apresenta grande biodiversidade se comparada a outros contextos áridos da mesma região. Localiza-se entre os vales dos rios Reque e Lambayeque, a 20 quilômetros do Oceano Pacífico e 190 quilômetros da selva baixa, na Amazônia peruana. Está no paralelo seis sul, alinhada ao segundo "paso" mais baixo em direção à porção leste da Cordilheira Andina (cerca de 2200m). Contextos do Formativo Inicial escavados na Huaca Ventarrón apresentaram elementos selváticos que sugerem a interação de sistemas regionais formados pelas ocupações da costa desértica, dos bosques tropicais semi-úmidos e da floresta tropical. Esta comunicação visa divulgar dados de pesquisa recentes que problematizam as fronteiras da "circunscrição" para o contexto de Ventarrón, e contribuir para o debate sobre a origem e o desenvolvimento do Estado andino.

Ardelean, Ciprian (University of Zacatecas, Mexico)

- [69] *Early Hunter-Gatherers and First Human Occupations at the End of the Ice Age and the Early Holocene in the Zacatecas Desert, Mexico*

The field investigations in the northeastern desert of Zacatecas, Mexico (Tropic of Cancer, a region never studied before), revealed an intense hunter-gatherer occupation manifested in 35 new archaeological sites, mainly open campsites. The settlements are situated on paleo-beaches, alluvial fans and heights surrounding an extinct paleo-lake inside an endorheic basin. The research focused on the evaluation of the earliest human occupation there. Preliminary test excavations complemented surface observations. Dunas site yielded interesting flaked stone assemblages on the surface, integrated by tools made of limestone and basalt, probably from the Pleistocene-Holocene Transition or Early Holocene. The rockshelters at San José de las Grutas revealed a new industry of limestone indented based points in an ancient ephemeral camp. Ojo de Agua is rich in extinct megafauna. A proper "black mat" layer was discovered there, for the first time in Mexico, radiocarbon dated for the Younger Dryas cooling episode. The Chiquihuite Cave showed potential old occupation in a still debatable context. The oldest human presence in the area goes back to at least Late Paleoamerican times.

Ardren, Traci (University of Miami)

- [194] *Forest Products and Resource Abundance: Asking the Right Questions about Ancient Maya Trade and Urbanism*

Archaeological studies of ancient Maya trade have long acknowledged the movement of products between different environmental zones as a cornerstone of Classic period economies. One of the most important circulations was between the long coastline of the Yucatan peninsula and the many inland urban centers of the Classic period. In addition to the transportation of long distance trade goods such as obsidian, traders moved savannah products including "phantom artifacts" such as palm thatch and other often over-looked plant fiber technologies essential to household and political economies of the Classic northern lowlands. Chunchucmil, a large urban Classic Maya center, was located in an agriculturally marginal area but adjacent to a rich savannah. Traditional models of agricultural self-sufficiency fail for this particular city which relied instead on trade and exchange. A consideration of the abundance of savannah resources provides a new perspective on initial settlement and eventual urban migrations to this unusual ancient center. Rather than agricultural scarcity, natural resource abundance may be a more

salient characteristic for ancient settlement calculations.

[143] Chair

Arendt, Beatrix [232] see Bates, Lynsey

Argueta, Juan (Wichita State University)

[293] *Challenges of Implementing New Praxes: Ethnographic and Community Archaeology in Xaltocan*

This talk presents a preliminary ethnographic case study on past and ongoing praxes of archaeology in San Miguel Xaltocan in the State of Mexico. After several decades of ongoing research, archaeologists working at Xaltocan have recently begun to implement community and ethnographic archaeologies, and the community has generally been very receptive to these modes. This past summer, I served as project ethnographer and was embedded in a museum team. The team worked to construct a large exhibit for the community within a large room adjacent the existing museum that the community had designated for the project. The exhibit displays included excavated artifacts and a reconstruction of an adobe house based on archaeological findings from previous excavations in Xaltocan, and was opened to the public in October 2013. My research documented several factors that impeded the full implementation of both community archaeology and ethnographic archaeology in the summer of 2013. This paper examines the ideals of the project before the trip and compares them to the reality that manifested in the field. Furthermore, this essay explores these impeding factors and considers how they could be overcome in the future to allow for a more complete praxis of community and ethnographic archaeology.

Arias, Veronica (University of New Mexico)

[268] *Assessing the Feasibility and Efficacy of Data Mining in Current Archaeological Research*

One emerging area of GIS development that holds much promise for archaeological research is the application of data mining algorithms to large spatial databases to identify patterns and relationships that are not readily apparent. Although there are few such applications, geographic data mining is particularly well-suited to explore spatial variability across large archaeological datasets and to generate new hypotheses. This paper describes a procedure developed and implemented within a GIS environment to spatially data mine a dataset from the American Southwest. The specific objectives of the study were to explore the feasibility and efficacy of such applications using current technologies and archaeological data standards, identify barriers to its implementation, and demonstrate a new course for GIS-driven innovation in the field. This paper briefly outlines the three-step methodology developed, and discusses the findings both in terms of discovered patterns specific to the study area and broader observations regarding current data practices and technological compatibility. Issues encountered involving data lineage, format, structure, and classification attest to the complexity of geographically data mining archaeological databases with current GIS technology, but also provide valuable insights for the development of future applications.

Arjona, Jamie

[213] *Diaspora and Desire: An Examination of Sexuality in Early 20th-Century Jooks*

Emerging in the 1880s throughout much of the rural United States, "jook joints" crafted a performatively queer medium within African-American culture. Particularly in the rural south, these jooks offered a haven for black music, dance, gambling, prostitution, and alcohol consumption. The allure of blues and jazz manifesting in jooks would ultimately influence the "cabaret school" of the Harlem Renaissance and the mainstream presence of African-American art forms in the 1920s. Some scholars, such as Nancy Unger, consider the jook a rural point of origin for the more embracing and nurturing urban landscapes that fostered sexual exploration and queer identification. Jooks materialized a queer sense of place that denaturalized identity politics and black "uplift" ideologies (Vogel 2009). While these subaltern venues revitalized fluid performances of sexuality, expectations of whiteness deterred and subjugated diasporic groups. As racist imagery equated black sexuality with the "primitiveness" of African origins, pressures from black elites and intellectuals attempted to excise the jook as a facet of African-American life. This paper discusses how African diaspora in the U.S. was effectively torn between the impossible rubric of whiteness and expressive catharsis of queer performance.

Arksey, Marieka (University of California, Merced), Holley Moyes (University of California, Merced) and Mark Robinson

[277] *Ritual Pathways at Las Cuevas*

Las Cuevas is one of the most salient examples of the strong tie that existed between monumental centers and ritual cave sites of the ancient Maya during the Late Classic. The site's main plaza and Eastern structure lie directly above a large cave set at the base of a sinkhole which has low-lying linear structures around the top and natural terracing ringing the inside. These terraces were initially hypothesized to provide a possible amphitheater-like viewing space for large numbers of people. In order to test this, density analysis of 100 shovel test pits placed throughout the sinkhole revealed not only that approximately 75% of the sinkhole was unmodified, but that there is a distinct pattern of intense use and modification leading down a slope from gaps in the linear structures to the entrance of the cave. Subsequent excavations of select areas on this slope revealed modified natural terraces and constructed steps dating to the Late Classic which demonstrates that the sinkhole during this time period was used almost exclusively as a pathway between the main plazas and the cave and which restricted access to the cave to a select number of individuals rather than providing an open-access, public performance space.

Arkush, Elizabeth (University of Pittsburgh)**[150] *Before and after the Middle Horizon at Ayawiri (Titicaca Basin): A Hilltop View of the “Valleys of Ancient States”***

In the Titicaca Basin, two periods are associated with evidence for widespread conflict and competition in the absence of pan-regional political integration: the Late Formative (late Early Horizon and early Early Intermediate Period) and the Late Intermediate Period. In the latter period, hill-fort settlements are common and large hill-fort towns are the largest sites of the time. In the earlier period, there is substantial recent evidence for the use of defensive hill-tops as well. Is it appropriate to apply similar interpretations of political fragmentation and social disunity to both periods? How did the inhabitants of defensive settlements in these two eras experience and express group organization at the scales of family, community, and region? Ayawiri (Machu Llaqta) is a highly defensive hilltop site in the western Titicaca Basin with major occupations in both periods. This paper draws on investigations at the site and its surrounding area to characterize social life within and beyond the defensive community. Preliminary results suggest fundamental differences between the two periods in the nature of social group organization, political authority, and regional / interregional interaction.

Armit, Ian (University of Bradford)**[145] *Alternative Urbanisms in the European Iron Age: Entremont and Beyond***

A recent program of integrated geophysical and topographic survey has revealed new evidence for the organization of space and movement at a number of Iron Age sites in southern France and Sicily. One of the main sites examined was the oppidum of Entremont, near Aix-en-Provence, built around 180 B.C. and generally regarded as the political capital of the indigenous Saluvian confederacy. Entremont also is well known in the archaeological literature for the discovery of a large assemblage of stone statuary including depictions of seated warriors clutching severed human heads. Excavations since 1946 have revealed dense patterns of streets and buildings suggestive of a proto-urban center, but lacking what might be regarded as key elements of urban infrastructure (public open space, large public buildings, etc.). This paper examines the implications of recent geophysical and topographic prospection over the extensive unexcavated areas of the oppidum for the understanding of incipient urbanism at Entremont. It examines the applicability of traditional approaches to early urbanism, such as those of Childe and Weber, and discusses the need for new understandings of how large groups of people come to live together within confined ‘urban-seeming’ spaces.

Armitage, Ruth Ann (Eastern Michigan University)**[156] *From Charcoal to Textiles: Archaeological Chemistry Research at Eastern Michigan University***

This session recognizes the contributions made by Marvin Rowe to understanding past human activity through radiocarbon dating of rock paintings. During the author's work with Marvin as his penultimate Ph.D. student, she learned not only how to apply plasma-chemical oxidation to charcoal-pigmented rock paintings, but about the collaborative nature of our research field. This talk will describe the author's experiences in establishing her own program in archaeological chemistry research, and the influences that Marvin's mentoring had in shaping that program. Projects in radiocarbon dating rock art and analysis of binding media continue to be the foundation for EMU projects, which now also encompass analysis of museum objects, residues, and even textiles and dyes. Marvin's unique emphasis on the highest standards in analytical chemistry combined with a desire to work directly with archaeologists to answer questions about ancient materials have influenced not just the author, but the many undergraduate and

graduate students and collaborators with whom she has worked since.

Armour, Daryl [327] see Boudreux, Edmond

Arnauld, Charlotte (CNRS)

[21] *Maya Residential Architecture, Mobility and the Terminal Classic Abandonment of Lowland Urban Settlements*

The simultaneous elucidation of “mobility” as a normal circulation of individuals or groups among Maya cities, and of the “migrations” that apparently took place during the Terminal Classic across the Maya Lowlands is key to our understanding of the transition (collapse or crisis) from Classic to Postclassic times. Beyond precisely dating the abandonments of urban settlements, we need to establish whether they did result from massive, and rapid population movements, or from a gradual drifting out. How might regular mobility related to social and economic practices during Classic times help in predicting posterior, larger movements? Evaluating (in rhythm and size) the development of residential masonry architecture within urban neighborhoods allows the archaeologist to outline specific social dynamics over time that encompassed immigration and emigration of households. Case studies from Río Bec (Mexico) and La Joyanca (Guatemala) are presented to illustrate and contextualize a mobility process that seems to have paved the way for non-massive, gradual abandonments of urban neighborhoods under specific circumstances.

[60] *Discussant*

[21] *Chair*

Arneborg, Jette [29] see Madsen, Christian

Arnold, Elizabeth (Grand Valley State University) and Stanley H. Ambrose (University of Illinois, Urbana-Champaign)

[124] *Regional Mobility of Domestic Herds and Their Implication for Understanding Land Use in the Early Iron Age of Southeastern Africa*

This research seeks to identify exchanges of cattle during the Early Iron Age (EIA, i.e. 1st millennium AD) of southeastern Africa to examine elements of the Central Cattle Pattern (CCP), settlement hierarchy and land use. The CCP is an archaeological model of spatial organization to explain the nature of Iron Age communities. The presence of this pattern would demonstrate an EIA society characterized by hierarchical social relations controlling land use and livestock resources. Previous research in the Thukela River valley utilized zooarchaeology, stable isotope, and phytolith analyses to examine this model. Importantly, several cattle were identified through the strontium isotope analysis as having come from outside the Thukela Valley and indicate a regional pattern of land use as well as social, economic, and/or political connections throughout the region developing in the later phases of the EIA. This paper presents additional data from EIA sites in the nearby Mnjeni Valley that suggests connections and cattle exchanges between these two areas. This movement of cattle between regions may be suggested as a major means to power and results in increased societal complexity, inequality in access to resources and the rise of chiefdoms.

Arnold, Elizabeth [208] see McCormick, Sarah

Arnold, Dean (Field Museum)

[281] *Ethnoarchaeology and the Meaning of Style: An Example from Quinua, Peru*

The separation of style and function in archaeology is almost a sacred distinction in archaeology and seems fundamental to the discipline. Style, of course, has multiple functions, and many stylistic analyses crosscut vessel shapes with different uses or functions. This paper briefly explores four different types of stylistic analyses (design structure, symmetry, design motifs, and explicit meaning) of multiple ethnographic vessels of one shape in Quinua, Peru. These data suggest that different kinds of meaning can be derived from each approach, and indicate that non-referential, abstract, and non-realistic designs can reveal social meaning when coupled with vessel function.

Arnold III, Philip J. [62] see Budar, Lourdes

Aronsen, Gary (Yale University), Nicholas Bellantoni (Connecticut Office of State Archaeology), Gerald Conlogue (Bioanthropology Research Institute, Quinnipac University), Lars Fehren-Schmitz (Department of Historical Anthropology & Human Ecology) and Jon Krigbaum (Department of Anthropology, University of Florida)

[270] Superstorm Sandy's Halloween Surprise: Initial Inventory and Assessment of Colonial-Era Burials from the New Haven Green

On October 29, 2012, Superstorm Sandy devastated much of America's East Coast. In Connecticut, high winds toppled the Lincoln Oak, a large tree planted in 1909 on the New Haven Green. Within exposed roots, a partial human skeleton was visible. This treefall provided a unique opportunity to study a Colonial era cemetery. Here, we present a review of the six burials recovered from the Lincoln Oak rootball. We combine analyses from osteology, isotopes, genetics, and radiology. Several individuals show skeletal or dental pathologies illuminating health and disease in New Haven prior to 1821. Associated artifacts such as coffin tacks and personal effects provide information about mortuary practices and potential context. The biological and archaeological evidence are placed into a larger context based on Colonial demographic and mortuary data. Our multidisciplinary approach combines the expertise of municipal historians and academic researchers, and demonstrates how coordinated efforts yield more meaningful results than any single line of inquiry. We suggest applying this approach when any human skeletal material or archaeological sites are exposed. This research was supported by the Committee of the Proprietors of Common and Undivided Lands at New Haven, the Yale University Department of Anthropology, and the New Haven Museum.

[270] Chair

Arroyo, Barbara [120] see Henderson, Lucia

Arroyo, Barbara (Museo Popol Vuh UFM Guatemala)

[279] The City over the City: Kaminaljuyu and Urbanism

Kaminaljuyu is an important Mesoamerican center that has been studied in pieces due to the fact that it lies underneath modern Guatemala City. However, various projects have contributed to the understanding of its origins and development. This paper makes an attempt to evaluate various questions such as the presence of urbanism, the point in time at which urbanism developed, social factors that had implications for the presence of urbanism, and the influences by other regions and sites that impacted such development. New data from recent research will be presented to understand Kaminaljuyu's development during the Preclassic and Classic periods.

Arsenault, Daniel (CELAT-UQAM, Montreal, Quebec) and Dagmara Zawadzka (CELAT-UQAM, Montreal, Quebec)

[248] Winter Wonderland and Canadian Shield Rock Art

The logistics of studying Canadian Shield rock art dictate that this form of visual expression is most often studied during the summer time. A winter study of rock art sites has seldom been undertaken, though it presents alternate possibilities for recording, as well as for the interpretation of these images and the analysis of some aspects of its long-term preservation. Through a series of examples taken mostly from Quebec's sites, this paper will attempt to present new venues for the recording, conservation and interpretation of Canadian Shield rock art sites, as well as shed light on the seasonal possibilities of creation and occupation of these sites.

Arterberry, Jimmy [95] see Galindo, Mary

Artz, Joe Alan [241] see Mack, Jennifer

Ascough, Philippa [89] see Hamilton, W.

Asencios Lindo, Gerbert [146] see Brown Vega, Margaret

Ashkenazi, Jacob

[127] "Ravens that Fed Elijah Cry to Us: 'Leave the Ploughs!'" (Isaac of Antioch): Rural Monasticism in Late Antique Levant—Literary and Archaeological Reflections

The haranguing words of Isaac of Antioch, criticizing the coenobitic monks, who spent their time plowing their lands, planting their orchards and negotiating with lay people while renouncing their duties as "Holy Men," reflect the change that overtook the monastic movement towards the end of the fourth century. Monasticism, to the growing concern of monastic fathers such as Isaac of Antioch, became constitutionalized and ecclesiastical, stepping far from the ideal anchoritic manifestation, propagated by hagiographic literature. Looking at the rural landscape of late antique Levant, thousands of monasteries dotted the countryside of the region, spreading from the limestone massif of North West Syria, through Phoenicia and Palestine to the fertile soil along the river Nile in Egypt. All these monasteries were inhabited by monks that were part and parcel of the rural society, joining hands with their village neighbors, in everyday labor. In this paper we will try to trace, through archaeological surveys and excavation conducted in the Levant, the departure point from which the anchoritic Holy man took off from the deserted hermitage to become a prominent social and economic factor in rural society and to understand the causes for this transformation of monastic manifestation.

Ashley, Sarah (Arizona State University) and Joshua Watts (Center for Social Dynamics and Complexity - Arizona)

[208] Individual Variation in Flake Scar Patterns on Experimental Projectile Points

The idea that flake scar patterns on projectile points might be used to identify the work of individual flintknappers in archaeological contexts dates back to at least the 1970s (Gunn 1977; Whittaker 1987). Individual-scale analyses are a promising approach to a better understanding of a variety of topics in archaeology, but methods proposed for identifying the handiwork of individuals must be rigorously tested. Techniques for documenting and comparing flake scar patterns, relying primarily on image analysis, have improved in recent years (Watts 2013). An experimental project was undertaken with modern flintknappers to assess the reliability of flake scar measurements as data for recognizing a craftsman's unique signature. A relatively large number of small triangular projectile points (over one hundred) were collected from modern knappers and analyzed. Two primary questions were the focus of the research. First, how reliably do flake scar measurements, as previously documented by Watts (2013), differentiate the work of modern craftsmen? Second, can the experimental data be used to develop better statistical methods for identifying the work of individuals?

Ashley, Keith (University of North Florida)

[213] Moving to where the River Meets the Sea: Origins of the Mill Cove Complex

The post-Archaic Native history of northeastern Florida has long been interpreted as continuous series of insular cultural developments interrupted only by European arrival in the late sixteenth century. Recent studies, however, are presenting a more dynamic landscape in which groups moved into and out of the region at key points in time, altering the historical trajectory of the region. With a grounding in historical process and interregional interaction, this paper proposes that the Mill Cove Complex was established by immigrant St. Johns groups who sought entry into Early Mississippian (A.D. 900-1250) exchange networks.

Ashley, Michael (University of California, Berkeley), Veth Peter (University of Western Australia), Alistair Paterson (University of Western Australia), Fiona Hook (Archae-aus) and Mark Basgall (California State University - Sacramento)

[244] The Codifi Data Management System for the Barrow Island Archaeology Project (BIAP)

At 7am in BIAP Camp on any fieldwork day, the historic, excavation and survey teams meet for logistics before splitting up to explore and document the immense archaeological record that is Barrow Island. Working around an active oil field and without access to cellular technology or power, the three teams embark each day to collect an astonishing array of high definition images, video, geo-coordinates, notes, and archaeological data forms. All told, each season will yield hundreds of thousands of individual data records totaling in the terabytes that must be securely preserved and managed from morning pre-check to end-of-day backup through post-season analysis, archiving and publication.

As ambitious as this may sound, the real challenges are not only technical. The goal is to develop a unified methodology for BIAP, harnessing the expertise of the diverse team without limiting creativity or tried-and-true practices to a single "way" of digitally doing fieldwork. We'll look under the hood at the Codifi data model and how we're together building a system that fosters best practices in digital data management while encouraging conversations through real-time sync and revolutionary "born archival" workflows.

Ashmore, Wendy (University of California, Riverside)**[296]** *Discussant*

Asmerom, Yemane [201] see Aquino, Valorie

Astruc, Laurence (CNRS-UMR 7041, Nanterre)**[249]** *Obsidian Technologies in the Near-East*

Obsidian studies in the Near-East rely on integrated approaches including detailed analysis of the geological complexity of volcanic massifs, geographical distribution of sources, archaeometric signatures of the glasses and studies of the production and use of archaeological artifacts. Recent developments focused notably on the techniques employed to detach blanks and on the use and curation of tools. These methods allow us to reach different levels of interpretation. Our aim here is to illustrate, with the help of several examples, ways in which they can throw light on the socio-economic contexts of diffusion and use of obsidian, the function of sites and the evolution of technical traditions.

Astruc, Laurence [249] see Erturaç, Korhan

Atac, Mehmet-Ali (Bryn Mawr College)**[162]** *The King and the Lion and the King as Lion in Assyrian Representations of the Royal Hunt*

Representations of the royal hunt in Assyria have often been interpreted as expressing the supremacy of order over chaos or that of civilization over wilderness. Such polarization, however, leaves unexplained the formulaic statement that the Assyrian king makes in royal inscriptions, "I am a lion and I am a (potent) male," equating himself with what he defeats. Instead of the king's literal superiority to the lion, the paper focuses on an alter-ego relation between the two. It argues that in the hunt, rather than an external enemy, the king targets, metaphorically, an aspect of himself, or his self, in a sacrificial act that results in his new formulation as the supreme priest-king. Proposing an analogy to the Mitra-Varuna dichotomy in Indo-Iranian mythology, the paper reinterprets the antagonistic relationship between the king and the lion as the transformation of the "enemy" (Varuna) into the "friend" (Mitra), and hence as the annihilation of a domineering warlike ethos in the process of the making of a perfect man. Such complexity challenges the long-established paradigms of power and virility, so far construed primarily as superiority over outside opponents and sexual prowess, in viewing the royal persona in the study of the ancient Near East.

Atan, Beno [152] see Shepardson, Britton

Atherton, Heather [168] see Rothschild, Nan

Atici, Levent [84] see MacIntosh, Sarah

Atwater, Chloe (UC Davis), Bruce Winterhalder (UC Davis) and Darren Andolina (UC Davis, CarndoENTRIX)**[316]** *The Ecology of Coastal Foraging by Native Californians in the Ten Mile Dunes*

Why did native Californians leave shell middens in dunes some distance from their collection site, when ostensibly better settlement locations existed closer to the collection site? We apply optimal foraging theory to archaeological data from the Ten Mile Dunes to reconstruct prehistoric behavior. Using data acquired in excavations during the UCD Field School 2012, we model a native Californian coastal diet and explore foraging behavior and its implications. We find that diet breadth models predict an optimal diet consisting of a singular item, *Cryptochiton stelleri*; however the data imply a more diverse diet. Additionally, the high frequencies of *Mytilus californianus* and *Balanus nubilus* found in the shell middens suggest that either these were the only components of the diet or that other resources were field processed, which is inconsistent with the field processing models' predictions that transporting unprocessed loads is more economical. When we impose the time constraint of daylight in the models, transport load size decreases, and most resources are predicted to be field processed. This is more consistent with the observed excavated materials, suggesting that time was indeed a constraint for coastal shellfish foragers, contrary to classic field processing models' assumptions.

Atwood, Kirsten**[4] Iron Age Cuisine at Bosutswe, Botswana: Food and Inequality**

This paper addresses the animal-based portion of the diet at the Iron Age site of Bosutswe, Botswana. I argue that that the Western (commoner) inhabitants consumed more wild game than Central (elite) inhabitants during most occupation phases. While the Central inhabitants did consume wild animals, they seem to have focused more on the "special" or spiritual animals, and on large animals that required group hunting. The Western inhabitants focused on the dietary aspects of wild game, but also seem to reject a monopoly on spiritual power by the Center, practicing some ethnographically documented ritual traditions longer than the Center people, and adopting new traditions (big game hunting) later than inhabitants of the Central Precinct. Despite the differences in what was eaten, how meat was cooked appears to be similar amongst both commoners and elites. Meat appears to have largely been boiled, as much meat is in Botswana today. I link the extreme difference in cattle culling patterns between the elite and commoner areas of Bosutswe during the Early and Middle Lose, in which the elites preferentially consumed juvenile and aged animals, to the current preference for "chewy" meat in Botswana, and processes of social emulation.

Aubert, Deanna (McMaster University)**[234] Curating "Canadian-ness"**

The government of Canada has recently initiated changes that affect Canadian archaeological practices and funding to heritage institutions, including cuts to Parks Canada, a renaming of the Canadian Museum of Civilization (to the Canadian Museum of History), and a revamping of the Department of Canadian Heritage programs. These initiatives call for an inquiry into the relationship between Canadian archaeology, national identity, and political agendas. This presentation examines these themes through an analysis of curatorial practices in Canadian museums, more specifically the decision making involved in what stories are told, how these pasts are represented in text, object and image, and how these practices serve to shape public perceptions of 'Canada' and its past.

Audette, Christopher [68] see Ducady, Geralyn

Ausel, Erica [266] see Wilson, Jeremy

Austin, Anne (UCLA)**[65] Developing Mobile-Based Digital Forms for Archaeological Data Collection**

This research discusses how to create data collection software on mobile devices and tablets to maximize data quality in the field. This paper demonstrates the processes used to develop OsteoSurvey, a set of forms designed to collect bioarchaeological data on human remains in the field utilizing Open Data Kit (opendatakit.org). During the 2012 and 2013 field seasons at Deir el-Medina, Egypt, osteologists recorded over 600 entries and 30,000 observations on an Android-based tablet utilizing OsteoSurvey. When tested against traditional paper forms, the OsteoSurvey not only saved time in data collection, but actually increased the consistency of the data being recorded in the field through decreasing interobserver variability and ensuring all entries are fully recorded. This research further addresses other digital data collection platforms such as Ohmage and how to integrate digital data collection with Open Context and other web-based data collection publishers. Finally, this paper evaluates the advantages and disadvantages to digitizing data collection, and suggests best practices for creating and disseminating data sets. This is particularly useful for archaeologists conducting survey work, as mobile data collection can not only automatically record timestamps and GPS coordinates, but can also be uploaded immediately to a shared server.

Aviam, Mordechai (institute for galilean archaeology, Kinneret College)**[127] First Century Galilean Entrepreneurs**

It is a common approach that Jewish Galilee in the first century was built of urban rich society, concentrated in the two Galilean capitals Sepphoris and Tiberias, and large rural society in the Galilean villages which was considered "poor" and their habitants sometimes even called "peasants." During the last 15-10 years, archaeological excavations uncovered the remains of 1st century residential areas at Yodefat (Jotapata), Migdal (Magdala) in the Galilee, and Gamala in the Golan. From the finds, it is very clear that not all Galilean villages were poor... and that there was wealth even in small Galilean sites, or in other words, there were rich and poor people in cities, towns and villages. This paper will focus on

finds from Yodefat such as an unusual amount of loom-weights, large amount of sheep bones, all point to the manufacturing of wool materials. The discovery of four pottery kilns at the site, prove the existence of pottery production at this mountainous town. I suggest that the Galileans, since the time of the Hasmonaean dynasty and up to the First Jewish Revolt were entrepreneurs and succeeded in building strong rural economy even though sometimes the land was poor, rocky, and covered with thick vegetation.

Avila, Jairo (CSU, Northridge)**[174] *The Pigment Recipe: Understanding Rock Art Production at Vasquez Rocks***

Given that prehistoric peoples are believed to have targeted specific mineral sources for the production of pictographs, the connections between rock art panels and their material sources are not clearly represented in the archaeological record. Drawing on the basic understanding of rock art production, this study looks further into analyzing the selection of material for the production of pictographs in Southern California. What can the selection of specific material in the landscape clarify about the artist and the painting depicted? Can such a study clarify the level of significance, in the rock art, as a result? Located at the center of major tribal areas of southern California, an analysis of the rock art at Vasquez Rocks can well help understand these questions, along with the mental process of the craftsmen and the level of interaction amongst neighboring groups.

Avner, Uzi [65] see Nadel, Dani

Awe, Jaime [21] see Hoggarth, Julie

Awe, Jaime**[31] *Of Apples and Oranges: A Comparison of the Early Middle Preclassic Maya of the Belize River Valley and Their Contemporaries in Northern Belize***

Between the 1970s and 1980s, investigations at Cuello and Colha established the presence of early Middle Preclassic Maya settlements in northern Belize. A decade later, archaeological research at Cahal Pech and Blackman Eddy identified coeval settlements in the Belize River Valley. Together, the data produced by these investigations have shed important information on the genesis of Maya civilization and the rise of cultural complexity in the Maya lowlands. In spite of these contributions, however, few archaeologists have attempted to understand the relationship between these precocious communities. This paper compares the material culture of the early settlements in northern and western Belize and examines whether the evidence warrants placing the two sub-regions in a similar cultural sphere.

Ayala, Sergio (Gault School of Archaeological Research and Texas State University)**[280] *Discussant***

Ayala, Sergio [318] see Garrett, Stephen

Aydin, Z. Nahide [210] see Natoli, Amelia

Azevedo, Diana and Elizabeth Sutton (Utah State University Museum of Anthropology)**[334] *Incised Stones from Utah's West Desert***

A collection of incised stones from Western Utah was recently donated to the Utah State University Museum of Anthropology. This paper details the results of recent research designed to provide historical, environmental, and cultural context for the collection of incised stones. An overview of the design patterns represented in the collection is provided and the motifs compared to those found on other incised stones and artifacts from the Great Basin region. The geographic location of the sites in which the stones were found along with the geological context of the stones themselves are considered in determining how these artifacts will be displayed and interpreted for the public in the Museum of Anthropology.

Babutsi, Mosarwa [58] see Nash, David

Baca Marroquin, Ancira Emily (University of Illinois at Chicago) and Patrick Ryan Williams (The Field Museum)

- [121] *Imperial and Local Pottery in the Chinchaysuyo: Examining Provincial Economy through Ceramic Distribution and Consumption Patterns in the South Central Coast, Perú*

Research on empires has mainly focused on the processes of imperial conquest and the consolidation of societies close to the imperial core. More recently, studies have recognized the value of examining processes of imperial control over non-state societies located far from the core to better understand the variety and flexibility of strategies involved in the incorporation of conquered groups. Empires, whether modern or ancient, transform non-state societies to suit their needs. Like many other expanding states, the Incas (A.D. 1400-1532) developed a variety of strategies to satisfy their demands for tribute from the myriad societies that came under their influence. Using a multidisciplinary approach, this presentation builds upon recent research in the Asia Valley, a marginal region on the south central Peruvian coast. Building on elemental composition analysis of clays and ceramics from the Asia, Mala, Lurín and Chincha Valleys, I examine the patterns of distribution and consumption of Inca and local ceramics in the south central Coast. Studying ceramic consumption and distribution in the south central Coast provides an important avenue to explore the different ways that coastal groups interacted with the empire and complied with their policies.

Bader, Alyssa (Southern Illinois University) and Izumi Shimada (Southern Illinois University)

- [103] *An Unusual Late Middle Sicán Sacrifice, Peru: An Osteobiographical Analysis*

During the Sicán Archaeological Project's 2008 field season, excavation atop the North Platform of the Huaca Loro temple mound revealed the skeletal remains of an adult, possibly male, who was interred with arms wrapped and tied around an algarrobo (*Prosopis pallida*) wood post. This mortuary context suggests that the individual may have been sacrificed. Additionally, osteological analysis revealed evidence of possible trauma and infectious disease. Given that the individual is part of a particularly well-contextualized archaeological sample and exhibits a range of pathologies, this individual presents an excellent case for osteobiographical analysis. Osteobiographies reconstruct the life history of a specific individual based on skeletal evidence, providing a bottom-up method of understanding daily life within archaeological populations. The contextual knowledge about the Sicán culture creates a backdrop for the in-depth social and biological analysis of this sacrificed individual. By comparing the life history of this individual to other spatially and/or temporally related interments within the same and nearby temple mound complexes, this poster suggests factors which may have socially marked this individual for sacrificial treatment. The results will incorporate both mortuary and osteological evidence in an interdisciplinary analysis, demonstrating the value of osteobiographical research to archaeological investigations of past populations.

Badilla-Cambronero, Adrián [197] see Corrales-Ulloa, Francisco

Badillo, Alex (Indiana University)

- [293] *Systematic Mountain Survey of the Nejapa Valley Region, Oaxaca, Mexico*

In 2013, members of the Proyecto Arqueológico Nejapa y Tavela (PANT) continued regional survey of in the Nejapa Valley region of the eastern Sierra Sur, Oaxaca, Mexico. The Nejapa region is located midway between the Oaxaca Valley (highlands) and the Isthmus of Tehuantepec (coast) and was an important throughway for communication, commerce, and conquest. Because of its location within the network of trade, people of Nejapa experienced multiple changes in sociopolitical regimes and interacted with diverse groups of people. In this paper I will discuss PANT survey methods and present results of the systematic mountain survey that covered an additional 90 square kilometers of the Nejapa Valley region.

Baez-Molgado, Socorro [143] see Meza-Peña, Abigail

Bagwell, Elizabeth (Desert Archaeology, Inc)

- [144] *Domestic Architecture of the Casas Grandes Western Periphery in Context*

Although Charles DiPeso studied the architecture of Paquime in depth, domestic architectural patterns of the Casas Grandes region as a whole are poorly understood. This paper discusses recent observations of the domestic architecture of the Western periphery from the Viejo and Medio Periods and places these patterns into regional context. In addition, attributes sensitive to regional variation including construction technique, room shape, doorway shape, and hearth shape are discussed in detail.

Bailey, David [10] see Lin, Ying

Bailey, Ralph (Brockington and Associates)

[101] *Discussant*

Baires, Sarah

[266] *Reconsidering Landscapes: New Discoveries at Cahokia*

Cahokia Mounds (A.D. 1050-1300), located in the American Bottom of southwestern Illinois, is a large monumental city with organized neighborhoods, plazas, and earthen monuments. The layout of the site has previously been discussed as oriented to the cardinal directions with large 'marker mounds' delimiting site edges. Based on new research on two ridge-top mortuary mounds located on Cahokia's edges and new evidence for the existence of a central, raised earthen causeway, this poster will reconsider the original assumptions regarding site orientation and landscape use. The addition of a central elevated causeway that until now was never corroborated archaeologically is an important factor in understanding how Cahokians used and transformed their surroundings. This foundational and important causeway, in addition to the newly gathered information on ridge-top mound construction and use, presents a unique picture of early Cahokia, one aligned to mortuary space, the cosmos and possibly even religion.

Baitzel, Sarah [203] see Dahlstedt, Allisen

Baitzel, Sarah (UC San Diego)

[203] *As They Died, So They Were Buried? A Mortuary Study of Tiwanaku Social Differentiation at the Omo M10 site, Moquegua, Peru*

As complex social contexts, human burials can convey information about individual life histories, social identities, ritual practices, and larger social organization. Over the past decade mortuary and bioarchaeology have made significant contributions to the study of the Tiwanaku polity, one of the earliest states to emerge in the south central Andes (A.D.500-1000). Recent excavations and ongoing analyses of over 200 burials from the Omo M10 site (Moquegua, Peru) – a regional Tiwanaku ceremonial center – have produced a large body of data that elucidates patterns of site-wide social differentiation. What role did mortuary rituals play in asserting and contesting identities and differences in provincial Tiwanaku society? Did distinct social groups maintain different funerary practices? If so, what were the implications? This paper employs multivariate analyses to compare burial contexts across discrete spatial divisions in the mortuary landscape in terms of body preparation and deposition, as well as grave offerings such as ceramic vessels, textiles and foodstuffs. In addition, we consider bioarchaeological indicators relating to the deaths of the interred to explain the diversity of mortuary practices at the site, as they played a role in the social and ritual life of the Tiwanaku colonists in Moquegua.

[203] *Chair*

Baker, Larry (San Juan County Museum Association/Salmon Ruins)

[68] *Architecture: Structural Preservation in Northwestern New Mexico and the Need for Funding*

The San Juan County Museum Association is a non-profit organization that manages Salmon Ruins, an 11th century pueblo, near Bloomfield, New Mexico. The Association has been involved in the preservation of the prehistoric, Chacoan community for forty-five years. Its broader mission of site stewardship and preservation has extended to numerous heritage sites around the greater Four Corners Region. Back-country archaeological sites remain important in terms of research, education and heritage tourism. Support by agencies and the general public needs to be solicited for "brick and mortar" funds to preserve architecture. This need is critical if we are going to preserve standing structures and avoid leaving only remnant rubble for future generations to study and interpret. Consequently, ruins stabilization programs will, by their nature, continue to advance public interest and advocacy for long-term preservation of our national heritage. Examples of preservation projects and stewardship programs are detailed in this context.

Baker, Suzanne (A/HC (Archaeological/Historical Consultants))

[153] *Enigmatic Pecked Features on Ometepe Island, Nicaragua*

During the course of a 10-season archaeological survey on Ometepe Island, Nicaragua, basalt boulders

have been found with enigmatic pecked features that are surprisingly standardized with regard to size and shape. In several sites they are the predominant features. Although these are usually found associated with petroglyph boulders, they are not what are normally thought of as petroglyphs. We believe that these are a type of specialized quarry stone from which elongated, rectangular, bar-shaped pieces of rock have been removed. It is thus far unclear what use may have been made of the removed stone, whether as a tool or other type of artifact, or whether they are of utilitarian or ritual significance. Despite an extensive search in the available literature, no references to this type of feature have thus far been found.

Baker, Joe
[304] *Chair*

Balanzario, Sandra and Erik Velasquez (UNAM) (INAH)

[61] *Ichkabal. Un asentamiento del Preclásico Medio. Primeras investigaciones*
El sitio de Ichkabal se localiza a cuarenta kilómetros al poniente del municipio de Bacalar en Quintana Roo y a nueve kilómetros al noreste del sitio de Dzibanche. El asentamiento se ubica en medio de tierras肥的, rodeadas de depresiones inundables (bajos) y abundantes aguadas. Es un sitio de monumentalidad excepcional, producto de una sociedad compleja cuyos inicios datan del periodo Preclásico Medio (500 a.C.). Su acceso, se efectua tomando la carretera de Bacalar, a 19.5 kilómetros por la carretera de asfalto, al poblado de Reforma, hasta llegar al Rancho El Suspiro, posteriormente se recorren veinte kilómetros mas, por el camino de terracería, hasta llegar al área monumental.
A juzgar por los recorridos de superficie realizados en el área, el patrón de asentamiento es del tipo "desarticulado", similar al de Dzibanche; argumento que obliga al estudio de unidades de análisis, de cada una de los grupos arquitectónicos que la integran (Ciudad de las Moras, El Ramonal [Templo de las Higueras], Mario Ancona, Los Lirios, El Zapotal, entre otros). Esta investigación implica una estrategia urgente en la protección y conservación del patrimonio arqueológico, compatible con la conformación de un Parque Eco-arqueológico.

Balasse, Marie [40] see Janzen, Anneke

Balcarcel, AnaBeatriz, Richard Hansen and Edgar Suyuc-Ley

[61] *Genesis Maya: How the Work in the Mirador Region Reshaped the Course of Preclassic Maya Research*

Intensive investigations in the Mirador Basin of northern Guatemala were among the first to recognize the extent and range of the social, political and economic complexity of the Preclassic Maya. The work, conducted over nearly 35 years, has revealed new information relevant to the socio-political sophistication that transformed Maya studies in subsequent decades. This paper will define the roles and impact of these investigations.

Balco, William (University of Wisconsin-Milwaukee)

[89] *Mead, Wine, Power, Prestige: Commensality and Change in Late Iron Age Western Sicily*

As Greek and Phoenician populations spread throughout the central and western Mediterranean, they introduced new lifeways to neighboring, extant indigenous populations. One cultural feature adopted in whole or in part by indigenous populations was the Greek symposium, a feasting ritual involving the social consumption of wine. This paper employs a postcolonial approach to examine the shift from consuming fermented grain beverages to drinking wine among indigenous western Sicilian populations during the seventh to fourth centuries B.C. Material culture responses are discussed, exploring the archaeologically visible remains of the transformed feast in order to better understand why Greek-style commensal behavior was so appealing to indigenous Sicilian populations. Results suggest that local populations may have emulated their impression of the Greek feast as a form of conspicuous consumption demonstrating social prestige within the local community.

[89] *Chair*

Baldwin, Anne [87] see Bremer, J

Balée, William [75] see Isendahl, Christian

Balen, Jacqueline [300] see Zavodny, Emily

Balkan-Atli, Nur [249] see Erturaç, Korhan

Ball, Dave (BOEM)

[136] *Discussant*

Ballenger, Jesse [24] see Holliday, Vance

Ballenger, Jesse (Statistical Research) and Matt Pailes (University of Arizona)

[210] *The Technological Organization of Desert Hunter-Gatherers during the Middle-Late Archaic Transition in the American Southwest*

Large-scale excavations at Luke Air Force Base near Phoenix, Arizona resulted in the collection of approximately 60 Middle to Late Archaic projectile points and fragments. Most of the intact bifaces fit the criteria for Chiricahua and San Pedro type points, technologies that are typical of these periods in the Sonoran Desert. The Luke collection is unique because few sites preserve the Middle-Late Archaic transition in a stratified and dated open air context. Still more, it samples an unanticipated technological landscape of dedicated high-tech biface manufacture (total weight 6.5 kg) contrasted by large, shaped ground stone tools (total weight 3528 kg) that were transported to the site at considerable expense. These stereotypically male and female technologies transcend the appearance of maize elsewhere in the Southwest, but there is no convincing evidence that maize was cultivated or consumed at the site. Previous studies identify a dramatic reduction in mobility during the Late Archaic period, when evidence for semi-permanent riverine agricultural village life appears in the region. Using routine measures of technological organization, this poster presents the evidence for continuity in residentially mobile hunter-gatherer lifeways and subsistence during and after the transition to agriculture.

Baltus, Melissa (University of Illinois Urbana-Champaign)

[205] *Daily Choices, Historical Changes: Revitalization of Thirteenth-Century Cahokia*

The rise and eventual decline of Cahokia, the largest pre-Columbian city north of Mexico, reverberated deeply within the historical trajectories of the North American mid-continent and southeast. The 11th century emergence of this multi-ethnic, multi-vocal metropolis appears to have been deeply entangled within a social-religious movement that spread rapidly throughout the region. Within a few generations, however, that initial movement became highly politicized, coupled with the spread of violence throughout these same areas. Archaeological evidence from two late-twelfth to early-thirteenth century villages in the uplands outside of Cahokia exhibits the choices and changes people made in their daily lives during and following this period of violence served to distance themselves from the more highly politicized (traditional Cahokian) "elite" spaces and objects. At the same time, people maintained and/or re-integrated practices, objects, and buildings reminiscent of the early Cahokian movement. These two sites, nearly contemporaneous with each other, demonstrate clearly different practices and relationships, indicating that people at these sites were maintaining a certain amount of autonomy while still participating within the revitalized Cahokian landscape.

Balzotti, Chris [252] see Terry, Richard

Bamforth, Douglas

[246] *Learning Archaeology from Mike Jochim*

This paper introduces a session honoring Michael Jochim's career in archaeology on the occasion of his retirement. I emphasize three major topics. First, Mike was one of the first archaeologists to bring optimization theory into our field, most notably into hunter-gatherer archaeology, and I consider both his contributions to this domain of thought and its role in his personal research program. Second, Mike is a superbly creative and technically rigorous archaeologist. His decades-long program of field research in southwestern Germany is a model of what it takes to turn even the most theoretically sophisticated ideas into empirically-supported knowledge of ancient people, and I emphasize the importance of this. Finally, and more personally, for over 30 years Mike has been a mentor and role model to students and

colleagues, many of whom are in this session. I close my discussion, and underscore the diversity of papers to follow, by acknowledging that.

[246] *Chair*

Banks, Kimball [88] see Gatto, Maria

Banks, Kimball

[239] *Chair*

Banner, Jay [280] see Wong, Corinne

Banning, Edward [84] see Hitchings, Philip

Banning, Edward (University of Toronto) and Isaac Ullah (University of Pittsburgh)

[335] *In Small Things Miscounted: Problems, Solutions, and Opportunities of Scale in Microrefuse Analysis*

Archaeologists can learn much about the distribution of cultural evidence at various scales ranging from trade over large regions to intercommunity relations over smaller ones, daily interaction within communities, and down to activity in individual households. One could argue that in many types of societies a significant proportion of the human experience takes place within and around houses, which is why houses play such a prominent role in discussions of habitus. Yet there are considerable challenges in the attempt to unravel this habitus, especially when many of the macroremains pertain to short-term activities that may not even be typical. By contrast, focusing on the tiniest debris that accumulates over long periods may help us overcome these challenges. However, many archaeologists have been reluctant to employ microrefuse analysis because of the erroneous perception that the scale of effort involved must be astronomical. We contend that careful consideration of the spatial and analytical scale of sampling factors permits us to detect robust patterns that probably reflect the distribution of persistent activities over longer time scales with a small fraction of the effort that previous analysts have employed.

Barber, Sarah [8] see Menchaca, Victoria

Barber, Michael, Carole Nash (James Maidson University) and Michael Madden (USDA-Forest Service)

[152] *The "Public" in Public Archaeology: Down from the Ivory Tower and into the Real Trenches*
Archaeology is not for the benefit of the archaeologist. Building on the foundation of the Archaeological Society of Virginia, Virginia's community of professional archaeologists has joined forces with the ASV and other partners and developed the "Certification Program for Archaeological Technicians." The program trains avocational archaeologists in the theoretical and methodological underpinnings of the profession. It is our contention that co-creation should begin with the first phases of any archaeological endeavor and continue through interpretation and overall historic preservation.

Barber, Sarah (University of Central Florida)

[191] *Peripheries and Crossroads: Shifting Boundaries and Identities on the Mar del Sur*

The Pacific coast of Mesoamerica was a politically and economically dynamic area throughout the precolumbian era. Ethnohistoric records indicate that during the Late Postclassic period alone the region was pivotal to long-distance exchange networks, was conquered multiple times by inland groups, and was the site of large-scale population relocations. The southern Pacific coast was thus a melange of intersecting ethnic and linguistic groups derived from millenniums of social interaction at porous social boundaries. Drawing on case studies from Oaxaca's central and western Pacific coastal zone, this paper considers how people in a highly dynamic social environment developed, maintained, and modified local and macro-regional social ties. Situated at boundaries between the Mixtec and Zapotec to the north and west, and Mixe-Zoque and Maya speakers to the south and east, the inhabitants of Oaxaca's coast defined distinct local identities in the face of (at times) significant external pressures but also showed flexibility and malleability in periods of major political and economic change. Variation in iconography, technology, and settlement from the Protoclassic to the Late Postclassic periods in the Manialtepec Basin and lower Río Verde valley suggest that, as political centers of gravity changed, so too did local

social identities.

Barberena, Ramiro [287] see Giesso, Martin

Bardolph, Dana (University of California Santa Barbara)

[59] *Evaluating Food, Identity, and Moche Valley Society through Archaeobotany*

This paper examines social, political, and economic transitions witnessed prior to and following the expansion of the Moche political economy ca. A.D. 300 through the lens of domestic foodways. Foodways represent a fundamental axis along which identity is constructed and maintained, and are increasingly recognized as having played a prominent role in the emergence of social hierarchies and the negotiation of status and power. Indeed, advances in Andean scholarship have elevated culinary concerns beyond the realm of the domestic, which is often considered to be outside the domain of the active and political, in works focusing on the significance of plant remains for tracking sociopolitical change and social memory; the powers women exercise as purveyors of culinary/agricultural knowledge; and the centrality of the kitchen in modern Andean contexts. Despite these advances, there remains a dearth of systematic analyses of archaeological plant food remains on the Peruvian north coast. I discuss recent paleoethnobotanical research from the Moche and Chicama Valleys, synthesizing available data to illuminate various subsistence strategies that profoundly shaped Moche sociopolitical development. I consider how plant data can be used to evaluate different social and spatial contexts, and conclude with directions for future research.

Bardolph, Dana [245] see Billman, Brian

Barker, Claire (University of Arizona)

[11] *Corrugated Pottery and Communities of Practice*

Often within archaeology, the study of social identity and cultural practice through ceramics has focused on analysis of decorated pottery. There is good reason for this; decorated ceramics represent a higher time investment than utility wares and the decorations on ceramics are often considered to be iconographic signs that encode the values of the society in question. However, the value of studying utility wares in order to explore social identity and cultural practices is often overlooked. Through a consideration of utilitarian corrugated pottery in the prehistoric U.S. Southwest this research explores the relationship between social identity, artifact style, and communities of practice. This research compares the physical attributes of Homol'ovi utility wares, locally produced within the Homol'ovi site cluster in northeastern Arizona to those of utility wares produced in the Tusayan area, specifically Tusayan Gray Ware and Awatovi Yellow Ware. The primary goal of this study is to explore the presence, extent, and significance of standardization in manufacturing methods within these two production areas in order to better understand community composition and organization within the Homol'ovi site cluster.

Barker, Alex (University of Missouri)

[55] *Discussant*

Barker, Heather (State University of New York at Buffalo) and T.L. Thurston (State University of New York at Buffalo)

[240] *That Work/Life Thing...*

Despite the current emphasis on “work/life balance” in university settings and a wealth of positive messages in policy statements, the graduate school experience for many women archaeologists presents tremendous difficulties when pregnancy, birth, and childcare are thrown into the mix with an active and ambitious scholarly agenda. How can the oft-resulting “gap” in fieldwork, research, and progress toward the degree (and career) be mitigated? In this paper we explore these difficulties, our efforts to eliminate them, and the successes and failures of our attempts at solutions.

Barket, Theresa (U.C. Riverside)

[84] *Features of Household-Level Flaked-Stone Production at the Neolithic Site of 'Ain Ghazal, Jordan*

Over the past two decades, there has been significant progress in research focused on the identification, characterization, and socioeconomic implications of specialized flaked-stone industries of the southern Levantine Neolithic. Few studies, however, consider in detail the nature and scope of nonspecialized

household-level flaked-stone production at sites with specialized production, or what this can add to the understanding of social and economic relations on the site level. To that end, the research presented here considers several features of flaked-stone production from domestic-related contexts, including a sample of debitage, tools, and cores, from the Neolithic site of 'Ain Ghazal, Jordan, with the goal of gaining insight into some of the social and economic interactions that occurred over the course of occupation.

Barkwill Love, Lori (University of Texas at San Antonio)

- [321] *From the Inside: Paste Variation in Mogollon-Mimbres Ceramics from Woodrow Ruin in the Upper Gila, New Mexico*

Woodrow Ruin (LA 2454) is the largest Mimbres site in the Upper Gila valley in New Mexico. The site was occupied from the Late Pithouse period through the Classic period, approximately A.D. 550 to 1150. Recent excavations in a large, subterranean communal structure yielded the full sequence of Mimbres pottery types from Alma Plain to Mimbres Style III. A preliminary study was conducted on a sample of the ceramics from the communal structure to explore the variation in the paste and temper of the ceramics. Macroscopic examination and refiring analyses were used to examine the paste and temper in both utility ware and decorated ceramics. This preliminary study provided the opportunity to explore the paste and temper variation within and between Mimbres pottery types in the Upper Gila region.

Barnard, Hans (Cotsen Institute of Archaeology at UCLA), Augusto Cardona Rosas (Centro de Investigaciones Arqueologicas de Arequipa) and Maria Lozada (University of Chicago)

- [11] *The Ramada Ceramic Tradition in the Vitor Valley (Arequipa, Peru) around 850 C.E.*

Between 2008 and 2013 an archaeological research project by the University of Chicago and UCLA, in cooperation with the Centro de Investigaciones Arqueologicas de Arequipa (Peru), investigated the Millo settlement complex in the Vitor Valley, just west of the modern city of Arequipa in southern Peru. Archaeological excavation of residential structures as well as graves yielded a pottery assemblage composed of small amounts of locally made imitation Wari- and Tiwanaku-style vessels among many vessels associated with the Ramada culture (Siguan III). Radiocarbon analysis of associated finds dated the pottery to 850-900 CE, which confirmed earlier thermoluminescence dates of similar vessels (Cano et al. 2009). The large amount of excavated sherds in combination with several whole vessels facilitate new research into the Ramada ceramic tradition, including petrologic thin-sections and organic residue analysis.

Barnard, Hans [25] see Haydon, Rex

Barnes, Jodi (Arkansas Archaeological Survey)

- [30] *Remembering Camp Monticello: Archaeology of a World War II Italian Prisoner of War Camp*

Camp Monticello, the Italian Prisoner of War (POW) camp located in Monticello, Arkansas, is a significant part of Arkansas's World War II Home Front heritage. The camp opened as a training facility for the Women's Army Auxiliary Corps (WAAC) in 1943 and served as a POW camp for Italians from 1943 to 1946. Today, the camp consists of stone foundations that once comprised three compounds that housed enlisted men, two compounds that held officers, a hospital and other facilities. Archaeological research at the camp and the artifacts used and produced by those interned provides important counterpoints to the documentary and oral historical records. The research, which actively engages the public, challenges and reworks narratives and memories of life at Camp Monticello and yields new information about Arkansas's role in World War II, the lives of women at the camp, and the ways in which the Italian POWs adapted to confinement and expressed ethnic and cultural identity through daily practice.

Barnes, Jodi [76] see Howe, Jessica

Barnes, Adam (Center for Advanced Spatial Technologies), Katie Simon (Center for Advanced Spatial Technologies - University), Adam Wiewel (University of Arkansas) and Vance Green (University of Arkansas)

- [322] *Photogrammetry or 3D scanning? Aerial Photogrammetry or Airborne Lidar?*

Laser scanning has become increasingly popular within archaeology and related disciplines over the last decade for a variety of reasons including their speed, accuracy, and precision in producing 3D models of artifacts, architecture, and sites. One major disadvantage of 3D object scanners, terrestrial laser scanners, and airborne lidar are their cost. The question inevitably arises: Can a decent camera and

good photogrammetric software take their place? This paper discusses the pros and cons of close-range photogrammetry versus 3D scanning and airborne lidar in a variety of applications including documentation, archaeological prospecting, spatial analysis, conservation, and change detection. From sub-millimeter to landscape-scale projects, choosing the best approach can be a complicated and confusing process. Issues affecting this decision-making process will be discussed including time and resource costs, field conditions, problematic surfaces, computing requirements, data resolution, accuracy and metadata and archiving concerns. A variety of case studies comparing photogrammetric and scan/lidar data capture and processing will be reviewed from inscribed surfaces to whole vessels, excavated features to standing structures, and landscape surfaces to buried features

Barnett, Kristen

[290] Little Houses on the Hillside: Community Ritual in the Mid-Fraser Canyon of British Columbia
Keatley Creek is one of the more impressive socially complex villages in existence today on the British Columbia Plateau in the Mid-Fraser region of interior British Columbia. With 119 pithouse depressions spanning approximately 3,000 years, Keatley Creek has been the source of considerable archaeological research. Five small houses previously defined as "ritual" architecture, and men's secret society houses, are located on a northern terrace peripheral to the site's core. Despite a comparative literature noting the lack, or non-existence, of secret societies ethnographically on the British Columbia Plateau, the most recent evaluation in 2010 adamantly defends this notion. I posit a new interpretation of these proto-historic houses relying on two lines of evidence: archaeological data and a rich regional ethnographic record. This new glimpse into the little houses suggests that ritual does play a significant role in the village, but is not restricted to the role of men and secret societies, but extends into gender and life stage ritual.

[175] Chair

Barnett, Kristen D. [193] see Winter, Thomas

Bar-Oz, Guy [65] see Nadel, Dani

Barrett, Jason (TxDOT), Richard Weinstein (Coastal Environments, Inc.), Roger Moore (Moore Archaeological Consulting, Inc.) and Charles Frederick (Charles D. Frederick Geoarchaeology)

[14] Cached, Dropped, or Ritually Deposited? Dimond Knoll's Enigmatic Lithic Assemblage and the Archaeology of Motive

The Dimond Knoll site (41HR796) was discovered along Cypress Creek in northwestern Harris County, Texas, within the upper Gulf Coastal Plain. Extensive data-recovery investigations at this small floodplain mound revealed that mobile foraging groups had visited the site regularly for nearly ten millennia, leaving behind artifacts spanning the Late Paleoindian (ca. 8000 B.C.) through the Late Prehistoric (ca. A.D. 1500) periods. Several pit burials were identified during excavations, along with a substantial quantity of artifacts related to food preparation and tool manufacture. One enigma surrounding the site's rich material inventory was the realization that 411 of the 834 formal bifacial tools were in pristine condition rather than broken or exhausted. Given the scarcity of local tool-quality raw materials, it is rare in the region for nearly 50 percent of a site's stone tool assemblage to retain utilitarian value. This paper explores various cultural and environmental factors that may have gone into shaping the anomalous artifact patterns that endured at the site across many centuries.

[14] Chair

Barrientos, Gustavo (Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata), Juan Bautista Belardi (UNPA-UARG, CONICET), Flavia Carballo Marina (UNPA-UARG) and Patricia Campán (UNPA-UARG)

[104] Connecting Basins through Plateaus: Late Holocene Hunter-Gatherer Mobility and the Circulation of Goods in Southwestern Patagonia (Santa Cruz, Argentina)

The purpose of this contribution is to summarize the results of an ongoing research aimed at understanding the settlement patterns and mobility strategies implemented by hunter-gatherer groups in the harsh environments of southern Patagonia in Late Holocene times. A growing body of evidence suggests that, in this time period, peri-Andean (San Martín-Tar, Viedma) and extra-Andean (Cardiel) lacustrine basins (around 250 masl) were used year-round while the intervening basaltic plateaus (around 900-1100 masl) seasonally functioned as guanaco (*Lama guanicoe*) hunting grounds and least-cost paths linking different basins. In this presentation we will discuss the main lines of evidence

supporting this assertion (e.g. rock art, lithic technology, archaeofaunal assemblages, radiocarbon dates), presenting new information coming from recently investigated archaeological localities (9 de Julio and Laguna del Pajonal, Tar-Viedma plateau). In particular, we will focus on those aspects of the regional archaeological record that suggest the existence of local differences that allow ranking of basins and the plateaus and provide clues about the way in which different places were connected. The latter will be discussed on the basis of a model about the regional circulation of goods, especially of artifacts made on obsidian and limolite which are toolstones whose specific sources are known.

Barrier, Casey [157] see Horsley, Timothy

Barrios, Edy (CUDEM-USAC), Cameron L McNeil (Lehman College and the Graduate Center, CUNY), Walter Burgos (USAC) and Cassandra Bill (MARI)

[161] Río Amarillo: A Town on the Edge of Ancient Copan

Investigations at the site of Río Amarillo have provided information concerning the lives of elites and commoners in this pre-Columbian town located between the city of Copan and the interior of Honduras. The excavation of contexts from the Early Classic through the Postclassic period has elucidated relationships between the site's inhabitants and their neighbors to the east and west. During the Early Classic, Río Amarillo ceramics were largely locally made, but by the Late Classic period the site was integrated into the politics and economy of Copan with goods imported from that center. Following the collapse of Copan, locally produced ceramics again became the norm, although the inhabitants remained part of a long-distance exchange network involving goods from Highland Mexico, Guatemala, and the interior of Honduras. Scholars debating the ethnic identity of Río Amarillo's people have suggested that the East Group in its core was not Maya due to its settlement pattern, but new research suggests that this area was integrated into the political strategies of Copan and that the odd pattern of settlement may reflect a palimpsest of occupancy. A residential area to the northwest of the core, however, embodies a fusion of Maya and central Honduran styles.

[191] Chair

Barrios, Edy [191] see Burgos, Walter

Barron, John [158] see Metcalfe, Sarah

Barry, Jack (Trent University) and Gyles Iannone (Trent University)

[137] Integrating GIS and Political History: The Ancient Maya City-State of Minanha

The ancient Maya city-state of Minanha experienced a florescence during the Late Classic period between the years of A.D. 675-810. During this period, the Minanha epicenter emerged as a polity capital in what is now the north Vaca Plateau of west-central Belize, which is suggested to be a contested frontier zone between the antagonistic centers of Caracol and Naranjo. The present study addresses Minanha's spatial position in this landscape by incorporating viewshed analysis and cost surface analysis, which model the territory that is visible from a specific location and the easiest routes of travel across a landscape, respectively. These GIS techniques have been applied to the Minanha city-state and suggest that the epicenter was strategically placed in a location with commanding vistas over the surrounding landscape with the ability to monitor and control important routes leading southeast to Caracol and northwest to Naranjo. By integrating GIS analysis with the regional political history, the rise and fall of Minanha within a perceived frontier must be viewed in a more holistic context that is most clearly illustrated through a model of embedded heterarchies.

Barse, William (Smithsonian Institution)

[129] Genetic Stratigraphy, Paleosols, and Orinoco Archaeology

The recognition of chronologically synchronous paleosols along the Orinoco River dating from the Pleistocene-Holocene transition and later periods of the Holocene reflect broad patterns of deposition, pedogenesis and weathering that serve as proxy data for patterns of climatic stability and change. The repeated occurrence of stratigraphic horizons with common archaeological "index fossils" of well-dated lithic complexes or ceramic assemblages can be understood within a framework of genetic stratigraphy. Early Archaic components and later Formative components are reviewed using the concepts of genetic stratigraphy. Although these concepts were developed originally for the analysis of ancient stratigraphic sequences in sedimentary rock, they are applicable to any landform that is undergoing aggradation or

erosional processes that resulted in a terrestrial stratigraphic section. Widespread paleosol horizons can be viewed as allogenic strata that can be linked to broader climatic events both within and beyond the Orinoco Valley. The framework provided by a model of genetic stratigraphy is a powerful tool to integrate the archaeological record with patterns of climate change in the northern tropical lowlands.

[129] *Chair*

Barse, William [308] see Pevny, Charlotte

Bartelink, Eric (California State University, Chico), Phillip Johnson (Texas A&M University), Olaf Nehlich (University of British Columbia; Max Planck Institute), Benjamin Fuller (University of California; Max Planck Institute) and Michael Richards (University of British Columbia; Max Planck Institute)

[242] *Human Mobility Patterns in Prehistoric Tutuila, American Samoa: Evidence from Strontium, Sulfur, and Oxygen Isotopes*

In this study, we examine evidence of mobility patterns in ancient humans from Tutuila Island, American Samoa, using stable isotopes of strontium, sulfur, and oxygen. Our study sample includes 32 radiocarbon-dated burials from six coastal sites that span ca. 1600-100 B.P. Previous work identified dietary heterogeneity in this sample, with females and subadults of post-weaning age consuming higher trophic level resources than males. This pattern may reflect dietary variation linked to division of labor practices, dietary preference, or may instead reflect mobility practices of specific individuals. To evaluate these competing hypotheses, strontium isotope analysis was conducted on tooth enamel samples from 21 individuals, oxygen isotope analysis of bone bioapatite was conducted on all 32 burials, and sulfur isotope analysis was conducted on 12 burials and three faunal samples. The results and limitations of the study will be discussed in regard to ethnohistoric and ethnographic data sources on human mobility patterns in American Samoa.

Bartelink, Eric [306] see Gardner, Karen

Barton, C. Michael [13] see Cegielski, Wendy

Barton, Loukas (University of Pittsburgh) [23] *Chair*

Barton, C. Michael (Arizona State University), Julien Riel-Salvatore (University of Colorado Denver), Peter Bleed (University of Nebraska-Lincoln), Steven Kuhn (University of Arizona) and Peter Hiscock (University of Sidney)

[71] *Lithic Technology and Human Ecology: An Evidence-Based Paradigm for Archaeological Research*

Most archaeological research on chipped stone artifacts today remains dominated by a largely implicit paradigm based in researchers' daily experience with 21st-century industrial technologies. But decades of accumulating evidence from diverse research programs spanning multiple geographic regions, forms of social organization, and time periods demonstrates that this implicit paradigm poorly fits lithic technology and can lead to significant misinterpretation of the archaeological record. Because of the critical importance of lithic technology to human biological and cultural evolution, and the ubiquity of lithic artifacts in the archaeological record, the misapplication of an inappropriate interpretive paradigm has significant impacts on our understanding of the human past. We urgently need to replace this implicit paradigm with one that explicitly recognizes the mechanical and social processes that underpin lithic technology, and its important linkages with human ecology. Geoff Clark's career-long emphasis paradigmatic bases for knowledge of the human past, and concern with human ecology makes this symposium the appropriate place to call for a paradigm shift in the way archaeologists study and make sense of lithic assemblages. We offer a conceptual framework and example research projects that illustrate a more useful approach to this key component of the global archaeological record.

[229] *Discussant*

Bar-Yosef, Ofer (Harvard University)**[201] Facing Climatic Hazards: Paleolithic Foragers vs. Neolithic Farmers in Asia**

The paper compares archaeologically reconstructed survival strategies of successful and failed Paleolithic groups of hunter-gatherers in Asia to responses adopted by Neolithic farmers since annual cultivation began and the number of sedentary communities increased. When African Lower and Middle Pleistocene humans dispersed into Eurasia they found uninhabited areas available even during abrupt climatic events. Failures to recognize the intricacies of the emerging calamities ended with extinction. The Upper Pleistocene provided similar conditions although humans living in the subarctic conditions were prone to abrupt climatic changes. The impacts of climatic hazards were and are generally more important among agro-pastoral societies. The rapidly evolving sense of territorialism with the establishment of permanent villages and the formation of early chiefdoms forced the adoption of new conceptual and technological buffering means (e.g., storage, raiding neighbors) to ensure the survival of the affected communities.

Basdeo, Tricia, David Raichlen (University of Arizona), Brian Wood (Yale University), Frank Marlowe (Cambridge University) and Herman Pontzer (Hunter College CUNY)**[208] Forces on the Forelimb in Traditional Archery Measured in Hadza Hunter Gatherers: Implications for Interpreting Archaeological Skeletal Collections**

Skeletal analyses of Mesolithic archaeological collections often look for evidence of bow and arrow usage in forelimb bones. However, few studies have examined the forces of traditional archery on forelimbs, and measurements of these forces during traditional archery may improve archaeological investigations of bow and arrow use in skeletal samples. From video recordings of ten adult men and four boys of the traditional Hadza hunter-gather tribe in northern Tanzania, calculations of forces acting on their forelimbs and velocity of the arrows were made as they participated in an archery competition involving hitting targets at four different distances. As expected, arrow velocity was strongly, positively correlated with the force used to draw the bow. However, there was no relationship between the target distance and forelimb forces during the draw, nor was there a relationship between target distance and arrow velocity. Comparisons between adults and juveniles indicate that draw force and arrow velocity were positively related to body size; adults used greater forces resulting in higher arrow velocities. Our findings indicate considerable force acting on the forelimb, particularly the phalanges, during traditional archery. We discuss the implications of these results for interpreting skeletal collections in populations that may have practiced archery.

Basell, Laura (Archaeology, Queen's University Belfast), Tony Brown (University of Southampton, UK), P. Toms (University of Southampton, UK), D. Ongwen (Uganda National Museum, Kampala, Uganda) and C. Kinyera-Okeny (Uganda National Museum, Kampala, Uganda)**[17] Human Evolution at the Headwaters of the Nile**

This paper will focus on the results of the first season of fieldwork conducted as part of the long-term geoarchaeological project looking at human evolution and paleoenvironmental change in the Kagera catchment and Lake Victoria. The discovery and excavation of new Early–Middle Stone Age sites in stratified and dated contexts will be described. The geomorphological context of the sites in relation to the long-term landscape evolution of the River Kagera and paleoenvironmental change will be discussed. The excavated sites are the first Early–Middle Stone Age sites in Uganda to be dated using modern chronometric dating techniques. Preliminary results raise numerous interesting questions regarding behavioral adaptations, environmental adaptations, and population dynamics of Middle Pleistocene hominins for future research.

Basgall, Mark [244] see Zeanah, David

Basgall, Mark (CSU Sacramento), David Zeanah (CSU Sacramento) and David Glover (CSU Sacramento)**[244] Technological Organization of Artifact Surface Scatters on Barrow Island**

No evidence of late Holocene artifact industries has been identified thus far from open-air sites on Barrow Island, suggesting a relatively pristine late Pleistocene/early Holocene surface record. Artifacts manufactured from non-local materials tend to be extensively reduced. Implements are uniformly small, often heavily retouched, and retain little further utility as tools. The use of local siliceous limestone reflects primary production of large, single platform cores and percussion blades. Both aspects of the surface record are consistent with expectations that highly mobile subsistence-settlement systems characterized the Pleistocene and early Holocene of arid Australia.

Basham, Matt (Texas State University)

[199] *Living on the Edge: Archaeological Investigations along the Canyon Edge, Eagle Nest Canyon*
The canyon edge surrounding Eagle Nest Canyon was used by Native Americans for thousands of years. It was a crucial component of the landscape, an intermediate zone with access to both upland and river valley resources. The most common archaeological remains encountered in the canyon edge zone, burned rock features, are ubiquitous components of the archaeological record in the Lower Pecos Canyonlands. Research conducted during and after the 2013 Texas State Archaeological Field School investigated numerous burned rock features along the canyon edge. Most of these features appear to be the remains of individual earth ovens. The remains were composed of burned wood, plants, and rocks. Analysis of the remains has revealed a variety of behaviors associated with the construction of these features including the selection of wood, rocks, and plants from the uplands and valleys, the arrangement of the rocks into heating element configurations, and the selection of locales where deeper sediments were present. These behaviors represent a specific subsistence strategy that allowed people to incorporate plants, such as lechuguilla and sotol, into their diet. The presentation will outline the methodologies used, the findings, and recommendations for future investigations.

Basiran, Alper and Cevdet Merih Erek (Gazi University Archaeology Department)

[299] *Three Dimensional Scanning of the Chipped Stone Tools from Direkli Cave/Kahramanmaraş/Turkey*

Newly initiated research at Direkli cave is helping to define an initial understanding of Epipaleolithic hunter-gatherer traditions in the central Taurus region of southern Turkey. Detailed analysis of the Direkli chipped stone tools and faunal assemblage suggests that the cave functioned as a short-term logistical camp in the late Epipaleolithic. Especially geometric microlit such as lunates and triangulars were used by occupatants of the cave. The cave was used primarily in the late summer and fall. This work uses a different approach from the traditional methods used on chipped stones. Some chipped stone stools from Direkli Cave were scanned by a 3D scanning device and observed different features on lateral edge which was backed of geometric microliths. This poster represents traces of production sequences of geometric microliths in Epipaleolithic period of the Direkli Cave.

Bateman, Mark [109] see Bousman, Britt

Bates, Brian (Longwood University) and James Jordan (Longwood University)

[80] *It's Always Field School Around Here: Longwood Archaeology and the Life Skills That an Archaeological Education Provides*

Founded in 1980, the Dr. James W. Jordan Archaeology Field School at Longwood University has grown from a summer opportunity for undergraduates into a multi-faceted program that is rich in fieldwork and laboratory opportunities for students year-round. The hands-on approach to learning has been an effective way to engage students and maximize learning. From our perspective, the archaeological methods, skills and view of the world transcend archaeology and are readily applicable to a broad range of career paths for students. The efficacy of this approach is demonstrated each year as dozens of Field School alumni return to share their experiences of "Life after Longwood" with current undergraduates. They do this as they participate in the excavations of the field school as a part of our annual Archaeology Field School Crew Luau and Alumni Weekend. What we have gleaned from these alums is that, because of the Field School, they have skills that have allowed them to lead satisfying lives in myriad career trajectories and in a meaningful sense, through archaeology; they have never really left Longwood.

Bates, Lennon (Texas State University), Evelyn Billo (Rutestrian CyberServices), Robert Mark (Rutestrian CyberServices), Eric Dillingham (US Forest Service) and Karen Steelman (University of Central Arkansas)

[156] *Radiocarbon Dates for the Guadalupe Mountains Red Miniature Paintings*

Nine paint samples and eight unpainted rock backgrounds were collected from four sites within the Guadalupe Mountains of the Lincoln National Forest for plasma oxidation and accelerator mass spectrometry radiocarbon dating. Unfortunately, only five paint samples contained sufficient carbon for dating: 3260 ± 50 , 3600 ± 150 , 4400 ± 80 , 3285 ± 40 , and 1520 ± 45 years B.P. Carbon levels in the unpainted rock backgrounds were not negligible; however, paint samples had significantly more carbon. We are cautiously confident in the ages reported here. Locally, dates span from the Middle Archaic Hermit's Cave / Lake Avalon phases with one date in the Terminal Archaic early Hueco phase. The

dates provide chronological context for specific communal hunting strategies in the Guadalupe Mountains, including use of nets, atlatls, antler snares, and rabbit sticks. Regionally, these results strengthen parallels between the Guadalupe red miniature paintings of New Mexico and the Red Linear Style of the Lower Pecos Canyonlands in Texas. Multiple lines of evidence using both physical and archaeological sciences are necessary when evaluating chronometric data.

Bates, Lynsey (University of Pennsylvania), Beatrix Arendt (DAACS), Leslie Cooper (DAACS) and Jillian Galle (DAACS)

[232] *Ceramic Stylistic Diversity from Slave Quarter Sites at the Hermitage, TN*

Variation in enslaved people's access to goods has been interpreted spatially as a result of proximity or distance from the owner's main house. In this poster, we evaluate these conclusions with data from Andrew Jackson's The Hermitage. Recent analysis by the Digital Archaeological Archive of Comparative Slavery (DAACS) of slave quarter assemblages indicates five phases of occupation across the Hermitage property. In light of this fine-grained chronology, we explore the influence of Jackson's program of housing standardization and the proximity of domestic contexts to the mansion on enslaved people's access to market goods. Specifically, we examine whether diversity in the decorative techniques and elements on ceramics acquired by enslaved people shifts as a result of these two variables. This detailed temporal and spatial analysis is possible through the specific, attribute-based recording of decoration called for in DAACS protocols.

Batuñ Alpuche, Adolfo Ivan [57] see McAnany, Patricia

Batziou, Anthi [102] see Fuehr, Stephanie

Bauer, Jeremy (Vanderbilt University) and Laura Kosakowsky (School of Anthropology, University of Arizona)

[31] *Charting the Ancient Maya of Northern Belize: Materiality, Place, Identity, and the Legacy of Norman Hammond*

Before the advent of the Barton Ramie project, archaeologists viewed Belize as a cultural backwater to the more-advanced Petén Maya. However, Norman Hammond's British Museum-Cambridge University Corozal Project in the 1970s charted the regional settlement in northeastern Belize and dismissed those earlier views. Additionally, the discovery of early, pre-Mamom ceramics and architecture at Cuello was foundational; it increased our understanding of these early communities, and demonstrated the presence of a northern Belize regional ceramic sphere, known as Swasey. The results of the Corozal Project surveys, the later work at Cuello, Nohumul and La Milpa, and the work of other scholars in the region revealed an early, vibrant, and in many ways, unique, regional cultural phenomenon centered around and along the Rio Hondo and the New River. From the preceramic to the Classic period, northern Belize's domestic, lithic, ceramic, and architectural remains demonstrate this distinctive regional style, both inspiring and inspired by the larger regional developments to the west and north. This paper will revisit northern Belize's history, charting the shared ideology and technology evident in the material manifestations, both big and small, which characterize this region, and the impact of Norman Hammond's work on our understanding of them.

Bauer, Andrew (University of Illinois)

[124] *Land Use, Social Landscapes, and Trajectories of Change: Examples from Early South India* As the opening presentation of the session, this paper calls attention to the importance of understanding ancient land use to a variety of different archaeological research programs. It argues that the detailed reconstruction of spatial and temporal practices of how people engaged with their physical environments is critical to both interpretive and ecological approaches to landscapes, allowing archaeologists to better investigate symbolic dimensions of spatial practice, social memory, political practices and inequalities, as well as long-term human environment interactions and the historical agency of both humans and non-humans. Improvements in methodological and analytical techniques for reconstructing ancient land use and spatial practices are thus broadly applicable to many archaeological research questions. To make these points this paper will use examples of remote sensing, GIS, archaeological survey, and paleoecological analyses of South Indian archaeological contexts that speak to the emergence of institutionalized social inequalities, changing strategies of land use, and socio-environmental histories.

[124] *Chair*

Bauer, Alexander (Queens College, CUNY)

[243] *Learning, Habits, and Archaeological "Cultures": Thinking about "Communities of Practice" across Time and Space*

For good reason, much of the archaeological work engaging with communities of practice has involved the ethnoarchaeological study of contemporary crafts, with a few noteworthy studies of archaeological materials from contexts with tight chronological and spatial control. Taking a case from the Bronze Age Black Sea, this paper argues that "communities of practice" may be helpful in thinking about craft production over broader scales of space and time, and allows us to think differently about the relationship of technology to communities, not simply recasting technological approaches such as chaîne opératoire with new lingo. I hope to show that the communities of practice framework provides a way to theorize how communities—and in turn, what we might identify as archaeological "cultures"—emerge from sharing technological practices in a way assumed but never explicitly addressed in previous technology-based approaches.

Bauer, Alexander [296] see Scott, Rachel

Bauer-Clapp, Heidi (University of Massachusetts Amherst)

[274] *Moderator*

[274] *Discussant*

Baumann, Timothy (Glenn A. Black Laboratory, Indiana University), George Monaghan (Glenn A Black Laboratory of Archaeology, Indiana U), Angie Krieger (Hoosier National Forest, USDA Forest Service) and Edward Herrmann (Department of Geology, Indiana University)

[111] *The German Ridge Project: Living on the Edge in the Hoosier National Forest of Southern Indiana*

The German Ridge Project, a multiyear joint research effort between the Hoosier National Forest and Indiana University, focuses on 19th-century German American farmsteads and settlements in the uplands in southern Indiana. The research documents the lives and culture of Perry County's early German American settlers, who were often, very literally, "living on the edge" as they cleared and farmed the narrow ridges of what is now the Hoosier National Forest. The lives of these settlers have been documented through oral history, photography, and historic archive records as well as by archaeological field investigations that employed university field schools and Passport in Time volunteers.

Two farmsteads, occupied from the middle 19th through early 20th century, were mapped and excavated during 2012. In 2013, we revisited one of these farmsteads as well as investigated some "mystery domes," rock piles whose purpose and age of constructing (historic or prehistoric) are unknown. A variety of survey techniques including shovel testing and remote sensing were used to examine the domes and solve their mysteries. Findings of this work will be shared through interpretive signs placed in the area, a website devoted to the German Americans of Perry County, and local history museums.

Baumann, Timothy [266] see Monaghan, George

Baustian, Kathryn [28] see Anderson, Cheryl

Baustian, Kathryn (University of Nevada, Las Vegas) and Barbara Roth (University of Nevada, Las Vegas)

[32] *Bioarchaeological Contributions to Late Pithouse Period Mimbres Studies: Data from the Harris Site*

Burials resulting from excavations at the Harris Site (both recent and many decades ago) have provided both biological and mortuary data for use in reconstructions of Late Pithouse Period (A.D. 750-1000) life in the Mimbres Valley of southwest New Mexico. Results of bioarchaeological analysis indicate significant roles for women and children in Mimbres society and suggest special importance of certain family lineages within these communities. Atypical mortuary treatments from Harris Site burials are compared to those typically observed at Mimbres sites. These burial contexts are explored to further understand social and ritual behaviors both within the community and the regional culture system. Biological indicators of

the skeletal remains portray a mostly healthy population with few pathologies or nutritional deficiencies. These data are proving to be important for consideration of ecological and social dynamics during the Pithouse Period.

Baxter, Erin**[344] Through Morris' Eyes—Historic Images from Aztec West, GIS, and Re-thinking Aztec Ruins**

New data points gleaned from original Morris photographs are combined with unpublished historic accounts of additional room features, architectural data, kivas, and surrounding sites on the landscape. These data have then been entered into a GIS format and analyzed from micro to macro scale (room to region) in order to present new ideas about the accretion, development, desertion, and landscape of Aztec Ruins.

[185] Moderator

Beach, Timothy (Georgetown University), Sheryl Luzzadde-Beach (University of Texas, Austin), Thomas Guderjan (University of Texas, Tyler) and Samantha Krause (The Maya Research Program)

[17] Maya Wetland and Floodplain Formation: Societal Stability and Environmental Change

In the tradition of Karl Butzer's geoarchaeology, we synthesize our sedimentary and paleoecological evidence from 2010 to 2014 to investigate the physical and anthropogenic formation of wetlands and floodplains in Northwestern Belize. Our lines of proxy evidence include extensive AMS dating, micromorphology, stratigraphy, magnetic susceptibility, general chemistry, carbon isotopes, elemental analysis, pollen, phytoliths, and charcoal from dated strata in an array of wetland and floodplain environments. These lines of evidence provide a range of floodplain formation rates and show significant differences in the timing, use, and crop types of wetlands over the Late Holocene. Mapping and excavation into water management features such as canals, dams, and reservoirs suggest the intricacy of Ancient Maya land management as well as intertwined natural processes in this dynamically changing landscape. Although many are clearly Maya fields, some wetland features appear to be largely natural, though even the most natural have human imprints. Remote sensing imagery and analyses is allowing us to extend our areal understanding of human and natural wetland uses and patterns.

[158] Chair

Beach, Timothy [123] see Krause, Samantha

Beahm, Emily [251] see Moore, Michael

Bean, Colin (University of West Florida)**[322] Rebuilding the Past: 3D Printing in Archaeology**

Recent technological advances allow archaeologists to engage in virtual curation of artifacts. Archaeologists routinely utilize tools such as three-dimensional (3D) scanners to create digital copies of artifacts to share both for research and educational purposes. Less attention has been paid to 3D printing, however, which has the potential to expand public outreach in archaeology by creating physical copies of artifacts, bones, and other vestiges of the past. This paper focuses on recent efforts at UWF's Division of Anthropology and Archaeology to both scan and print physical models of artifacts using a NextEngine 3D scanner and a Makerbot Replicator 2X 3D printer. To date, we have scanned and printed skeletal remains, prehistoric and historic ceramics, and parts from historic shipwrecks located around Pensacola. Scanned models and copies of artifacts can be used to demonstrate archaeology in K-12 and undergraduate classes, can be shared through online social archaeology networks such as OpenContext or GitHub, and can form the basis of a tactile museum display for the visually impaired. Finally, this paper outlines some of the challenges inherent in today's 3D printers and ways to overcome them in order to provide the public with a better understanding of the human past.

Beanlands, Sara [157] see McNeill, James

Béarez, Philippe [245] see Goepfert, Nicolas

Beaudoin, Matthew

[338] Creating “Archaeological Imaginaries” of Consumption: Colonial Legacies within Archaeological Meaning Making

A central tenet of the archaeological process of meaning making is the association of material remains in the present with identities in the past. Changes in material remains represent shifts in dispositions, which signify changes in past peoples. Material remains end up acting as proxies for people within archaeological interpretation; however, how are people differentiated when they are all using similar material goods from similar sources? The current discourse within historical archaeology draws heavily on the archaeology of capitalism to engage with the more recent past; however, this conceptualization relies on an underlying colonial framework that ultimately serves to exclude Indigenous peoples in the past from discourses of modernity, requiring an existential loss of their Indigenous identities. This paper explores the process of identity negotiation within consumption through multi-generational, 19th-century Mohawk sites in Ontario. This exploration emphasizes the role we as archaeologists play in creating ‘archaeological imaginaries’ of the past, where Indigenous peoples consumed goods in an essentially different manner than non-Indigenous peoples. By deconstructing these essentialist binaries, more accurate conceptualizations can be explored while contributing to new discussions about Indigenous consumption and material remains.

Beaver, Joseph (University of Minnesota Morris) and Ian Buck (University of Minnesota Morris)**[76] Teaching Hunter-Gatherer Lifeways through Gamification**

The hunter-gatherer lifeway, despite being fundamental to human existence, is completely unfamiliar to undergraduate students who have lived their whole lives in an industrialized complex society. Experience has shown that students need more hands-on, experiential learning to achieve a satisfactory understanding of a lifeway so radically different from their own. We present an interactive game-style computer simulation of a hunter-gatherer society’s way of life, in the tradition of such “games” as Oregon Trail. The game places particular emphasis on decision-making regarding seasonal movement, food choices, and division of labor by hunter-gatherers. In the game, the student player makes iterative decisions as to which members of the society will engage in which subsistence-related tasks, as well as which foods will be ignored or deliberately targeted. The game simulates the outcomes of these decisions, providing feedback on the health (and especially hunger levels) of the individual members of the hunter-gatherer group.

Beck, Jess (University of Michigan - Museum of Anthropology)**[28] Age, Identity, and Burial in Copper Age Iberia**

Recent work has called attention to the significant number of subadults recovered from late prehistoric burial contexts in western Iberia. However, non-adult burials are also documented at some of the well-known, large-scale centers of the Copper Age of southeastern Spain, where adults and subadults are represented in both commingled and individual burials. The implications of the inclusion and mortuary treatment of subadults at such centers of social and economic power have yet to be satisfactorily explored. Here, I discuss the implications of the presence of non-adults on the formation and representation of community identities, with particular emphasis on the case of Marroqués Bajos. At this site, salvage excavations have yielded evidence of five concentric ditches and one adobe wall that encompass an area of approximately 113 ha, making it one of the largest ‘macro-villages’ known for the Iberian Copper Age. Marroqués Bajos is a particularly relevant case because non-adults occur in formally and chronologically distinct funerary contexts; their remains appear in secondary and commingled contexts, communal burials, and grouped individual burials beneath structures. The significance of subadult burial is explored relative to understandings of status and role in prehistory, as well as ethnographically and archaeologically documented rites of passage.

Beck, Colleen (Desert Research Institute) and Ben McGee (Astrowright Spaceflight Consulting LLC)**[230] The Bottle as the Message: Solar System Escape Trajectory Artifacts**

The notion that extraterrestrial intelligence may one day encounter artifacts of human technology has been incorporated into the design of spacecraft set on trajectories beyond the Solar System. By applying archaeological methodology to the analysis of these artifacts, it is argued that the physical attributes of our spacecraft themselves convey a rich narrative about our civilization typically ignored in technical and academic considerations of extraterrestrial communication. The informational value of these “messages in a bottle” that have received so much focus for future extraterrestrial communication pale in comparison with the informational value of the bottle, the spacecraft itself.

Beck, Jess [230] see Hall, Katherine

Becker, Kenneth [45] see Duryea, Dean

Becker, Kenneth (Statistical Research, Inc.), Scott Kremkau (Statistical Research, Inc.), Steven Shelley (Statistical Research, Inc.) and Stephen Norris (Statistical Research, Inc.)

[45] A New Approach to Recording Desert Pavement Quarries

The Mojave Desert of California contains a rich and varied archaeological record reflecting over 10,000 years of human occupation. Vast areas of desert pavement containing abundant stone suitable for stone tool production blanket the lower bajadas and alluvial fans located there. Many of these desert pavements were quarried over millennia for tool stone resulting in concentrations of well-preserved segregated reduction loci (SRL) representing single reduction events. These pavement quarries can cover an area of more than 400 ha and contain thousands of SRLs and tens of thousands of individual artifacts. The sheer numbers of artifacts present a challenge to fully inventorying and evaluating these resources. During a 10,000-acre survey at Fort Irwin and the National Training Center, Statistical Research, Inc., developed a suite of field methods and postfield analyses using Global Positioning System and geographic information system technologies to quickly and efficiently record and define these sites in their entirety. These methods reduced field time by at least 50 percent over traditional recording methods.

Becker, Sara (York College of Pennsylvania)

[64] Community Labor and Laboring Communities within the Heartland and Hinterlands of the Tiwanaku State (A.D. 500-1100)

Organized labor is a known key component to the development of state-level societies. Understanding how labor is organized and in what fashion can help elucidate activities performed by individuals in their daily lives, as well as production within an emerging complex society. Tiwanaku, with its multiethnic neighborhoods in the heartland of the Titicaca Basin, Bolivia and various settlement clusters in their colony near present-day Moquegua, Peru, provides the opportunity to compare labor between various groups within the state. Specific skeletal evidence of activity (i.e. musculoskeletal stress markers and osteoarthritis) from Tiwanaku individuals was compared to the archaeological record to infer how habitual activity varied within this state. Labor rates within the heartland showed some degree of difference between elite areas and non-elite areas, possibly indicating centralized labor control. However, the communities of non-elite laborers in various communities, including colonists, had activity patterns that did not indicate that these people worked at the behest of elites as some kind of serving or slave class. Instead, the data from this study suggested that these people worked at a variety of tasks and that they were more embedded laborers, akin to a guild, within the state.

[64] Chair

Becker, Marshall (West Chester University)

[191] Tracing Identity in Ceramic Production Techniques: Kilns and Firing Pits in Mesoamerica

Despite the use of well fired ceramics within the Maya realm, from the Pre-Classic to the Post-Classic period, firing technologies remained extremely simple. The elaborate painted wares and polychromes as well as high temperature ceramics were produced by extremely skillful potters using varieties of open surface firing. Enclosed production systems, or rudimentary kilns, are known from extremely few locations in Mesoamerica, all of them beyond the Maya region. The various identified technologies and their distribution provide clues to cultural conservatism in this facet of Maya material culture over at least two millennia.

Bedelian, Vahan [228] see Giessler, Kalena

Bedell, Jennifer [308] see Tucker, Bryan

Bedford, David [87] see Fairley, Helen

Beekman, Christopher (University of Colorado Denver)

[189] The contexts of Archaeologically Recovered Shaft Tomb Figures in Central Jalisco: Who Do

They Represent?

The hollow ceramic figures looted from shaft tombs remain for many the defining features of western Mexican archaeology, perhaps because fresh research into their use and meaning stalled out over 40 years ago. The identity of the individuals portrayed in the shaft tomb figures remains unclear, and different proposals have tended to assume rather than demonstrate who the figures represent. This paper considers in the aggregate those figures that have been professionally recovered from archaeological contexts in the central valleys of the state of Jalisco. I consider in particular the location of the tombs where they were found, and the accompanying burials and artifact assemblages. The goal is to narrow the range of possible interpretations, and to consider their significance for ancient sociopolitical organization. I caution that the conclusions of this study cannot be applied to all figures from shaft tombs. Shaft tombs and the mortuary practices associated with them differ across western Mexico and cannot be assumed to be uniform in nature.

[189] Chair

Begley, Christopher (Transylvania University)

[190] *The Ancient Mosquito Coast: Why Only Certain Material Culture Was Adopted from Outsiders*
The archaeological cultures of the Mosquito Coast of Honduras share a strong cultural affiliation with Lower Central America, although often obscured by a strong Mesoamerican veneer manifested in elite goods and architecture. This paper explores the relationship between the Mosquito Coast of Honduras and their neighbors during Periods V and VI (A.D. 500 to 1520) and examines the utilization of these external connections by local elites. Rather than viewing this kind of external influence as a passive response to powerful neighbors, these outside elements are discussed as evidence of internal political strategies, revealing something about the situation in which these developments happened. The adoption of external elements varies throughout this large region, and these differences are discussed.

Beisaw, April (Vassar College)

[323] *Nationality as a Means of Understanding Native Identity after European Arrival: The Susquehannock Case*

Archaeological narratives of Native Americans during the Contact period (circa 1500-1800) often focus on rates of assimilation or declines in population. Recent efforts to decolonize archaeology encourage us to move away from relying on European artifact counts to create chronologies—more European goods does not necessarily mean the site is more recent and the inhabitants more assimilated. Instead, these artifacts can be seen as remnants of the "cultural entanglements" that characterize the era. This paper reconsiders the archaeological narrative of the Susquehannock, a Native American group of what is now central Pennsylvania, by viewing them as a nation instead of an ethnic group. Nationality may be superior to ethnicity for understanding cultural entanglements because it is rooted in cultural not biological inheritance. All that matters in nationality is that individuals minimally participate in a shared lifestyle and do not attempt to bring down or overthrow the leadership, outside of accepted mechanisms for political change. Nationalities are also routinely adopted and shed as political landscapes change. Freed from issues of authenticity, a nationality-based archaeological narrative can focus on evidence of Native agency at a variety of scales, from individual, to village, and regional community.

Bejko, Lorenc [89] see Galaty, Michael

Belardi, Juan Bautista [104] see Barrientos, Gustavo

Belardi, Juan (Univ Nac de la Patagonia Austral), Pablo M. Fernández (CONICET-INAPL), Isabel Cruz (Universidad Nacional de la Patagonia Austral), Mariana De Nigris (CONICET-INAPL) and A. Sebastián Muñoz (CONICET-IDACOR-UNC)

[206] *Past Human-Huemul (*Hippocamelus bisulcus*) Interactions in Patagonia (Southern South America): A Zooarchaeological Perspective*

Huemul (*Hippocamelus bisulcus*) archaeological evidence in Patagonia has been discussed at the local level so far. In this poster, published archaeological data from across the region are assembled in order to evaluate possible longitudinal and latitudinal fluctuations in the past distribution of this endemic Patagonian cervid. We aim at contributing to the natural history of the species, classified as endangered by IUCN, as well as understanding its interactions with human hunter-gatherers through time. The archaeological deposits considered are currently located almost exclusively in the Andean forest, the

forest-steppe ecotone, and the SW coast of southern continental Patagonia. Regional archaeological data display a low frequency of huemul remains through time. Even though huemul was available from the beginning of human occupation in the region, it was rarely included as a prey item until the Middle Holocene (around 6000 years B.P.), and it becomes significantly more abundant in the Late Holocene, particularly in southern Patagonia. Based on this pattern, it follows that huemul bone occurrence in archaeological contexts roughly resembles the species present distribution. Hence, hunter-gatherer predation had little or no influence on the distribution of huemul east and west of the Andes.

Bell, Ellen [128] see Bill, Cassandra

Bell, Ellen (California State University, Stanislaus), Marcello Canuto (MARI, Tulane University) and Cassandra Bill (MARI, Tulane University)

[161] *Hierarchy in the Copan Hinterlands? The Copan Kingdom Dual Center Administrative Strategy and Patterns of Centralization in Southeast Mesoamerica*

An administrative strategy built on the establishment of dual centers in the Classic Maya kingdom of Copan, Honduras, has been well-documented in the El Paraiso Valley and additional examples elsewhere in the Copan hinterlands, including the Rio Amarillo and La Venta Valleys, await further investigation. The question, however, of why this approach, unknown elsewhere in the Maya area, was necessary and effective in the Copan kingdom remains. In this paper, we explore patterns of political centralization and fragmentation documented elsewhere in Southeast Mesoamerica to better understand the context within which Copan elites developed and deployed this unique strategy. We suggest that, in establishing a Copan-style administrative center alongside an autochthonous local capital in the El Paraiso Valley, Copan elites sought to use the hierarchy-trending political practices of the region to their own advantage. By replicating rather than replacing local power structures Copan elites achieved and maintained centralized control through strategies appropriate to a region in which political organization was highly fluid and often decentralized. These strategies stand in apparent contrast with those deployed by Maya elites at Quirigua whose approach to regional control was distinct and, perhaps consequently, short-lived.

Bell, Colleen (University of Tulsa) and James Holt (Holt Consulting Services, LLC)

[165] *Is Digging Archaic? CRM's Misuse of Academic Methodology*

Many federal, state, and tribal review agencies overseeing Phase I archaeological surveys require systematic shovel test pits (STP's) as a standard component of any fieldwork to be reviewed. The nominal goals of this strategy are two-fold; 1) to locate buried deposits and 2) to define the boundaries of a site once one is located. In academic archaeology, STP's are primarily used for the latter. Sites are typically discovered through locating surface scatters via erosion, agricultural disturbance, tree falls, or other similar avenues. Numerous studies have been conducted to evaluate the best sampling strategy in placing the test pits throughout a given project area, but there has yet to be an analysis of the efficacy of shovel test pits in locating sites. This study critically examines the usefulness of STP's for site discovery and proposes a change in methodology that would decrease the likelihood of missed sites using a data set obtained over the course of three years in the Southern Plains region. This region is ideal for this type of analysis due to the variety of climate, landforms, and cultural diversity present.

Bellantoni, Nicholas [270] see Aronsen, Gary

Belletti, Jaqueline [243] see Neves, Eduardo

Bello, Charles (Federal Emergency Management Agency (FEMA-DHS))

[50] *Traditional Chippewa-Cree Indian Cultural Education and Awareness Training Program: An Effective Partnership between the Chippewa Cree Tribe of the Rocky Boy Reservation, Montana and the Federal Emergency Management Agency (FEMA)*

This paper discusses mitigation measures funded by the United States Federal Emergency Management Agency (FEMA) through its Hazard Mitigation Grant Program, in partnership with the Chippewa Cree Tribal Council and the Historic Preservation Office. The project focuses on cultural education and awareness, where funding mitigates against the loss of Chippewa-Cree Indian history and culture by providing training to anyone working construction jobs on the Reservation. The multi-media and innovative format of instruction provided by this grant is weighted toward both traditional knowledge as well as Federal cultural resource compliance, and it speaks directly to the mission statement of the tribe's Cultural Resource Preservation Department: "To maintain and inspire traditional values relating to the

Ojibwa and Ne-hi-yah-wa (Cree) people through established principles of Culture, History, Language and Life."

[50] Chair

Bellorado, Benjamin (University of Arizona) and Barbara Mills (University of Arizona)

[202] *The Ties that Bind: Textile Imagery, Social Proximity, and Communities of Practice in the Northern Southwest*

In the ancient Southwest, people communicated their membership in different communities of practice with both high and low visibility attributes simultaneously across several classes of material culture. Archaeologists have identified potential networks of practice through architecture, ceramics, ritual paraphernalia, and textiles, some of which overlap substantially while others are distinct. Throughout the northern Southwest, Ancestral Pueblo peoples used textiles and ritual footwear, and imagery of these items, to signal community and individual identities at several levels. Unlike some types of rupestrine imagery, rock art and building mural imagery dating to the late A.D. 1100s and early 1200s are often found in private household contexts and restricted routes of travel across landscapes and appear to have been intended to communicate social messages to relatively small audiences. Changes in the context and execution of these images may indicate changes in social ties, community organization, worldviews, and how identities were reproduced across space and time. This presentation will document how different communities of practice were expressed by ancient peoples in Southeastern Utah during the Pueblo II and III periods, and how both low and high visibility attributes of material remains signaled changing ties to the Mesa Verde and Kayenta areas over time.

Bellot-Gurlet, Ludovic [249] see Le Bourdonnec, François-Xavier

Beltrán, José Carlos [339] see Gonzalez, Lourdes

Bement, Leland (Oklahoma Archaeological Survey, OU) and Kristen Carlson (Oklahoma Archaeological Survey)

[280] *Bison Across the Holocene: What Did Calf Creek Foragers Hunt?*

The Calf Creek culture flourished during a relatively brief interval between 5500 and 4800 RCYBP on the North American southern Plains. Conventional wisdom dictates that the bison hunted during this time had completed the evolutionary trend to the modern form *Bison bison*, a species sporting short, tightly curved horns, and smaller frame than previous species. Crania with horns are rarely preserved during this important interval, leaving little for taxonomists to study. We present a broader picture of changing bison form and associated climate and grassland data through the deep history on the southern Plains. This history of change provides a better understanding of Bison, the largest prey animal available to Calf Creek hunters.

Benavides Castillo, Antonio [195] see Pallan Gayol, Carlos

Benden, Danielle (University of Wisconsin-Madison)

[68] *From the Repository to the Classroom: Artifacts as a Portal to the Past*

In 1996, the Society for American Archaeology adopted a series of eight Principles of Archaeological Ethics. Principle 4 focuses on outreach and education, and the importance of promoting quality interpretations of the archaeological record to the general public. This paper details a case study initiated by the University of Wisconsin-Madison and the Madison Metropolitan School District (MMSD) where archaeological resources were made available to second, third, and sixth graders in accordance with curricular standards. Funded by a UW-Madison Evjue Foundation Grant, several in-class, hands-on activities were created for area schoolchildren who also visited and interacted with Effigy Mounds on UW-Madison's campus. This collaborative effort between UW-Madison personnel and MMSD curriculum advisors can serve as a model for other efforts nationwide, in our collective work promoting the value of archaeology in science education.

Bender, Shilo (University of Missouri)

[10] *Costs and Strategies of Obsidian Procurement in the Southwest Borderlands*

A combination of social network analysis and geographic information systems (GIS) techniques were used to analyze obsidian assemblages from the Southwest borderlands. Chemical data used in sourcing

the obsidian pieces were collected at the University of Missouri Research Reactor using X-Ray Fluorescence. ArcGIS was used to calculate a terrain cost-adjusted proximity between sites and the sources of obsidian recovered therein. It was then determined whether a correlation existed between the utilized obsidian and the source that could be reached with the least cost in energy. If obsidian was not obtained from the least-cost source, trade routes may have been used to obtain obsidian from greater distances. Trade routes may have resulted in obsidian procurement having a higher overall energy cost but lower individual energy cost than direct source procurement. Establishing obsidian procurement strategies provides vital information on social interactions and how they change through time and space.

Benedetti, Michael [102] see Kubátová, Ilona

Benedetti, Mike, Jonathan Haws (University of Louisville) and Dustin Pollard (University of North Carolina Wilmington)

[299] *Pleistocene Stratigraphy and Geoarchaeology of Lapa do Picareiro, Central Portugal*
Lapa do Picareiro is a cave located about 100 km northeast of Lisbon, Portugal. Archaeological excavations since 1994 have unearthed over 7 m of muddy gravel from the cave, containing a rich variety of human artifacts and faunal remains. This poster presents the results of physical and geochemical analysis to establish the depositional and weathering history of the cave. Radiocarbon ages show that the cave fill dates from 9 to > 45 ka B.P. The average sedimentation rate during this period is .13 mm/yr, with accelerated sedimentation (0.30 mm/yr) around the time of the last glacial maximum. Gravel in the sedimentary fill is derived from spalling off the cave roof, while silt and clay are contributed by in-situ weathering, slope wash, aeolian transport, or groundwater flow through bedrock fractures. Particle size data show coarse gravel layers associated with cold phases, and a general coarsening upward in the fine fraction. Mineralogical and geochemical data show a shift to stronger chemical weathering and increased organic matter at the start of the Holocene, as forest cover expanded across the region. Isotope records show ^{13}C excursions related to changes in cave hydrology, and ^{15}N values that suggest strong fecal enrichment of the sediments.

Benefield, Paul (Sam Noble Oklahoma Museum of Natural History)

[280] *Replicating Calf Creek Lithic Technology*

Within Oklahoma, the Calf Creek cultural complex is represented by a variety of basally notched spear points that typically manifest high gloss, color changes, and some marginal translucency due to their having been intensively heat treated. Collections from the Primrose site in Murray County, Oklahoma, and from the Grouse Creek site in Cowley County, Kansas, provide a basis for replicating the prevailing biface manufacturing sequence and identifying when and how many times heat treating was applied during this sequence. Frisco chert is the dominant material manifest at the Primrose site, whereas varieties of Florence chert are dominant at Grouse Creek. I will outline my work on replicating the heat treating and several biface thinning stages associated with these two cherts as documented in the archaeological finds.

Benfer, Adam (University of Kansas)

[153] *A Century in Stone: One Hundred Years of Lithic Analyses in Nicaragua*

While archaeological knowledge of pre-Hispanic stone tool technologies has greatly expanded since the earliest descriptive accounts from Central America, we still know little about Nicaraguan lithic types and operational sequences. By reviewing one hundred years of publications on pre-Hispanic Nicaraguan stone tools, I begin the process of developing a lithic typology including chipped and ground stone tools. Using this review, I assess the current state of lithic analyses and outline research objectives for future investigations in Nicaragua. Presently, we cannot say much about any stage in the operation sequence of any type of pre-Hispanic stone tools from Nicaragua. We need to focus on identifying raw material sources, interpreting manufacture strategies, conducting experimental use-wear analyses, and developing a comparative microbotanical residue database, among other research endeavors. To initiate this process, I present my preliminary analyses on the stone tool assemblages from the El Rayo and Sonzapote archaeological sites.

Benfer, Bob (University of Missouri-Columbia) [250]

Habitat Discrimination by Phytolith Assemblage

As part of the "Phytoliths in the Flora of Ecuador Project," assemblages of four habitats in Ecuador were studied. Between 16 and 28 surface samples were collected from localities in four environmental zones:

arid coast (Chanduy), dry coastal forest (Jama), moist coastal forest (Bilsa), and moist Amazonian forest (Jatun Sacha). More than 100 types of phytoliths were identified in these samples, and this paper discusses statistical classification of those data by habitat.

Phytolith data propose challenges to any classification. Simple counts treated in a multivariate linear model will not produce successful classifications. This is because some types are more frequent, and some types are more variable than others. Collections differ in total number of types identified. Classification by habitat may require attendance to patterns and magnitudes of types with pattern having greater diagnostic power. Relations among types may be non-linear. I will describe here a method that produces 100% correct classification of habitat by phytolith assemblage with a non-linear model. These findings suggest transformations that may be useful for any comparison of phytolith or any rare artifacts. The results tend to validate the use of prehistoric phytolith comparisons since they are shown to produce distinguishable habitats in recent, known settings.

Bengtson, Jennifer (Southeast Missouri State University) and Jodie O'Gorman (Michigan State University)

[306] *Ethnicity and Childhood at Morton Village*

Morton Village and the associated Norris Farms 36 cemetery sites in Fulton County, Illinois, provide a unique opportunity to synthesize biological and cultural perspectives on life among Mississippian and Oneota residents of the region. Among the research directions developing from new excavations at Morton Village are questions regarding the role that subadult burials can play in informing an analysis of intra- and inter-community social relations. This paper considers what is known about the lives and deaths of Morton children as represented in the cemetery, particularly as this evidence relates to broader intracommunity patterns. Atypical mortuary ceremonialism associated with children's burials may reflect community signaling of multiethnic identity within a new social context characterized by immigration and intermarriage between Oneota and Mississippian people. Ethnographic and ethnohistoric examples are explored as analogies for such circumstances, while additional mortuary and bioarchaeological research is suggested to further elucidate these ideas.

[306] Chair

Benjamin, Jeff (Michigan Technological University)

[122] *The Resonance of the Industrial Past*

The silence of ruins evokes absence—a forgotten, irretrievable past—but the archaeological record is nevertheless replete with very specific and accurate sonic information. Once listening is granted status as a primary mode of perception, a demystification of the aural environment of the past ensues. The advent of the industrial era brought with it unprecedented sonic extremes, and the significance of this phenomenon merits closer scrutiny. Many factories and industrial sites, although now mute, are still alive in the memories of those who lived and worked there. This is demonstrated by frequent expressions of a nostalgic reminiscence of industrial sound, delivered once the industrial processes have ceased. The industrial past is resonant; both literally and metaphorically. This paper will first examine the phenomenon of industrial sound broadly, and then move in more closely to look at a particular assemblage of structures at the Quincy Mining Company, in Hancock, Michigan. Through a combination of archival documentation and archaeological evidence, a plausible sonic 'moment in time' is produced. The evidence and research is structured in the form of a "historic soundwalk," as a listener may have experienced this location in the spring of 1916.

Bennallack, Kathleen (University of California, San Diego)

[127] *Preliminary Excavation at Wadi Fidan 61: A Multi-Period Neolithic Site in Faynan, Southern Jordan*

In the 2012 field season of the Edom Lowlands Regional Archaeology Project, we excavated a site previously only published in survey reports. It is a large, steeply sloped, densely-built site with, at minimum, Pre-Pottery and Pottery Neolithic occupations as well as later, possibly Iron Age, tombs. The 2012 excavation only exposed a very small area, with very complex, well-preserved architecture and surprisingly sparse small finds. Until ¹⁴C dates and lithics are processed, we will not know the exact period(s) of the site, but we propose that it may be related to Ghwair 1 and Tell Wadi Faynan. The upper levels contained significant coarse pottery, as well as some lithics and potential "white wares", diagnostic of early attempts at pottery in the PPNB. The site also contained copper ores (possibly used for making beads and cosmetics) and as-yet unidentified architectural structures inside the buildings, as well as hearths, a pit, and many ground stone artifacts. The size and density of settlement, uniqueness of

artifacts, and complexity of building phases all suggest a long and multi-faceted occupation, which we hope will be the focus of several future excavations.

[127] *Discussant*

[127] *Chair*

Bennett, Stacey (Blackwater Draw National Historic Landmark, Eastern New Mexico University)

[267] *A Closer Look at Bison Hunting at the Clovis Site, Blackwater Locality 1*

Combining recent work carried out by Eastern New Mexico University Archaeological Field School with legacy data from the Clovis site, we are now in a better position to understand Late Paleoindian bison hunting in and around the outflow channel at Blackwater Locality 1. Reconstruction and digitization of previously unpublished research, in addition to current work at the site, gives us a three-dimensional view of these deeply-buried cultural horizons that occur within Unit D and Unit E strata. This analysis ties together the work of many previous excavators and allows us to associate seemingly disparate bone concentrations recovered at different times and with range of excavation techniques, to quantify Late Paleoindian bison utilization at the Clovis site.

Benson, Larry [248] see Hattori, Eugene

Bentley, R. Alexander

[193] *Decision-Making and Evolutionary Archaeology*

A provocative idea in the evolutionary archaeology literature compared human intentions to those of squirrels and oak trees—i.e., from an evolutionary perspective on long time scales, human intentions didn't matter. Does this apply to decision-making as well? Here we propose a useful means of considering decision-making in cultural evolution, in which the two important 'axes' of variation are social influence (from individual to social) and how well-informed the agents are (from well-informed to poorly informed). We offer that this "map" organized by these two axes is useful in converting archaeological data into particular 'quadrants' of general evolutionary dynamics, each of which features a signature behavioral pattern. When taken together, the map and its signatures provide an easily understood empirical framework for evaluating how modern collective behavior may have changed from prehistory even to the digital age, thus helping to make evolutionary archaeology more clearly relevant to the wider social sciences.

Berdan, Frances (California State University San Bernardino)

[253] *Discussant*

Beresford-Jones, David [264] see Nanavati, William

Berger, Elizabeth (UNC-Chapel Hill), Dong WEI (Jilin University Center for Chinese Frontier Archaeology) and Hong ZHU (Jilin University Center for Chinese Frontier Archaeology)

[102] *Caries Calibration Methods in a Bronze Age Inner Asia Skeletal Sample*

This study examined the applicability of two caries calibration methods to a Bronze Age population from Xinjiang Province, China. A skeletal sample of 55 adult individuals from the Tianshanbeilu cemetery (19th to 3rd centuries B.C.E.), housed at Jilin University, Changchun, China, was examined for evidence of dental wear, carious lesions, pulp exposure, and ante-mortem tooth loss. Results showed that the first calibration method (Lukacs, 1995) (5.2%) was slightly higher than the uncalibrated rate (4.8%), and that the second method for calibration (Duyar and Erdal, 2003) produced a similar rate (5.1%) to the first calibration method. However, the calibrated rates are not statistically significantly different from the uncalibrated rate. This is consistent with expectations, as the population had a low rate of carious teeth but a high rate of wear, meaning that most antemortem tooth loss was likely due to wear and not carious lesions. These results are suggestive of a diet low in cariogenic foods, but high in tough or gritty foods. This has implications for the utility of existing caries calibration methods for all ancient diets, and for indirect methods of ancient dietary reconstruction.

Bergstrom, Michael [23] see Lee, Craig

Bergsvik, Knut Andreas (University of Bergen, Norway) and Haug Anne (NTNU, Norway)

[325] *From Stone Shelters to Wooden Shielings: The Use and Abandonment of Early Medieval Caves and Rockshelters on the West Coast of Norway*

The paper presents a survey of the excavated caves and rockshelters that were in use during the Migration, Merovingian, and Viking periods (ca. 400-1030 A.D.) along the west coast of Norway from Nordland in the north to Rogaland in the south. Although there are regional differences, the survey shows that caves and rockshelters were intensively used as residential sites as well as ritual sites during the Migration period whereas relatively few of these places were occupied during the Merovingian and the Viking periods. The change, which takes place around 550-600 A.D. can probably be related to general social and economic changes in Scandinavia around this time, when power became more centralized and the utilization of the land was reorganized. During this process, agriculturally marginal areas – in which most of the caves and rockshelters were situated – became more important in the overall economy. This led to the establishment of built architecture and wooden shielings, which to a large degree replaced the natural shelters. Another cause for the change was that caves and rockshelters were increasingly associated with negative forces and supernatural beings during this period.

Berkhout, Frans

[75] *Discussant*

Berman, Mary Jane (Center for American and World Cultures)

[250] *Lucayan Agriculture and Tool Use: A View from the Central Bahamas*

Starch grain and phytolith analyses of flaked stone, ceramic, and shell objects and macrobotanical remains from four early and late period Lucayan sites in the central Bahamas have yielded a variety of crops and wild plants. Many of the stone tools contained residues from more than one plant. A picture of Lucayan food preparation and culinary practices and field preparation techniques is emerging from these finds. The plant processing technologies and techniques will be compared to those found elsewhere in the pre-European Caribbean, and to historic and contemporary cultures of the Caribbean, Amazonia, and Central America.

Berman, Mary Jane [269] see Mullins, Meghan

Bernard, Julienne

[323] *Lithic Acquisition, Production, and Political Landscapes: The Mission-Era Chumash Interior*
Concepts of landscape are infused with political meanings, and utilization of the landscape has clear political implications. The colonial hinterlands of the Chumash Interior in California sheltered many local and refugee indigenous communities long through the Mission era, and was thus a locus of interaction and negotiation between people of varied cultural backgrounds and colonial experiences. Patterns of lithic raw material acquisition and tool production from several late prehistoric-Historic period sites provide a window on to varied utilization of the physical (and thus, sociopolitical) landscape by local communities in addition to newly arrived mission refugees. These data also reveal compelling evidence of continuity in multiple region-specific lithic traditions. Further, the lithic assemblage provides a way of examining the diverse ways people in the region participated in larger systems of regional exchange, showing that many individuals appear to have strategically altered their economic activities, driven in part by political concerns. Taking a landscape approach, I suggest that the ways in which these groups moved throughout the region and employed the landscape for the purposes of lithic acquisition served as a key path through which they negotiated their place in an unfamiliar and increasingly complex physical, sociopolitical, and economic environment.

Bernatchez, Jocelyn [42] see Medeiros, Melanie

Bernatchez, Jocelyn and Melanie Medeiros (William Self Associates)

[141] *Virgin Anasazi Archaeology and the Southern Parkway Project*

In 2009, as part of the Utah Department of Transportation's Southern Parkway Project, William Self

Associates, Inc., conducted data recovery at six Virgin Anasazi sites located within 1.6 km of each other on a southern terrace of the Virgin River in the St. George Basin, southwestern Utah. Together, the six sites have (discontinuous) occupations spanning a large portion of the Virgin Anasazi sequence, from the Basketmaker II (300 B.C.–A.D. 400) through Pueblo II (A.D. 1000–1150) periods, although the heaviest period of use appears to be from late Basketmaker III through early Pueblo I. This paper provides an overview of the results of investigations at these sites, which documented more than 100 features, including multiple pithouses, storage cists, and ephemeral brush structures, and produced substantial artifact assemblages of flaked stone, ceramics, ground stone, and botanical and faunal remains, as well as 30 radiocarbon dates. These data are particularly important in light of the paucity of published excavation data and secure radiometric dates for the region. The project results are synthesized in terms of our understanding of the Virgin occupation along this single terrace of the Virgin River and the project's overall contribution to archaeological research on the Virgin Anasazi.

Bernd, Schoene [201] see Gronenborn, Detlef

Bernemann, Amanda

[206] Exploitation of Birds by Late Prehistoric Forager-Farmers along the Central Des Moines River
Comprehensive analyses of bird remains from the Howard Goodhue Oneota site (A.D. 1190) provide insight on the use of these animals by Late Prehistoric forager-farmers who lived along the Des Moines River in central Iowa. The collection of avifauna includes 614 specimens, with taxa ranging in size from small passersines to ducks, geese, turkey, and swan. They acted as a supplementary, and likely seasonal, food source to the other fauna and farmed resources in the diet of the Oneota. Additionally, modifications on the specimens indicate these animals were utilized as a source of raw material in the production of bone beads.

Berquist, Stephen and Alexei Vranich (University of California Berkeley)

[107] Virtual Cusco

This project virtually recreated a moment in the history of the indigenous imperial and ceremonial city of Cusco, Peru before it was forever transformed into a European-style colonial provincial village. On a broader theoretical level, this research relates to the way we visualize this most important pre-Columbian city of the South American continent. Methodologically, the project is a feasibility study for the best method to visualize and incorporate past and future data from various fields such as architecture, archaeology, conservation and ethnography, and take advantage of the extensive resources and detailed information collected by various city agencies and individual scholars.

Berrey, Charles (University of Pittsburgh)

[139] Survey, Shovel Probes, and Population Estimates: Studying Regional Demography Using Sub-Surface Artifact Densities

Evaluating patterns of regional demography is a critical part of understanding organization and change among complex societies. Among other things such an evaluation requires estimating the size of prehistoric populations, in both relative and absolute terms. For years settlement pattern research has recognized that these estimates are most reliable when they account for both the area and density of human occupation, which, in contexts lacking domestic architectural remains, are often based on the distribution and density of ceramic sherds. Methods have been developed for systematically translating such values into absolute population figures, but only for cases in which surface collections constitute the primary form of data collection in the field. These methods of demographic reconstruction are thus not well-suited to areas with poor surface visibility, as this precludes the reliable calculation of surface artifact densities and often requires substantial amounts of sub-surface testing. This poster presents a technique for making absolute population estimates in such contexts, based on the use of sub-surface artifact densities. The field methods and datasets on which this technique is based are all drawn from regions of the Intermediate Area, but can be adapted to the study of regional demography in other parts of the world.

Bertolino, Silvana Raquel Alina (CONICET- IFEG. Córdoba Argentina), Udo Zimmermann (Department of Petroleum Engineering, University of Stavanger), Marcos Gastaldi (IDACOR- CONICET. Museo de Antropología, Universidad Nacional de Córdoba) and Andrés Laguens (IDACOR-CONICET. Museo de Antropología, Universidad Nacional de Córdoba)

[19] The Ceramics and Pigments from Piedras Blancas (600-1000 AC), Aguada Culture: Clay

Provision, Technology, and Social Change at the Ambato Valley (Argentina).

Piedras Blancas (600-1000 AC) is a residential site where a well settled, more complex and unequal society developed after the political, social and ideological changes that occurred in the Ambato valley in the IV century of the Christian era. It belongs to the Regional Integration Period (300-1000 AC). Known as the Aguada Culture, these changes spread regionally, encompassing northwestern Argentina.

The pottery production reflected those changes within the iconography ("the draconian style").

Technological classes reduced from 44 to 12 while two of them gained popularity: Classes E (common) and A1 (black incise) grew 100% and 30% respectively. The aim of this research is to help to understand the role of these objects in the new society, the continuity and disruptions of the technology, the organization of good production, management and selection of natural resources by this culture and the access to those resources. Pottery sherds, pigments and other possible raw materials found at this site as well as several local clay resources identified within the valley (Catamarca, Argentina), were characterized on their mineralogy, geochemistry and other physical and technological features. Certain minerals and chemical elements are found to be traceable and distinctive from other Aguada styles like the Aguada Portezuelo.

Bestel, Sheahan**[170] Bamboo and Rice: Plant Residues from Artifacts in Southern China**

Plant residues may be used to identify subsistence patterns and trends in general geographic regions. Bamboo and rice residues from artifacts from a range of Neolithic sites are discussed in this paper. While rice remains are frequently identified and sought after in some archaeology sites in South China, other potential domesticates or managed plant taxa such as bamboo are less frequently discussed in the archaeological literature. This paper attempts to document bamboo use in South China during the late paleolithic and early neolithic period.

Bethard, Jonathan (Boston University), Anna Osterholtz (University of Nevada, Las Vegas), Andre Gonciar (ArchaeoTEK-Canada) and Zsolt Nyaradi (Haaz Rezo Museum)**[241] Of Infants and Elderly: A Bioarchaeological Analysis of a 17th-Century Mortuary Context from Transylvania, Romania**

In 2007, archaeologists conducted a salvage excavation inside the Reform Church located in the village of Telekfalva, Romania. At that time, remains of 70 individuals were uncovered and accessioned into the Haaz Rezso Museum located in the city of Odorheiu Secuiesc, Romania. During the 2013 field season, these remains were analyzed for the first time by an international team. In this paper, we present the initial results of these analyses, including the remarkable finding that 69 of the individuals were juveniles. Notably, 71.0 percent of the juvenile assemblage was assigned to either perinatal or fetal age cohorts. Remains of a single elderly adult female were also documented. We draw upon recent literature related to the bioarchaeology of children to interpret the role of this Reform Church as a consecrated burial space for juvenile individuals. In addition, we describe the influence of Calvinist theology on 17th-century Transylvanian mortuary contexts. Lastly, we draw on other studies from Eastern Europe to elucidate the relationship between the juvenile individuals and the single elderly female interred in the Reform Church.

Bethke, Brandi (University of Arizona), Maria Nieves Zedeño (University of Arizona) and Kaitlyn Moore**[159] Chronotopes: The Parallel Biographies of Two Humanized Landforms**

Among the most important intellectual contributions of landscape theory to archaeology is the ability to reconstruct human trajectories by focusing not on archaeological sites per se but on the interaction of people and landforms. Borrowing shamelessly from Keith Basso and anthropological linguistics, we apply the term "chronotope" (literally, time space) to those landforms that uniquely contain and project the long-term history of a people, from creation to the present. The parallel biographies of Kootenai Falls and Chief Mountain, two major landmarks on either side of the Montana Rockies, are followed through the experiences and narratives of ancestral and contemporary Kootenai and Blackfoot people, respectively. We illustrate how long-term interactions between these groups and their landforms are mutually transformative in tangible and intangible ways.

Bettinger, Robert (University of California-Davis)**[284] Late Pleistocene Lithic Technology on the Upper Yellow River, PRC**

There were at least 3 late Pleistocene lithic technologies on the upper Yellow River, Ningxia Hui Autonomous Region: the Initial Upper Paleolithic Shuidonggou flat-faced core technology (41.0-25.0

B.P.), a microblade technology termed the North China microlithic (13.0-8.0 B.P.), and Helan technology, which unlike the first two is not blade based and draws heavily on quartzite as a raw material. Key components of the Helan assemblage include bifaces, unifacial tools, spheroids, choppers, and flake tools, many of which suggest heavy processing, perhaps of plants. The transition from Helan to microblade technology documented at Pigeon Mountain just west of the Yellow River places an upper limiting date for Helan technology between 13.5 and 11.9 cal B.P.; its absence at Shuidonggou just east of the Yellow River fixes its lower limiting date most likely after 20 cal B.P., during a warm-wet period bracketed by cold-dry ones. Because, unlike those representing the two more familiar blade technologies, no Helan assemblage has never been treated in detail, we describe the Helan assemblage recovered in 1995 at Pigeon Mountain, make inferences as to its functions, its relationship with hunter-gatherer mobility, and the broader relationship between lithic technology and climate change in prehistory North China.

[23] *Discussant*

Bettinger, Robert [316] see Tushingham, Shannon

Bettison, Cynthia (Western New Mexico University Museum)

[68] *Chair*

Bevan, Andrew (University College London) and Daniel Pett (British Museum)

[36] *Spatial Sovereignties, Archaeological Access and the Big Data Landscape*

Spatial data has always carried more political charge than aspatial information, not least in a modern world of nation-states, cadastre-based taxation and location-aware services. In archaeology, the massive advantages of spatially-explicit evidence has been obvious since the early days of the subject, in distribution maps or excavated stratigraphy, and more recently, due to yet greater attention to context, the use of GIS, and sharply increasing overall quantities of digital data. Transparent dissemination of spatial data is increasingly encouraged alongside other forms of 'open' access in archaeology, even if many researchers recognize reasons to act carefully with coordinate information, for example, in order not to enable enhanced looting. Likewise, whilst international projects might see deposition of their final results in data repositories as a responsible act, some might argue this raises as many neo-colonial, cross-border issues about who owns the archaeological resource as it solves. Even so, these questions—of whether we should have spatial gatekeepers and who them might be—are rapidly being taken out of our hands with the advent of citizen-scientific reconstructions of 2- and 3-D spatial models of archaeological phenomena. This paper seeks to foster debate over these issues.

Bey, George [31] see Ringle, William

Bey, George (Millsaps College)

[275] *Returning to the Scene of the Crime: The Early Tollan Phase and the Growth of Tula, Hidalgo, Mexico*

The analysis of ceramics from Tula and its surrounding hinterland by Healan's Tulane obsidian workshop project in the 1980's led to the identification of an Early Tollan phase dated to between A.D. 900-1000. The ceramic complex associated with the Early Tollan phase is considered a manifestation of major social and cultural changes that took place at Tula during this time period. It is also argued that these changes represented significant transformation in the Toltec ceramic economy. This paper looks at the arguments made in support of the Early Tollan phase focusing on a re-examination of the data and the strength of the ceramic changes. The changes in ceramics include among others a shift from red on brown to monochrome wares, new vessel forms for bowls and dishes, and a decline in complexity of surface decoration, fire clouding and blackened cores. The causes thought to underlie these changes are competitive marketing practices, demographic shifts, and production innovations resulting from the highly dynamic growth and expansion of Tula at this time. This paper seeks to evaluate the validity of this model and whether the data support it.

Beyer, Renate [233] see Ford, Ben

Bhattacharya, Tripti (University of California, Berkeley), Roger Byrne (Department of Geography, University of California, Berkeley), Kurt Wogau (Centro de Geociencias, U.N.A.M. Campus

Juriquilla, Queretaro) and Harald Boehnel (Centro de Geociencias, U.N.A.M. Campus Juriquilla, Queretaro)

[158] *Cultural Implications of Late Holocene Droughts Reconstructed from High-Resolution Maar Lake Sediments in the Eastern Trans-Mexican Volcanic Belt*

Climatic change has been invoked to explain periods of cultural change in pre-Columbian Mesoamerica, but a detailed reconstruction of past climate only exists for a handful of sites. We present a reconstruction of 6,000 years of paleoclimatic change in the area surrounding Cantona, a major pre-Columbian city in the eastern Trans-Mexican Volcanic Belt (TMVB). Cantona was an important exporter of obsidian throughout Mesoamerica, and was occupied from 2,550 to 950 cal yr. B.P. Archaeologists have invoked drought to explain the site's abrupt abandonment, although few paleoclimatic records exist for this area. Our research team obtained a sediment core from the maar lake Aljojuca in 2007. This laminated, 12-meter sediment core features a basal date of 6,200 cal yr. B.P. Analyses of elemental geochemistry, pollen, magnetic susceptibility, and stable isotopes from authigenic carbonates reveal evidence of a climatic shift to drier conditions between 1,160 and 870 cal yr. B.P. Moreover, the intensity and duration of this dry period is unprecedented in the 6,000-year record. Our results not only establish the climatic context for Cantona's occupation, but also suggest broader coherence of mid to late Holocene climate variability in highland Mexico with that of the Yucatan and lowland Central America.

Bianco, Briana, Rani Alexander (New Mexico State University) and Gary Rayson (New Mexico State University)

[330] *Beekeeping Practices in Modern and Ancient Yucatán: Going from the Known to the Unknown*

According to historic documents and scarce archaeological data, apiculture with the stingless bee, *Melipona beecheii*, was significant in the diet, economy, tribute, medicine, and ritual practices of pre-Columbian Mesoamerica. Beekeeping practices have changed as a result of the introduction of other species of bees, as well as taxation and intensification of honey and wax production under the Spanish colonial regime. Today, the global economy has linked Yucatan's beekeeping cooperatives with the rest of the world. Current meliponiculture gives us a frame of reference for interpreting the archaeological record. This paper focuses on ethnoarchaeological studies carried out in Yucatán, Mexico. Soil samples collected from underneath and near beehives, as well as samples of honey and wax, were analyzed using Fourier Transform Infrared Spectroscopy in order to identify possible chemical signatures for soil near apiaries. The soil was also tested for pH and nitrate differences with the goal of developing new methods to identify apiaries in the archaeological record. Ethnoarchaeological and soil chemical studies inform conservation efforts aimed to prevent the disappearance of traditional beekeeping practices, the disappearance of the variety of plants necessary to produce honey, and the disappearance of stingless bees themselves.

Bicho, Nuno (Universidade do Algarve)

[201] *Rapid Cooling Events, Human Resilience, and Technological Change: The Case of the Portuguese Upper Paleolithic*

In Western Europe, the Upper Paleolithic is marked by clear regional and diachronic technological differences. Some of these are most likely related with human adaptations to the Late Pleistocene environmental shifts. In this paper we focus on the Rapid Climatic change events and analyze their impact on the main Upper Paleolithic cultural transitions in central and southern Portugal, based on the Adaptive Cycle and Repeated Replacement Models. Our data will also bring insights to issues such as human resilience across the cultural boundaries in technology, land use, and mobility.

[116] *Chair*

Bicho, Nuno [116] see Umbelino, Cláudia

Bies, Michael

[248] *A Preliminary Analysis of Several Dinwoody Tradition Sites.*

This presentation provides results of an analysis of images from several Dinwoody Tradition sites in Wyoming. The analysis is an attempt to understand the variations in patterns of images and production techniques within the tradition. The sites chosen are from a wide range of topographic and environmental settings.

Bigman, Daniel [13] see Jones, Travis

Bigman, Daniel**[196] A Comparison of Conductivity Survey Results from Three Cemeteries in Georgia**

This paper will compare the results from electromagnetic induction surveys at three cemeteries in Georgia: Ocmulgee National Monument Mound C (Funeral Mound) Bluff; Prior Family Cemetery; and McVicker Family Cemetery. Each of these is historic in date, but the use periods range and include Historic Creek, African American Slave (pre-Civil War), and Civil War respectively. Data quality and interpretability varied between cemeteries and each highlights limitations and successes of electromagnetic induction in locating unmarked burials and delineating cemetery boundaries. Comparing these conductivity results with other geophysical survey methods helps to identify conditions under which electromagnetic induction out-performed or under-performed GPR and magnetometry. Electromagnetic induction was a particularly useful technique in cemeteries with unpatterned distributions and measured the boundaries of individual burial pits. Alternatively, electromagnetic induction had more difficulty identifying individual grave shafts under conditions where burials were closely spaced and oriented in the same direction. Despite this limitation, electromagnetic induction aided in delineating cemetery boundaries, served as supportive data to other techniques, and helped reject anomalies as possible burials based on conflicting responses.

Bill, Cassandra (Middle American Research Institute), Ellen Bell (California State University, Stanislaus) and Marcello Canuto (M.A.R.I., Tulane University)**[128] Multiple Material Discourses on the Southeast Maya Frontier: Indexing Interaction and Identity through Material Culture in the El Paraíso Valley, Western Honduras**

As the archaeological study of frontiers and boundaries increasingly incorporates a focus on agency and an interactionist approach to identity, borders once thought impermeable and static have been re-conceptualized as fluid, contingent interaction zones, the physical and conceptual spaces within which networks of interaction are instantiated and identities and affiliations are negotiated. This is particularly true in the Classic period (A.D. 425-825) kingdom of Copan, Honduras, where residents living along the southeastern limits of the Maya area marshaled an extensive array of material culture to craft nuanced salient social identities and affiliations. In this paper we explore one such set of material discourses in the El Paraíso Valley, contrasting pottery found at Los Naranjitos, an elite residential group at the non-Maya center of El Cafetal, with the site's architectural style, construction techniques, and use of open space. While all other diacritics underscore local affiliations, the ceramic assemblage highlights regionally unprecedented access to some of Copan's finest pottery. We suggest that, for the purpose of negotiating affiliations, local El Cafetal residents engaged most actively with Copan elites through media they regarded as meaningful, remaining inured to the norms of foreign canons they deemed less relevant.

Bill, Cassandra [161] see Barrios, Edy

Billman, Brian (UNC & MOCHE, Inc)**[245] Fisherman, Farmer, Rich Man, Poor Man, Weaver, Parcialidad Chief: Household Archaeology at Cerro La Virgen, a Chimu Town within the Hinterland of Chan Chan**

Cerro La Virgen is a large coastal settlement located 6 km north of the urban core of Chan Chan, the capital of the Chimu Empire (A.D. 1000-1460). The settlement covers 19 ha and consisted of several hundred household compounds clustered along the Great Northern road to Chan Chan. Although one of the largest and best preserved Chimu settlements in the Moche Valley, it is threatened with destruction by illegal quarrying. We report the results of emergency excavations and our attempts to halt the destruction. Over 450 m² of three household compounds were excavated as well as deep stratigraphic units in middens. Preliminary results indicate a long period of continuous occupation during the Chimu and Inka periods by a mixed community of fishing, farming, and crafting families. Analysis of household middens reveals the economic strategies pursued by households as well as the occurrence of El Niño events during the occupation. Surface mapping indicates the range of household sizes and types during the last occupation of the site. Settlement pattern analysis reveals it was the largest settlement in the rural sustaining area of Chan Chan. We critically examine the role that the community played in the provisioning of Chan Chan.

[59] Discussant

Billman, Brian [104] see Hudson, Jean

Billo, Evelyn [156] see Bates, Lennon

Binetti, Katie [209] see Ferraro, Joseph

Binning, Jeanne (California Department of Transportation), Alan P. Garfinkel (AECom), Jennifer J. Thatcher (Northwest Research Obsidian Studies Laboratory), Craig E. Skinner (Northwest Research Obsidian Studies Laboratory) and Brian Wickstrom (California Department of Transportation)

[287] Obsidian Use in the San Joaquin Valley during the Holocene

Obsidian acquisition, reduction, spatial distribution, and use are all aspects of obsidian research that have been informed by archaeometric techniques and methods. The original source and age of breakage of obsidian artifacts can be determined with some assurance. The raw material for the obsidian artifacts found at sites in the San Joaquin Valley of California originated from sources on the east side of the Sierra Nevada Mountain Range. One particular site, CA-KER-5582, has obsidian artifacts from three major obsidian sources (Casa Diablo, Queen, and Coso) and has evidence for over 9000 years of human activity. Integrating data on source, technology, and time of reduction from CA-KER-5582 addresses site history, formation processes, and stratigraphic integrity. Moreover, in conjunction with some technological aspects of the obsidian debitage, these data provide insight into the changing economic behaviors of hunting and gathering groups in Central California during the Holocene.

Birch, Jennifer [34] see Brannan, Stefan

Birch, Jennifer (University of Georgia)

[145] Complicated Communities: How Larger Villages Created Complex Societies in Northern Iroquoia
The term “complex” is loaded with a particular kind of meaning in archaeological scholarship. In this paper I strip the term back to its core meanings to investigate cultural phenomena which are interrelated, connected, and associated. In sum: complicated. Between A.D. 1450 and 1600 numerous ancestral Wendat communities rapidly aggregated into large, densely populated settlements. Over the course of two to three generations these communities underwent processes of integration which allowed them to function and persist as large co-residential populations. This paper uses detailed analyses of settlement patterns and material culture to interrogate the complex nature of social, political, and economic life in large Iroquoian village-communities. At one scale it explores the interrelated nature of decision-making, procuring, and producing the necessities of life, and the tangled web of social and kin-based relationships that underpinned those activities. At another scale, it examines how these increasingly complex communities related to processes of social differentiation, alliance-building, and geopolitical realignment which set the stage for the formation of the political confederacies that characterized the contact era.

Birch, Dylan (Art History Society - CSU Los Angeles)

[293] Tula 2013: Reexamining the Palacio Quemado through Its Infrastructure

The Proyecto de Investigación, Conservación y Mantenimiento para la Zona Arqueológica de Tula 2013, directed by Dr. Robert Cobean focused on the excavation of the Palacio Quemado. Today, the three major ceremonial structures exposed are the Palacio Quemado, Pyramid B and Pyramid C; these buildings form an L-shape and face the Adoratorio that is situated in the center of the plaza. The architectural layout of Tula Grande shares symbolic parallels with Teotihuacan in the Valley of Mexico. The Palacio Quemado served as a ritual centerpiece of Tula’s main plaza. This colossal structure contains three adjacent chambers with similar interior features: a series of stone columns, a compluvium exposing the heavens through the roof architecture, and a sunken patio that could collect rainwater, complete with a drainage system from the Pre-Columbian period. The summer 2013 excavations reopened the work of Jorge R. Acosta at this palace seventy years prior, after a small team of graduate students from Zacatecas, Puebla and the United States unearthed a system of drainage canals that were buried less than 2 m beneath this structure. The following presentation utilizes the summer 2013 Tula excavations to illustrate the ritual identity of the Palacio Quemado in greater detail.

Bird, Douglas (Stanford University) and Rebecca Bliege Bird (Stanford University)

[16] Constructing Martu Country: Mobility and Trophic Facilitation in Australia’s Western Desert
Strategies of travel and land use among contemporary Martu foragers are shaped at multiple scales of

social and economic obligation. These obligations in turn shape ecosystem function and species composition in Western Desert landscapes. Here we describe the contemporary material and political contexts of Martu mobility, and explore factors that influence their ecological expression. At broad temporal and spatial scales, commitments to maintain political and familial networks require extensive travel and encourage both transient residence and material egalitarianism. At more local scales, high residential mobility increases the costs of storage and encourages a reliance on more immediate return resource use and extensive food sharing. For Martu, a more immediate return economy is underwritten by subsistence and logistical mobility structured by patch mosaic burning. These burning practices fundamentally modify habitats and species composition, and have broad implications for understanding the evolution of trophic relationships in the Western Desert.

Bird, M. (Midwest Archaeological Research Services, Inc.)

- [155] *A "Public Burial Place, a Field of Peace, a Pleasant Place of Resort": The Forgotten circa 1842-1886 Peoria Public Grave Yard (11-P-835) in Peoria, Illinois*

MARS, Inc. completed Phase III data recovery at Peoria Public Grave Yard in 2009. Purchased in 1839 and platted in blocks-lots in 1842, the city set aside burial "ranges" for "poor persons and strangers." The city ceased interments in 1886, removed all markers, and subsequently established Lincoln Park. Descendants voluntarily vacated some graves (1857-1902). An addition to the 1910 Carnegie library, which occupies the former cemetery grounds, was planned in 2009 and has since been built. Field investigations exposed 304 features but only excavated the 86 within the footprint of the library addition. The features appear to coincide with the lots as platted and suggest grouped family interments. MARS, Inc. excavated the remains of 12 men, 18 women, and 58 juveniles. The demographic profile illustrating age at death highlights a high infant mortality and suggests a health risk to women during their child-bearing years. Identified coffin shape included primarily hexagonal with fewer rectangular, octagonal, septagonal, anthropomorphic, and tapered. The simple nature of some of the infants' coffins suggests that those burial containers may have been homemade; the others were manufactured locally or mass-produced. Nearly half the features included outer boxes, randomly distributed and apparently unrelated to unstable soils.

Birmingham, Bob (University of Wisconsin Waukesha)

- [82] *Ancient Effigy Mound Landscapes of North America*

Between ca. A.D. 700 and 1100, Late Woodland people in the Upper Midwest of North America used the topography and other features of the natural landscape to create vast ceremonial landscapes consisting of thousands of earthen mounds sculpted into animals and animal spirits that mirrored their belief and clan-based social structures, similar to the beliefs and social systems of more recent Indian people, and that served an important role in mortuary ritual. It is proposed that these effigy mounds were living, ceremonial landscapes in the minds of the makers where ancestral animals and the supernatural were ritually brought back to life for protection, assistance, and maintenance of identity at places where the spirits are best evoked in a continuous cycle of death and rebirth of the earth and its people. This poster graphically demonstrates how three-dimensional maps of ancient cosmology were created with effigy mound landscapes in different parts of the region that vary in natural landscapes and with the nature of the animal and spirits that are imbued in these landscapes.

Bishop, Katelyn [42] see Holeman, Abigail

Bishop, Ronald (Smithsonian Institution)

- [128] *Frontiers and Boundaries: A View from the Western Maya Lowlands*

Frontiers or boundaries, aside from those imposed by unchanging physiographic structures, are commonly used archaeological constructs. They represent "snapshots" of societal structures cognitively employed to suggest some heuristic division. This snapshot is invigorated by adding the term "dynamic." Complexity exists for not all aspects of a polity reflect the boundary or frontier construct in the same way or at the same time, as may erroneously be implied by reference to a material "complex" or inferred from horizontal lines on a chronology chart. In this brief paper, I call attention to how ceramic materials from the Late Classic Maya site of Palenque are being used to infer inter polity boundaries and how they varied according to political and social changes.

Bishop, Andrew (Arizona State University) and Kim Hill (Arizona State University)

[132] Firearms and Return Rates: A Reanalysis of the Proposed Relationship between Body Size and Prey Rank

The relationship between body size and energetic return rate for prey has been critically analyzed by anthropologists and archaeologists for decades. The ability to determine energetic return rates and prey ranks is essential to the use of the prey-choice model, however, these data can only be accurately obtained through direct observation. The idea that relative body size could serve as a proxy measurement for relative prey ranks has been a critical component of the application of optimal-foraging and prey-choice models to the archaeological record. This paper analyzes the validity and strength of the proposed positive correlation between body size and prey rank in modern ethnographic context, using return rate data collected through direct observation. The impact of firearms on diet breadth and prey rank is examined, and the relationship between prey size and prey rank is reconsidered in contexts which may better approximate ancestral human conditions. Alternative explanations are offered for the patterned shift in faunal assemblages from large bodied to small bodied game which appeal to life history and importance to diet rather than prey rank.

Bishop, Katelyn (University of California, Los Angeles)**[140] Early Formative Period Bird Exploitation at Paso de la Amada, Soconusco, Mexico**

Bird remains form important parts of zooarchaeological assemblages that are sometimes overlooked in studies of emergent complexity. While they can answer questions regarding consumption, bird assemblages can also help reconstruct the use of animals for ritual purposes. This study examines Early Formative period (1800-1000 B.C.) bird exploitation and use at the site of Paso de la Amada in the Soconusco region of southern Mexico. The site exhibits evidence of early participation in what may be considered a pan-Mesoamerican set of ritual beliefs. It is thus a unique location to explore the hypothesis that, rather than simply factoring as components of a subsistence economy, birds and their byproducts contributed to ritual activities and played an increasing role in the accumulation of wealth. This study examines factors such as plumage color, locality and habitat of species, species diet, elemental selection, bone modification, intra-site distribution, and ritual deposition to ascertain for what non-dietary purposes the inhabitants of Paso de la Amada were hunting birds.

Biskowski, Martin (California State University, Sacramento)**[63] Staple Food Preparation at Teotihuacan**

The rapid growth of Teotihuacan created subsistence problems common to urban systems. But Teotihuacan first encountered these problems without well-developed institutions and traditions of urban living, and the city consequently lacked access to solutions to subsistence problems which became common in later centuries. Tracking how Teotihuacanos solved these problems is fundamental to understanding life in the early city. A variety of evidence from grinding tools and other food preparation tools indicates a diverse range of subsistence strategies were employed within the early city. Many of these strategies apparently were organized around small social units whose economic activities bridged the gap between the capabilities of Teotihuacan's nascent economic institutions and the subsistence needs of its inhabitants.

Bisset, Thad [81] see DeMuth, R. Carl

Bissett, Thaddeus (University of Tennessee, Knoxville)**[216] Identifying Technological Variation between Early Mid-Holocene Social Groups in the Lower Tennessee Valley: The Use of Geometric Morphometrics in Projectile Point Shape Analysis**

The Eva and Big Sandy sites are two of the most well-known shell bearing sites in the midcontinental US, but their respective histories are relatively poorly understood. Recently obtained radiocarbon dates from both sites indicate that they were contemporaneously occupied during the early centuries of the Mid-Holocene period between 8,900 and 8,200 cal yr B.P., and their early components are among the oldest dated Archaic shell-bearing deposits in the interior eastern United States. The early deposits at the two sites contained large numbers of Eva points, a large and highly recognizable chipped stone projectile point form. Based on the results of geometric morphometric analysis, a statistical technique for shape analysis capable of assessing minute, patterned morphological variation in groups of similarly-shaped objects, I argue that minute, patterned variation in the forms of Evas from the two sites suggests that Eva and Big Sandy were occupied during their initial periods of use by members of distinct social groups who, while not of wholly separate cultural traditions, nevertheless were different enough to have developed detectable variation in their manufacturing sequences.

Bisson, Michael (McGill University)**[228] Teaching Complexity and Ambiguity in an Introductory World Prehistory Course**

Teaching an introductory-level archaeology and world prehistory course at the university level is challenging because the instructor must balance the need for comprehensive coverage against the risk of superficiality that would impede student understanding of the discipline. This paper is a personal account of the use of an interactive role-playing laboratory exercise to teach archaeological field and laboratory methods, in the context of hypothesis testing. The interaction between theory and research design and the potential influence of the archaeologists' intellectual history on interpretation are strongly emphasized. The topics of the exercise are the "Neanderthal problem" and the origins of complex cognition, interrelated issues which are subject to currently unresolved debate. This exercise has demonstrated that first-year students are capable of understanding and manipulating complex and occasionally conflicting data to produce an effective scientific argument. Although this is a successful pedagogical technique, the labor cost to the instructor and teaching assistants is very high.

[228] Chair**Bjerregaard, Lena (Ethnologisches Museum, Berlin)****[336] The Diversity of Environments Preserving Non-Excavated Textiles in South America and in Europe.**

The best preserved, old, archaeological textiles are found in the dry deserts of Peru and Egypt. But the highland rainforest of Peru, the waterlogged bogs of Scandinavia, and Swiss lakes also contain well preserved textiles. Fragments of textiles or textile imprints are also sometimes preserved on metal objects, where all the rest of the textiles are gone. Different environments preserve different textiles. Funerary rites in some cases help the preservation of the textiles, and dyeing processes applied to the textiles during their creation can either preserve or damage the fibers. With examples from archaeological textiles excavated in South America and Europe this paper tries to define the local environments that will preserve some and destroy other fibers, and why and how these conditions interact with the different kinds of textiles.

Black, Kandy**[46] Redefining Tewa Basin Chronology in the Classic Period through the Examination of Tewa Biscuit Wares**

The Protohistoric-period Tewa culture history of the northern Rio Grande region, and specifically the Rio Chama watershed, is poorly understood. Although it is generally known that ancestral Tewa people depopulated their highland settlements and coalesced in Historic-period villages along the Rio Grande in the sixteenth century, the timing and catalysts of this move are debated, particularly pertaining to the effects of Spanish colonization and climate change. This project attempts to refine the typology of ancestral Tewa biscuit ware pottery to better date Late Classic period (A.D. 1500–1598) settlement and population movement in the Tewa homeland. I suggest that the current biscuit ware typology (Abiquiu Black-on-gray and Bandelier Black-on-gray) is chronologically too broad and does not capture the stylistic, technological, and temporal variability practiced by Tewa potters. I investigate the possibility of a third previously proposed and technologically discreet type (Cuyamungue Black-on-tan) that dates to the sixteenth century. My investigation will combine an attribute analysis (form, slip, pigment, design execution, paste, and temper) with a technological study (investigating firing dehydration, oxidation, and vitrification) to examine variation in biscuit ware pottery from the site of Sapawe'unige and help to resolve the history of a turbulent time in Tewa history.

Black, Valda (CUNY Hunter College) and Danielle Kurin (University of California Santa Barbara)**[93] A Morphometric Approach to Characterizing Heterogeneity in Cranial Modification in the South-Central Peruvian Highlands**

An enduring debate in Andean bioarchaeology concerns the nature and meaning of intentional cranial vault modification (CVM). Traditionally, crania were characterized based on the modification technique used (boards or circumferential bindings) and the angle of the back of the head (erect or oblique). However, broad categories obscure the variability of head-shape within each group. Here, we attempt to characterize CVM variation quantitatively using 3D geometric morphometric techniques. Variation in CVM may speak to a type of ascribed identity that, in the Peruvian Andahuaylas region ca. AD 1150–1250, was associated with hardships including violence and disease. Eighty well-contextualized "normal" and "CVM" crania excavated at the Andahuayan Chanka polity site of Cachi were assessed for patterns

of variation. The crania were scanned, and 12-18 landmarks were collected on 3D images to capture various aspects of cranial vault shape. The crania were then aligned using Generalized Procrustes Analysis, and Principal Components analyses were subsequently employed to highlight meaningful differences across crania for different landmark sets. The resulting variation among CVM crania along the principal components axes suggests a large amount of heterogeneity in circumferential CVM and points to a moderately standardized practice; head shape may signal a lineage-based or "ethnic-like" social identity.

Black, Rachel and Hugh Matternes (New South Associates, Inc.)

[155] *When Did the Sun Go Down? Placing the Avondale Burial Place in Time.*

Folk Cemeteries frequently are a challenge to assign to a place in time. Historical and family records for the Avondale Burial Place were limited and could only provide general temporal inferences. Surface decorations did not record death dates and most could not be associated with specific graves. Artifacts from within the graves were examined for temporal data. As a whole the cemetery could be dated to between 1820 and about 1930 within individual graves expressing narrower deposition dates. Conservative approaches to burial traditions by the community translated into material forms that exhibited long use periods; many graves therefore possessed broad deposition dates. The spatial distribution of dated graves in the cemetery reflected a pattern where later period graves were placed on the periphery of a core composed of potentially earlier deposited graves. Family clusters and pre-Emancipation era components of the cemetery were visible in the cemetery's temporal data.

Black, Stephen [199] see Koenig, Charles

Black, Stephen (Texas State University, San Marcos)

[199] *Documenting, Sampling, and Conserving Complexly Stratified Rockshelter Deposits*

In our ongoing investigation of Eagle Cave, a massive dry rockshelter in the Lower Pecos Canyonlands of southwest Texas, we are adapting new recording and sampling methods to tackle discontinuous, complexly stratified deposits over 3 m thick spanning over 9,000 years. The 1930s excavations at Eagle Cave by the Witte Museum, and 1960s excavations by University of Texas resulted in a long deep trench through the center of the site. Left open, the trench walls have collapsed, leaving small exposures of intact stratification in the upper deposits yet protecting the lower deposits. The focus of the earlier work was on recovering perishable artifacts and painted pebbles for museum display (1930s) and on establishing projectile point chronology (1960s) using gross stratigraphic zones. We aim to: 1) expose and stabilize intact deposits in discontinuous sections across the site; 2) use high-resolution Structure from Motion (SfM) 3D models to document small-scale vertical excavations following natural strata, some of which are quite thin, intermittent, and ephemerally exposed; 3) sample each layer to develop a fine-grained and tightly dated multidimensional record of rockshelter formation and use; and 4) backfill the trench and potholes to conserve the extant deposits for future generations.

[199] *Chair*

Blackmore, Chelsea (University of California, Santa Cruz), Sarah Peelo (Albion Environmental) and Lauren Wysham (University of California, Santa Cruz)

[119] *"Empty" Spaces and Indigenous Visibility: Preliminary Research at Mission San Antonio de Padua*

Although scholarly investigations into European colonization have surged in the last 20 years, research within California missions continues to be framed within the binary of colonizer/colonized. As the fundamental axis of identification, this dichotomy emphasizes the effects of European contact while obscuring the far more complicated conditions that colonial encounters produced. This has been partly exacerbated by archaeologists' overemphasis of adobe architecture and interior spaces. While these kinds of excavations can provide insight into indigenous practice, they represent a small percentage of the larger mission community and one under the close scrutiny of priests and soldiers. To countervail this, preliminary research at Mission San Antonio de Padua (California) has employed a landscape approach to examine how exterior spaces were utilized and consider what roles these "empty" spaces played in indigenous identity formation. This paper presents preliminary artifact and soil analyses of materials collected from posthole transects dug in the summers of 2011 and 2012. By studying the experiences of those who lived outside of the church's walls, we are trying to open up traditional frameworks that have defined both identity and the spaces in which it is constructed in rigid and dichotomous ways.

Blair, Elliot (UC Berkeley)**[243] Constellations of Practice at Mission Santa Catalina de Guale**

Situated learning theory has recently emerged in archaeology as a powerful way of exploring socio-material relationships. Among its many strengths is that by focusing on the “community of practice” as an analytic unit one can explore “groupness” without resorting to a priori categories of social identity. In this paper I embrace this benefit to explore the social landscape of Mission Santa Catalina de Guale, a 17th-century Spanish mission community (St. Catherines Island, GA). I employ two different datasets to explore past communities of practice: locally produced ceramics and glass trade beads. I explore local ceramic production communities of practice, examining how these operate at the neighborhood and household scale. Using glass beads recovered from the mission cemetery, I discuss the multiple communities of practice involved in their manufacture and distribution during the 17th century. By considering how beads that derive from different manufacturing communities are distributed, circulating within “local” communities of consumption, I reassemble social networks operating at a different scale than that of the ceramic production communities. I conclude by weaving together these multiple communities of practice from different material arenas, operating across practices of both production and consumption and at both a global and a local geo-spatial scale.

Blake, Elizabeth (McDonald Institute for Archaeological Research, University of Cambridge) and Ian Cross (Professor of Music and Science, Faculty of Music, University of Cambridge)**[122] Sound and Music in Archaeological Contexts: The Lithoacoustics Project**

Sound is an important part of the human communicative toolkit. It provides information about the environments in which people live, and its production, perception, and socially ascribed meanings play a role in how people interact with each other. However, approaches to studying sound in the past remain underdeveloped in archaeology. In part this is due to the fact that there is no single discipline to which archaeologists can refer for information about sound and human behavior. There has also been a tendency to interpret the social values of sound in terms that are based upon those typically associated with urban and industrialized societies, and to focus on sound tools, or musical instruments, that are similar to well-known contemporary instrument types. These presumptions have tended to underpin the exploration and evaluation of social meaning in sound and in sound tools, and they are likely to have impeded the identification and interpretation of aurally significant artifacts. This paper presents the Lithoacoustics Project as a case study with scope for investigating and interpreting sound and sound tools in archaeological contexts by drawing upon multi-disciplinary and experimental approaches in the light of ethological, acoustical, psychological and anthropological evidence.

Blakeslee, Donald (Wichita State University)**[208] An Experiment in Point Classification**

This presentation reports the design and results of an experiment in projectile point classification. The technique used is called stacked outlines, which allow an analyst to see both the modal form(s) and range of variation within a type. They are also useful for documenting the similarities and differences between types. I applied the technique to a sample of 500 contracting stem points, which are notorious for being difficult to classify. The results of the experiment show that 1) the points are representative of discrete types and 2) that types are consistent across large spatial distances, and that there is no significant variation through time within the types.

Blanton, Dennis (James Madison University)**[276] Explaining Archaeological Variability among Sites of Early, Native-Spanish Encounter in the Southeast**

Interpretation of earliest Native-Spanish encounters in the Southeast is complicated by tremendous variability in many aspects of candidate sites including methods and contexts of recovery, and assemblage diversity and richness. The nature of that variability will be described, means of accommodating it outlined, and competing explanations of the behaviors that produced it evaluated. Beyond recovery methods, unique circumstances of initial European exploration were arguably the most prominent factor behind the pattern. A baseline for comparison is the Glass Site in south-central Georgia, a small, late prehistoric community that has recently yielded robust evidence of Native-Spanish interaction early in the sixteenth century.

Blecha, Erika (University of Montana), Mary Bobbitt (University of Montana), Bethany Hauer (University of Montana), Linwood Tallbull (Northern Cheyenne Tribe) and Kelly Dixon (University of Montana)

[78] *Examining Landscape Transformations at Oévemanâhénó: The Use of Modern and Traditional Methods at an Early Reservation-Era Community along the Tongue River on the Northern Cheyenne Reservation*

The Northern Cheyenne Reservation, located along the Tongue River in eastern Montana, was established in the early 20th century, at this time Northern Cheyenne were expected to move onto reservation land and begin the enculturation process into Euro-American society. To expedite this process, the Bureau of Indian Affairs (BIA) developed schools, agricultural facilities, churches and ranching opportunities. During July 2013, in partnership with the Institute on Ecosystems, Chief Dull Knife College, the Northern Cheyenne Tribe, and Montana State University-Billings City College, a University of Montana field crew traveled to Oévemanâhénó (Birney Day School Village, Montana, 24RB1064) to document, what is known amongst the Northern Cheyenne Tribe, as the most traditional community on the Northern Cheyenne Reservation. Methods such as archaeological survey, 3D digital laser scanning, photogrammetry, analysis of 1924 BIA records and ethnography were used to reconstruct the cabin locations and the landscape of historic Oévemanâhénó. This fieldwork is drawing attention to the ways in which colonialism altered—and continues to alter—the traditional, river-dependent economy and cultural landscape of this early-reservation-era community. It is through this lens that we can examine relatively sudden and dramatic landscape transformations yielding relevant information for land managers, researchers, and the general public.

Bleed, Peter [71] see Barton, C. Michael

Blegen, Nick [26] see Tryon, Christian

Bliege Bird, Rebecca [16] see Bird, Douglas

Blinman, Eric (NM Archaeology)

[156] *The Archaeomagnetic Dating Legacy of Dr. Robert L. DuBois*

Dr. Robert L. DuBois was the father of archaeomagnetic dating in the western hemisphere. A geophysicist at the University of Oklahoma, his interest in the Holocene geomagnetic field included the abundant burned earths of archaeological sites. Through the 1960s and 1970s he pursued archaeomagnetism, motivated both by his geophysical goals and archaeologists' hopes for an effective dating tool. Two student archaeologists, Daniel Wolfman and Jeff Eighmy, assisted and eventually carried on DuBois' legacy by establishing their own labs. As archaeomagnetic dating gained momentum independent of his involvement, including the work of geophysicist Rob Sternberg, DuBois became isolated from most of the archaeological community, including his students. In retirement, DuBois completed a catalog of the archaeomagnetic work he started, but he never bridged the gulf that had developed. DuBois died in 2008, and his death went largely unregistered. He left behind literally tons of well-documented samples and records, with tremendous potential for research in the history of archaeology, archaeomagnetic dating, and Holocene geomagnetism. But his intellectual estate was caught in a complicated web of relationships. Only through the lucky coincidence of accident and intent was DuBois' archive rescued, literally weeks before the start of its progression to the Oklahoma City landfill.

Blitz, John (University of Alabama)

[281] *Skeuomorphs and the Construction of Object Value in the Ancient Eastern Woodlands*

In this paper I examine the role of skeuomorphs in the construction of value in ancient societies, with particular attention to examples from the U.S. Eastern Woodlands. Skeuomorphs are copies of the design elements of a prototype artifact, replicated in a different material medium in the derivative artifact. For example, a ceramic vessel that mimics the shape and surface texture of a basket is a skeuomorph. Because skeuomorphs always reference prototypes, various meanings associated with the prototype can be transferred to the derivative object. I propose that skeuomorphs endow things with the kind of value that Papadopoulos and Urton define as "object value," which permits the object to be evaluated along a scale of worthiness relative to other objects. Skeuomorphs create object value by the contrast between prototype and derivative copy; changing the composition material creates a new variant of a familiar

object by altering color, luster, texture, and other physical properties. Skeuomorphs elicit revaluation of objects because a rank order of object value has been established. The scale of value created by skeuomorphs can also be extended from object to person by possession of objects along the scale of value to convey prestige distinctions through connotation and association.

Blom, Deborah (University of Vermont) and Nicole Couture (McGill University)

[25] *Tiwanaku's Talking Heads: Unpacking the Meaning of Human Heads through Bioarchaeological and Archaeological Data*

This paper draws together bioarchaeological and archaeological datasets to address the meaning of human heads in ancient Tiwanaku society ca. 500 to 1150 A.D. in the south central Andes. A bioarchaeological approach reveals that group or community identity was permanently embodied on the head during first years of life and this diacritical feature was perhaps involved in boundary maintenance between different groups, even while people moved between regions. Molding the child's head appears to be an important element in assigning personhood to Tiwanaku individuals. The ontological primacy of the head as the locus of the embodied person suggested by the bioarchaeological data can also be seen in Tiwanaku art and iconography, where depictions of human figures focus almost exclusively on heads rather than faces or entire bodies. In this paper, we ask what the combined datasets on the meaning of heads in Tiwanaku society tell us about culturally specific notions of personhood, death, and social reproduction.

[64] *Discussant*

Blom, Deborah [203] see Couture, Nicole

Blomster, Jeffrey (George Washington University)

[83] *Discussant*

Blong, John (Texas A&M University)

[23] *Human Adaptation to High-Latitude Upland Landscapes in the Central Alaska Range*

The central Alaska Range plays an important role in understanding prehistoric human adaptation to high-latitude upland landscapes. The goal of this research is to explain the timing, environmental context, and nature of initial human use of the central Alaska Range, and to explore how the environment and use of upland landscapes changed throughout prehistory from earliest use through the late Holocene. The spread of hunter-gatherers into upland landscapes in eastern Beringia during the late Pleistocene and Holocene required unique behavioral and corresponding lithic technological adjustments. To investigate these changes, we tested 13 previously unrecorded archaeological sites in the upper Susitna River basin in the central Alaska Range. We recovered lithic, faunal and geoarchaeological data, and collected peat cores from four peat bogs for palynological and macrobotanical analysis. These archaeological, geomorphological, and paleoecological data are used to explore variation in lithic technology and subsistence activities, and how these relate to environmental shifts and upland land use.

Bloszies, Christopher [186] see Wright, David

Boaretto, Elisabetta [84] see Kaufman, Daniel

Boatwright, Mark [77] see Slaughter, Mark

Bobbitt, Mary [78] see Blecha, Erika

Bobbitt, Mary (University of Montana), Bethany Hauer (University of Montana), Ayme Swartz (University of Montana), Erika Blecha (University of Montana) and Kelly J. Dixon (University of Montana)

[78] *Landscape Reconstruction of the Fort Missoula Historic Dump and Grant Kohrs Ranch National Park*

Archaeological case studies from both prehistoric and historic periods along the Clark Fork and Bitterroot Rivers can be used as microcosms for understanding questions related to landscape transformations and climate change throughout the arid American West and beyond. This research will work to integrate

historic General Land Office (GLO) Surveys, archaeological site records, paleoecological data, Traditional Ecological Knowledge (TEK), modern ecological data, and modern plant surveys to develop environmental reconstructions for the area landscapes encompassing the Fort Missoula Historic Dump and Grant Kohrs Historic Ranch. Multiple lines of proxy data recovered during field work during the summer 2013 field season and historical research will provide a backdrop and temporal scale for examining coupled natural and human ecosystems and will explore the ways in which anthropogenic alterations have influenced ecosystem structure, function, and transformations in the region.

Bocci, Marco [249] see De Francesco, Anna Maria

Bocinsky, R. Kyle (Washington State University)

[289] *A General Spatial Reconstruction of Potential Maize Paleoproductivity, AD 600–2000*

In the decades since the pioneering maize paleoproductivity work of Burns and Van West, which formed the foundation of the VEP I paleoproductivity model, archaeologists have learned a lot about maize agronomy. Maize has specific requirements for number of frost-free days and accumulated heat. Precipitation is not only essential for growth and maturation, but also for nutrient fixation and de-alkalinization. Ancestral varieties of maize vary in their temperature and precipitation requirements and these constraints vary markedly across the Southwest landscape and through time. Ancestral Pueblo farmers unquestionably had a nuanced understanding of these demands and developed generally successful strategies to meet them. Here, we present a new model for potential maize productivity that can be applied to any study region. We use local and regional tree-ring and pollen records to generate spatial retrodictions of growing-season temperature and winter-summer precipitation across the two VEP study areas. Our reconstruction accounts for both high- and low-frequency climate regimes, as well as for highly local topographical effects such as cold-air drainage. We then transform these retrodictions into potential paleoproductivity for farming technologies ranging from the rain-fed agriculture of the NSJ region to the diverse runoff- and floodplain-irrigation strategies employed in the NRG.

[229] *Discussant*

Bocinsky, R. Kyle [259] see Conway, Meagan

Boehm, Andrew (Southern Methodist University) and Richard Anderson (Southern Methodist University)

[208] *Empty Units Are Filled with Data: An Example of Investigating Site Formation Processes*

Utilizing non-cultural data to inform on cultural aspects of archaeological sites is not new, especially in sites with complex site formation histories or sites under intense scrutiny. However, we suggest that such rigorous research methodologies should be applied more often. Non-cultural data can be invaluable for independent analysis of a site. To illustrate the benefits of such research programs, we present data from non-cultural excavations at the Mountaineer site, a high elevation Folsom encampment. The Mountaineer site was suggested to contain multiple Folsom-aged structures with varied activity areas. To test whether the structures were, in fact, structures, two non-cultural excavations were carried out. Using data from the non-cultural areas, the research team was able to demonstrate that the structures were culturally derived. Additionally, the non-cultural data also revealed information on the bone, daub, charcoal, and opal CT assemblages from the site.

Boehnel, Harald [158] see Bhattacharya, Tripti

Bogaard, Amy [84] see Wolfhagen, Jesse

Boileau, Arianne (University of Florida)

[227] *Maya Animal Exploitation during the Middle Preclassic Period: Prey Choice, Habitat Use and Transport Decisions at Pacbitun, Belize*

This paper examines animal resource exploitation during the Middle Preclassic period (900–300 B.C.) at the ancient Maya site of Pacbitun, Belize. Diet breadth, habitat use, and carcass transport patterns are interpreted using the central place forager prey choice model as a framework. White-tailed deer appear to have been the prey most frequently taken by the Maya of Pacbitun, followed by other lower-ranked artiodactyls. A variety of less profitable prey were sometimes included in the diet. The analysis suggests the procurement of resources from terrestrial habitats at short distances from the site, and the occasional

use of exotic resources. Complete carcasses of large game appear to have been frequently transported to the site, where they were exploited for their meat and marrow. Comparisons with other Middle Preclassic faunal assemblages indicate significant differences in terms of taxonomic composition.

Boisvert, Richard (NH Div. of Historical Resources) and Thomas Williams (Texas State University)

[133] *Sourcing Rhyolites in New Hampshire Paleoindian Sites with Greater Precision Using a Portable X-Ray Fluorescence Device*

The availability of portable X-ray fluorescence (XRF) devices, such as the Bruker Tracer III-SD XRF spectrometer, has made characterization of stone tool sources such as obsidians, substantially more effective and efficient. Two sources of visually similar yet geologically distinct rhyolites have been intensely sampled and shown to be geochemically distinct according to a suite of trace elements. These are the Mt. Jasper lithic source in Berlin, NH and the rhyolites found in the glacial till of Jefferson NH, 30 kilometers distant. Analysis using this technology of tools and debitage from Early and Middle Paleoindian sites in Randolph, Jefferson and other sites has revised our approach to visual identification of rhyolite varieties and revealed unexpected distributions and patterns of usage.

Boling, Mark (Southwestern Energy Company)

[98] *Discussant*

Bollwerk, Elizabeth (University of Virginia)

[152] *Open(ing) Archaeology: A Model for Digital Engagement*

This paper begins with a brief introduction of the Open Authority and Co-Creation models and explores their role in altering and revolutionizing archaeological practice. The focus then shifts to a discussion of engagement methods that archaeologists are currently utilizing on the web, including blogging, crowdfunding, and social media and evaluates their success as co-creative projects. These methods are compared with co-creative methods that are being utilized by other scientific disciplines, in particular, crowdsourcing. This paper concludes by considering 1) the obstacles and challenges facing the implementation of archaeological co-creative projects that are web based and 2) best practices for digital co-creative engagement identified from successful projects.

[152] *Chair*

Bolnick, Deborah, Elizabeth Pintar (Austin Community College), Jorge Martínez (ISES-Universidad Nacional de Tucuman), Marcela Diaz-Matallana (Pontificia Universidad Javeriana) and Jaime Mata-Míguez (University of Texas at Austin)

[93] *Ancient DNA from Early Human Burials in the Argentine Puna: Insights into Burial Practices and South American Population History*

Although the earliest archaeological sites in South America date to the late Pleistocene, little is known about the genetic makeup or mortuary behavior of early hunter-gatherer populations in South America. To help shed light on the burial practices of these hunter-gatherers, as well as the early population history of this region, we extracted ancient DNA from the remains of 13 individuals excavated from early and mid-Holocene archaeological sites in the southern Argentine Puna. These remains are from four locations in the Antofagasta de la Sierra region of northwestern Argentina, and date between 9200 and 3200 YBP. We sequenced 372 base pairs of the first hypervariable region of the mitochondrial DNA to define maternally-inherited genetic lineages, and analyzed a length dimorphism in the amelogenin gene to investigate the sex of each individual. We found that maternally related individuals were sometimes buried together, and several individuals exhibited a mtDNA lineage that is rare in indigenous American populations today. Our results shed light on the early population history of this region and help elucidate the genetic affinities between the prehistoric inhabitants of the Puna and other regions in South America.

[93] *Chair*

Bolnick, Deborah [291] see Mata-Miguez, Jaime

Bond, Sarah [64] see Killgrove, Kristina

Bongers, Jacob [105] see Jones, Terrah

Bongers, Jacob (UCLA), Ben Nigra (UCLA) and Terrah Jones (UCLA)

[146] *The Chincha Mortuary Tradition in the Upper Chincha Valley, Peru*

The upper Chincha Valley, located on the Peruvian south coast, is marked by chullpas, above-ground funerary towers, likely dating to the Late Intermediate Period (A.D. 1100-1476) and Late Horizon (A.D. 1476-1532). Previous research interprets chullpas within theoretical frameworks built around social organization, ancestral veneration, and territoriality. These investigations largely concentrate on chullpas constructed in the highlands of Peru, Bolivia, and Chile. Here, we present the mortuary data collected during the 2013 field season. We report a high degree of chullpa construction (over 500 tombs) with associated patios and plazas and several mortuary finds including burned human remains and reed posts with human vertebrae. We preliminarily define a consistent mortuary tradition in the upper Chincha Valley characterized by the pervasive construction of chullpas and discuss the implications for secondary burial activity and ancestral veneration rituals.

Boomgarden, Shannon (University of Utah)

[317] *Experimental Maize Farming in Range Creek Canyon, Utah: Year One*

It is clear from the archaeological and isotopic evidence found in Range Creek Canyon, Utah, that maize agriculture was a significant part of the Fremont diet during the seemingly short prehistoric occupation around 1050 A.D. Of the nearly 450 sites recorded in the canyon, there are over 100 storage structures (granaries and cists), 116 sites with ground stone, and maize has been recorded and collected throughout the canyon. We hypothesize that given the arid conditions, precipitation alone would not have been sufficient to successfully grow a significant amount of maize. An experiment designed to look at the costs and benefits of irrigation and the amount of water necessary to produce maize in Range Creek was carried out during the 2013 growing season. Four experimental plots were planted. One plot was not watered. Three plots were watered using irrigation from the creek on three different watering schedules: once per week, twice per week, and "as needed." The maize selected for the experimental plots was Onaveno, a flint variety from the Rio Mayo in Sonora, Mexico. This poster will discuss the process and results of the experiment and ideas for future farming experiments in Range Creek Canyon.

[317] Chair

Boomgarden, Shannon [317] see Metcalfe, Duncan

Borau, Laetitia (Université Paris 4 Sorbonne. Laboratoire TRACES)

[60] *Water and Social Practices in Hilltop Settlements: The Example of the Gallic Oppidum of Bibracte (2nd-1st Century B.C.–1st Century A.D.)*

Access to water has always been an essential factor for societies, especially when they settle on hilltops. Primarily intended for daily consumption, water requires the development of specific techniques designed to channel and store it. It assumes a strong symbolic value attested by different types of remains. The analysis of hydraulic structures demonstrates the adaptation of populations to their environment, but also enables us to understand their social practices: they are the result of technical or ritual gestures.

According to this approach, the Gallic oppidum of Bibracte, the most important in Gaul, is a particularly rich field of study. It was precisely in this high-up site where Caesar chose to take his winter quarters in 52 B.C. Our recent studies have identified 125 hydraulic structures and demonstrate, for the first time, the presence of large collective catchment basins and reservoirs. These meeting places are also the focus of certain religious practices. This study reveals the existence of strong local traditions particularly in the use of wood and clay in the making of hydraulic structures. The comparison of these constructions with the hydrological resources and environmental context give a new perspective on the management of water in hilltop settlements.

Borck, Lewis (University of Arizona / Archaeology Southwest) and Barbara Mills (University of Arizona)

[338] *So If All Your Friends Jumped Off a Cliff [Polychrome], You Would Jump Too? Modeling Precolonial Participation and Resistance to the Salado Social Movement*

In this paper, we present a model that cross-cuts the "great divide" between precolonial and colonial inquiries. Our study uses data about the prehispanic depopulation of northeastern Arizona and subsequent movement of those groups into populated areas in southern Arizona. An emergent socioreligious movement, termed "Salado", resulted from this culture contact. It incorporated new consumptive practices, including specialized production of polychrome ceramics and large-scale feasting. The adoption of new consumption practices is an agentive process where simple knowledge of "foreign"

objects is not sufficient to explain their adoption. We present a model in which knowledge and attitude interact to determine the integration of these social practices. A negative attitude may result in active resistance to those “foreign” objects and practices. To recognize resistance without colonial period documents, we integrate inferential tools developed by postcolonial researchers examining historically neglected groups with a formal social network model in which knowledge and adoption of “foreign” objects are considered separate historical events. Attitude, pivotal to the model, is multivocal and governs future interactions. This model demonstrates how and why consumptive practices are affected by culture contact and demonstrates how archaeological/historical data can be operationalized to approach the adoption of “foreign” objects and practices.

Borejsza, Aleksander (Universidad Autónoma de San Luis Potosí) and Arthur Joyce (University of Colorado)

[149] Convergence and Divergence as Problems of Explanation in Land-Use Histories: Two Mexican Examples

Similar results that arise from different processes and causes (convergence or equifinality) and different results that arise from similar processes and causes (divergence) are two common problems of explanation in any historical science. Two cases rooted in geoarchaeological fieldwork in highland Mexico exemplify such problems. Marked changes in the pace and style of sedimentation are observable at ca. A.D. 1000 in the Mixteca Alta. Potential proximate causes include changed runoff, sediment delivery from slopes, adjustments of stream gradient, or channel form. Each can hint in turn at a plethora of ultimate causes in realms such as climate, demography, agriculture, or warfare. Dramatic population growth is observable between ca. 500–100 B.C. and A.D. 1300–1500 in Tlaxcala. The first time interval coincides with widespread degradation, the second with widespread improvement of farmland. Chronological refinements that would allow in themselves to choose between alternative explanations are not in sight. The solution may lie instead in contrasting fieldwork at different spatial scales, and greater attention to the historical antecedents of geomorphic systems and farming traditions.

Borgens, Amy [307] see Hanselmann, Frederick

Borgens, Amy (Texas Historical Commission), Michael Brennan (University of Rhode Island), Christopher Horrell (Bureau of Safety and Environmental Enforcement) and Frederick Hanselmann (Meadows Center for Water and the Environment)

[307] The Monterrey Shipwreck Project: Preliminary Results

The 2013 Monterrey Shipwreck Project recovered more than 60 artifacts, a dozen sediment samples, and a live anemone as a means to deduce information not just about the ship itself and those aboard, but also to learn about the interaction between the wreck and its environment. Examples of dinnerware, navigational tools, medicinal supplies, personal items, and weapons were collected to supplement video and photographic documentation of Monterrey Shipwreck A. As part of ongoing research, these data will be compared to video imagery collected on the neighboring shipwrecks, now known as Monterrey Wrecks B and C, and other archaeological sites and historic collections in order to help refine the date of the shipwreck and determine cultural affiliations. The sediment and biological samples further our current understanding of the interplay between the natural environment and a complex foreign object and show how one influences the other at such great water depths. This paper will present the preliminary results to date and share what has been discovered about the shipwrecks and related ecosystem.

Borgstede, Gregory

[296] Archaeology Should Be Diplomatic

In this presentation I examine the implications of four/five-field holistic anthropological training for diplomacy and international relations (IR). I approach the topic through the framework of international debate concerning the intersection of trafficking in cultural property (TICP) and transnational organized crime (TOC). I argue that the TICP TOC issue has an important diplomatic component, including national and international consensus-building and policy setting. The interplay of these aspects centers on compromises that must be agreed upon among stakeholders from differing sociocultural standpoints. I contend that the cultural standpoints affect research, analysis, mutual comprehension, and public presentation of national positions, and I attempt to demonstrate the efficacy of holistic anthropological training to analyzing and understanding the role of diplomacy in bi- and multi-lateral settings. I conclude that TICP TOC policy—its negotiation, setting, and presentation—is best understood through the tools of holistic anthropological study.

Boric, Dusan (Cardiff University), Emanuela Cristiani (University of Cambridge), Zvezdana Vusovic-Lucic (Center for Culture and National Museum in Niksic) and Dusan Mihailovic (Belgrade University)

[278] LGM Marmot Hunting in the Dinaric Alps

The Balkans is often considered a refugium of European foragers during the Last Glacial Maximum (LGM), along with the possible importance of the northern Adriatic Plain as an area that might have seen the concentration of resources and human groups. Yet, the topography of large areas of the western Balkans is characterized by extensive mountain ranges known as the Dinaric Alps with many high altitude locations. The character of human occupation before, during and after the LGM in this region is poorly understood if compared with the Italian Alps and Prealps, where research to date has provided more detailed information about human responses to changing climatic conditions in the course of the late Pleistocene and early Holocene. Our research in the mountainous areas of western Montenegro identified marmot hunting dated to c. 24–23 ka cal B.P. and suggests the use of higher altitude locations during the LGM. Our paper compares this specialized focus on marmot hunting in the southern Dinaric Alps to several similar sites identified in the Alpine region but dated to the Epigravettian period.

Borojevic, Ksenija [299] see Sherwood, Sarah

Borrero, Luis (CONICET)

[201] Climate Change, Availability of Territory, and the Late Pleistocene Human Exploration of Ultima Esperanza, South Chile

A complex set of swiftly changing climatic and environmental conditions was taking place at the time of the first human exploration of Ultima Esperanza, Patagonia, Chile. The retreat of Pleistocene glaciation and the formation of a proglacial lake created adequate basic conditions for human colonization. Volcanic activity, climatic oscillations, and concomitant floristic changes added a degree of uncertainty to hunter/gatherers prospects for adaptive success. The archaeological evidence indicates that the first archaeological evidences were deposited sometime between 11.5 and 11.0 ka B.P. We will report new archaeological evidence and will discuss its relevance to understand the peopling of the region.

[69] Discussant

Bortolini, Eugenio (The Institute of Archaeology, UCL (UK))

[67] Fashion or Social Meaning? Analyzing Change in Monumental Burials of Prehistoric Eastern Arabia

This work analyzes change in prehistoric funerary structures and related material culture of Early Bronze Age eastern Arabia (Northern Oman and UAE, 3100–2000 B.C.) from the perspective of cultural evolutionary theory (Cavalli-Sforza and Feldman, 1981; Boyd and Richerson, 1985). By observing decorative and structural elements in monumental tombs and pottery, new hypotheses about the underlying mechanisms of cultural transmission can be explored. The main objective is to transcend the traditional dichotomy between early and late tomb types by creating an explanatory framework that looks at diachronic variation for inferring cultural processes. The research develops a new systematic description of burials and ceramics. Diversity measures are used to investigate the role played by human interaction/isolation and demography in determining adoption, replication, systematic preference and persistence of the examined cultural variants. Results confirm that specific mechanisms are at work in different moments of time, for both tombs and ceramics. By starting to research the processes underlying structural change, this work allows for a reassessment of the current interpretation of prehistoric funerary practices, and generates new hypotheses on the movement of people and ideas in a still largely unexplored context.

Bosch, Pedro [164] see Mansilla, Josefina

Bosch, Stephanie (College of Wooster) and P. Nick Kardulias (College of Wooster)

[172] A Geoarchaeological Investigation of the Provenance of Chert Artifacts from the Prehistoric Wansack Site (36ME61) in Western Pennsylvania

Wansack (36ME61) is a multicomponent, prehistoric site located in western Pennsylvania (Mercer County) just east of the Ohio border. Four seasons of excavation (1974–1977) yielded ample evidence of occupation spanning the Archaic, Woodland, and Late Prehistoric periods. The present study analyses the patterns of raw material procurement as seen through the lithic artifacts collected from Wansack. The primary method utilized to do this is X-ray fluorescence spectrometry (XRF). Samples of chert from the

Flint Ridge, Upper Mercer, and Sky Hill outcrops provide a baseline for source types found in close proximity to Wansack. The elemental composition of source specimens is compared to that of artifacts recovered from Wansack to determine the point of origin of the latter. Flakes are tested from all stratigraphic levels of occupation, as well as across the site from each period. This study focuses on what the patterns of raw material procurement at Wansack can show about the changing dynamics of mobility, economic structures, and trading relationships from the Archaic through the Late Prehistoric period in the upper Ohio River drainage.

Boswell, Alicia (UCSD)

- [198] *A Politically Marginal yet Essential Landscape: Late Andean Prehistory in the Yunga of the Moche Valley, Peru*

Populations residing in the yunga ecological niche (500-2300 masl) on the west side of the Andes have been considered minor players in Andean prehistory. Living in a politically marginal zone between coastal and highland polities, yunga populations inhabiting the tributary valleys of coastal river valleys had constant interaction with coastal and highland polities whose exchange routes passed through the yunga. Additionally the yunga ecological niche produced prestige resources that were essential for the political economies of neighboring polities requiring Andean polities to interact with yunga residents. This paper presents results from archaeological excavations at Cerro Huancha, the largest archaeological site in the Sinsicap Valley, a tributary of the Moche River. This is the first archaeological excavation to take place in the Sinsicap Valley and presents new information about yunga residents' local history during Late Andean period. In particular, we highlight the role of the yunga landscape in the formation of a local, yunga identity vis-a-vis the imperial Chimú and Inka polities.

- [198] *Chair*

Boswell , Alicia [104] see Teetelli, Loren

Boteler Mock, Shirley (University of Texas)

- [169] *Dreaming with the Ancestors: Black Seminole Women in Texas and Mexico*

Although Black Seminole culture is interwoven with strands of other cultural influences, the resilience of African-derived customs and traditions among members of the group is examined in this paper. The prominent role of Black Seminole women in these cultural retentions is explored through historical documents, archival records, archaeological input, and descendant interviews. African-derived expressive forms such as dream reading to prognosticate the future, call and response oratory, and the ring dance persisted in the Black Seminole community as they wound their way through diasporic journeys, conflicts, wars, and relocations from Florida to Mexico and Texas. A profound respect for the ancestors, a defining feature of African- derived traditions, continued to resonate in funeral and burial traditions. African-derived naming conventions and a genealogical knowledge of ancestors sustained a collection of stories and events centered on historical events that anchored Black Seminoles in their identity—a landscape of kinship ties both culturally and genealogical defined.

Boudreaux, Sarah Nicole (University of Texas at San Antonio)

- [49] *Life on the Edge: Models of Maya Community Formation and Development near the Dos Hombres Site Core*

A vast amount of the Programme for Belize Archaeological Project permit area is unexplored terrain. As a result, the location, number, and size of ancient settlements are unknown, and the relationship between settlements is not well understood. Projects such as the Dos Hombres to Gran Cacao Archaeological Project (DH2GC) are trying to create a detailed picture of the PfBAP area by way of an interdisciplinary inquiry including: archaeological, ecological, and geoarchaeological survey efforts. Over the past 5 years, a significant amount of settlement data has been collected within the DH2GC project boundaries. This paper analyzes the first 1 kilometer of the settlement, excavation, and ecological information in relationship with the site center of Dos Hombres. To create a more convincing settlement analysis, data from previous settlement studies around the Dos Hombres area are considered. This analysis will include size of residential groups, environmental setting, and ceramic data to understand community development, correlation with the environment, and temporal variation between community groups. The paper will conclude by offering future directions of research for the DH2GC project.

Boudreaux, Sarah [137] see Marinkovich, Erik

Boudreaux, Edmond and Daryl Armour (ORISE Research Fellow)

[327] *The Use of Public Space within the Mississippian Center at Town Creek, North Carolina*
Investigations of public spaces such as earthen mounds, plazas, and distinctive buildings have figured prominently in the study of Mississippian societies in the southeastern United States. Mississippian public spaces were the loci of a wide variety of activities that ranged from the domestic to the esoteric and from the mundane to the spectacular. Recent studies have demonstrated the variability that existed among public spaces within the same community, and others have considered how public spaces were used through time. This paper will compare several public contexts at the Town Creek site, a small Mississippian civic-ceremonial center in central North Carolina. The analysis of architecture, ceramic vessels, faunal remains, and other artifacts suggests that some of Town Creek's public spaces were venues both for social integration through participation in communal events and for activities that may have emphasized social differences because they were more exclusive in nature. An association between these different kinds of activities and public spaces appears to have persisted throughout the center's existence despite significant changes in other aspects of community life that included the construction of a platform mound and a substantial decrease in population.

[327] *Chair*

Bouknight, Aletheia (Washington State University) and Andrew Duff (Washington State University)

[113] *Faunal Circulation in Three Chacoan Great House Communities*

This paper explores the intra- and inter-community circulation of fauna in three Chaco-era (ca. AD 1050-1130) great house communities in the Southern Cibola region of west-central New Mexico. In particular, we focus on ritual activities within the great house communities of Cox Ranch Pueblo, Cerro Pomo, and Largo Gap to explore intra-site subsistence and feasting trends in the larger Cibolan region. Based on the ethnographic record, many southwestern fauna were either hunted communally or individually for prestige purposes. Thus, the distribution of these animal goods throughout the communities helps indicate how different households interacted with the sites' larger provisioning and ritual activities. By correlating social hierarchies and leadership strategies with ritual feasting activities, this paper explores how commonly utilized models of feasting dynamics in the Southwest articulate with models of centralized authority during the Chacoan era. Because feasting activities are generally considered either aggrandizing or integrative, the nature of feasting indicates how residents of these sites were utilizing Chacoan symbolism to legitimize their authority.

Boulanger, Matthew (University of Missouri) and Michael J. O'Brien (University of Missouri)

[315] *Phylogenetic Analysis of Eastern Paleoindian Fluted Point Forms*

Fluted projectile points dating to the Paleoindian period (ca. 13000–11000 cal BP) occur in a remarkable diversity of forms in eastern North America. However, because few of these specimens have been recovered from well-dated contexts, there remains much to learn about the spatial and temporal relationships of these point forms. Here, we use cladistics to analyze a large ($n > 2500$) sample of point forms from the East to pose testable hypotheses regarding geographical and phylogenetic relationships.

Bourgeois, Nicholas [277] see Phillips, Harriet

Bousman, Britt (Texas State University), James Brink (Florisbad Quaternary Research Department, National), Mark Bateman (University of Sheffield, UK), Holly Meier (Baylor University) and Daryl Codron (Florisbad Quaternary Research Department, National)

[109] *Middle and Later Stone Age Occupations in the Modder River Valley, South Africa*

Alluvial depositional records are rare in the interior of southern African but such sequences can provide critical information on human activities and paleoenvironmental contexts. Here we report on Middle Stone Age (MSA) and Later Stone Age (LSA) occupations in the Modder River valley. Four terraces have been identified with the oldest terrace, dating to the Middle Pleistocene, containing fossilized faunal remains and occasional artifacts. Numerous MSA and LSA locales were documented in a Late Pleistocene terrace that span the last 120k years. Faunal remains occur throughout the terrace deposits. Isolated Equus capensis, Megalotragus priscus and Damaliscus niro partially articulated skeletons were possibly associated with a significant drought, while in an upper unit of the same terrace Robberg occupants processed remains of plains game, such as Connochaetes gnou, Megalotragus priscus, Equus capensis and Phacochoerus sp. Stable isotope and phytolith results indicate widespread C3 plant environments

except for a brief period in the Late Pleistocene at the LGM when there is a marked shift to C4 plant communities. These results provide new information on Late Pleistocene climatic fluctuations in the grassland biome, the dual nature of wetland and open plains Floridian faunal species, and modern human adaptations in the interior grassveld.

Boutin, Alexis (Sonoma State University)**[296] Archaeology Should Be Bioarchaeology (or Should It?)**

At the 2011 SAA meetings, I participated in a forum called "The Future of Bioarchaeology," held in honor of Fryxell Award winner Jane Buikstra. As we conversed, I was struck by how many of us continue to experience the same challenges that I had faced in graduate school: when it came to funding, publications, and the job search bioarchaeologists are at a disadvantage compared to peers who specialize in one anthropological subfield. The archaeologists who review our grant and job applications think we hew too closely to biological anthropology, while the biological anthropologists who review them think the reverse, leaving us in limbo and often without jobs or funding. But this is not cause for despair: I believe that the segregation of bioarchaeology between the four subfields is generational. Namely, the mentorship that we received is qualitatively different from the training that we are giving our own students. To test this hypothesis, I have created an online survey that is designed to assess bioarchaeology's integration in the categories of training, teaching, research, funding, publications, and mentoring. I anticipate that the results will provide important insights into the current state of the discipline and lay the groundwork for new cross-subfield initiatives.

Bouwman, Abigail (University of Zurich)**[291] The Different Aspects of aDNA in Establishing Kinship**

Kinship can be defined in any manner of ways. In contemporary terms, it can be defined as close familial relationship, kinship via extended family group, or even relationship at the clan or tribal level. In a temporal sense, too, people can feel they have a kinship with direct ancestors or with a population. Genetics can identify only the genetic kinship of a group of people, not the sociological kinship. By looking at genetic markers, such as the HVRI in mtDNA or Y-chromosomal markers we can identify individuals with a maternal or paternal link, either in contemporary individuals, or over period of time. Here I will present two case studies, which exemplify two aspects of genetic kinship identification. Firstly, the mtDNA similarities and differences between individuals buried within Mycenae Grave circle B. Here, identical mtDNA sequences within two individuals of the same age buried within a short space of time indicate that either siblings or maternal cousins were buried together. Secondly, I examine the Y-chromosomal similarities and differences between a 17th-century individual and his purported descendants. Here, differences between the sequences cannot exclude or confirm ancestry because of the higher rate of mutation in non-autosomal DNA.

Bouzigard, Aimee [308] see Tucker, Bryan

Bovy, Kris [286] see Butler, Virginia

Bow, Sierra [248] see Simek, Jan

Bow, Sierra [216] see Dennison, Meagan

Bowen, Corey (Vanderbilt University) and Rebecca Bria (Vanderbilt University)**[104] Access, Visibility, and Defense: GIS Approach to the Rise of Warfare in the Early Intermediate Andean Highlands**

Recent research of Recuay materials, iconography, and architecture indicates a marked increase in warfare during the Early Intermediate Period of the highland Andes of Ancash, Peru (1-700 C.E.). Archaeologists have identified defensive trenches, fortified walls, and strategic site positioning at many individual Recuay community sites, a pattern which stands in sharp contrast to the character and location of village centers in the preceding Formative Period (1800-200 B.C.E.). This poster presents GIS viewshed and cost-path analyses to investigate trends in less physical elements of defensive constructions: visibility and accessibility. We will compare cumulative and individual viewsheds and the general accessibility of Early Horizon and Early Intermediate Period sites in highland Ancash to contribute a broader, regional perspective to our understanding of increasing warfare during this cultural transition.

Bowler, John (University of Mississippi)**[52] Water Management at Cahal Pech**

Water management was a crucial factor in ancient Maya life and agricultural production. With distinct wet and dry seasons, obtaining water in the Maya area during times of drought and managing it during times of flooding was a major issue in Maya society. Recent water management research has focused on artificial catchment features such as reservoirs, along with natural features including streams and bodies of water. New insight into water retention features such as dams has shed light on a previously understudied aspect of Maya water management. This paper adds to the discussion by examining how the Maya managed water at the site of Cahal Pech in the Cayo District of Belize. Through excavations of a small Maya dam, along with a GIS analysis focusing on spatial and topographical data, this paper presents a hydrological model for Cahal Pech and the surrounding area

Bowser, Brenda (CSU Fullerton)**[284] Women's Manioc Cultivation in Amazonian Ecuador: A Perspective from Human Behavioral Ecology**

Jochim's seminal work in human behavioral ecology brought focus to people's foraging behaviors as thoughtful, strategic, and flexible in response to ecological and social conditions. These are adaptive behaviors with fitness consequences. Jochim and his students and colleagues have extended those ideas to understand the transitions from mobile foraging to sedentism, social complexity, and agriculture. This study focuses on the strategies women use to acquire individual plant varieties and increase the richness of their gardens in a horticultural foraging society, based on ethnographic data. Potential benefits of garden richness include differential resistance to disease and insect predation, differential yield in current vs. future garden sites, and variable yields in different soils and micro-environmental contexts. Women increase the richness of their manioc gardens and their status by sharing garden resources strategically, and reproductive benefits accrue to high status women. Specifically, women develop networks of economic and political cooperation through which they share plant propagules, which positions some women as gatekeepers in the flow of plant resources within and between coalitions in a multi-ethnic community. These are significant ties that bind kin and non-kin together into networks of cooperative economic relationships, which are embedded in coalitional structures.

[284] Chair**Boyce, Ian (Trent University)****[43] Copper Bells in the Southwest: Evaluating the Prestige Goods Model**

Archaeologists are increasingly interested in trade and interaction between the Southwest United States and Mesoamerica. Copper bells, probably from West Mexico, have been recovered from sites throughout the American Southwest. Although archaeologists have compiled lists of the distribution of these artifacts, few have made an effort to understand their cultural significance. The artifacts have been lumped, somewhat unceremoniously, into the category of "prestige goods." This poster will examine the cultural significance of Mesoamerican copper bells in the American Southwest. The temporal and geographical distribution of copper bells as well as their archaeological provenience will be examined. Whether the prestige goods model is an appropriate fit for these artifacts will then be evaluated. If this model is not found to be applicable, the possible economic, social, or ideological roles copper bells could have played in Southwest societies will be considered.

Boyd, Brian**[22] Making Containers Visible in the Prehistoric Levant**

Archaeology has developed a fairly sophisticated understanding of "presence" in the literal sense of "things being there", and in its recent theoretical encounter with materialities and their varied manifestations (including the expression of immaterial ideals). Given that the greater part of human history (prehistory) is materially absent, invisible, intangible, it might follow that prehistory should have something to offer the study of the intangible that is original and interesting. I will use the example of "invisible" containers, and the concept of containment, specifically in the later prehistoric Levant as a starting point for these explorations. Both plant and animal resources relating to containers will be considered.

Boyd, Carolyn (SHUMLA/Texas State University)

[156] Layers of Meaning: Stratigraphic Analysis of a Pictorial Narrative in the Lower Pecos Canyonlands of Texas

Description of individual figures at rock art sites provides data for inter- and intra-site patterning. Through documentation and analysis of the sequential ordering of those figures, as well as their stratigraphic relationships, researchers can gain insights into the artistic and cognitive processes that led to the creation of the panel. In this paper, I present the results of an analysis of the White Shaman rock art panel located in the Lower Pecos Canyonlands of southwest Texas. The panel spans 8 meters in length and 4 meters in height and contains more than 100 Pecos River style images dating to the Late Archaic (3,000 to 1,500 years ago). Through stratigraphic analysis of these pictographs using a Dino Lite handheld microscope, the development of Harris matrices, and production of layered illustrations using Adobe Photoshop, I have determined the strict order in which the colors were applied and the stratigraphic relationships between figures. This analysis demonstrates that the panel is a planned composition with rules governing not only the portrayal of symbolic forms, but also the sequencing of colors. Complex images painted in black, red, yellow, and white were woven together at the White Shaman site to form an intricate pictorial narrative.

[248] Discussant**[199] Chair**

Boyd, Carolyn [199] see Cox, Kim

Boyer, Jeffrey [247] see Whitley, Catrina

Bozarth, Steven [330] see Luzzadder-Beach, Sheryl

Bracken, Justin [147] see Pugh, Timothy

Bracken, Justin (CUNY Graduate Center) and Timothy Pugh (Queens College)**[147] Delimiting the San Bernabé Mission and Determining Its Broader Context within the Site of Tayasal**

Four seasons of fieldwork at the site of Tayasal, consisting of excavation and extensive mapping using a total transit station, managed, among other things, to locate and define the limits of the San Bernabé mission there. Placed amidst the Postclassic Maya community living at Tayasal at the time of Spanish conquest of the region, the Mission served as the local face of Spanish social control and dominance in that early Colonial era. The fieldwork performed during these recent seasons has served to enlighten the continuity and change in cultural attributes such as ritual and land use among the population there from the Middle Postclassic (A.D.1200 to 1400) through the ensuing Late Postclassic and Contact eras, and onward to the Colonial Era that started in 1697. Furthermore, the excavations have instigated a refinement of the ceramic sequence of the region, with implications for its overall chronology, while the use of current mapping technology on the ground and in the lab has allowed for detailed new maps to be produced of large areas of the site, including the new discoveries that have been made.

Bradley, Robert (University of Texas, Pan-American)**[192] Aquatic Imagery in Moche Art and Culture**

This presentation scrutinizes the harvesting, cooking, and consumption of a species of Trichomycteridae catfish in two traditional communities located on Peru's North Coast. The information gleaned from this ethnographic study is then applied to Moche artistic representations for this creature. This particular species of Trichomycteridae catfish has been enigmatically named life and even though the word was borrowed from English the pronunciation is Spanish. Life is likely a reference to this freshwater fish's ability to go into a type of status when the coastal rivers, emanating from the highlands, dry up. When the rivers re-hydrate, the catfish seemingly comes back to life. Stylized images of life are prevalent in the tomb and on the body of recently discovered Moche burial: the Señora de Cao. These icons take on profound significance when associated with this tomb because of the catfish's ability to reincarnate. But another interpretation of life symbolism is possible. The Trichomycteridae family of South American catfish is also parasitic. Perhaps then, Moche iconographic representations of this catfish reference prisoner sacrifice and bloodletting, both practices being widespread in Moche culture.

Bradley, Bruce (University of Exeter)

[318] A Genealogy of Late Pleistocene Flaked Stone Artifact Assemblages: An Interactive Exercise
Flaked stone artifact assemblages are used to infer historical relationships through time and space. This is especially important when interpreting the highly variable evidence of the peopling of the Americas. Typological approaches have dominated but technological, tool use and stylistic insights have added greatly in the past several decades. Most efforts have been made by individual scholars. This poster is designed to take the process of historical relationships forward by soliciting input from those willing to collaborate on a communal effort. A proposed 'phylogeny' of flaked stone assemblages is presented that is designed to be modified. The poster uses images of projectile points and bifaces as proxies for whole TECHNOLOGICAL systems and their historical connections. Participants in the effort are asked to mark up the poster, making additions, deletions and corrections and will be asked to 'own' their input by it being photographed and recorded as theirs. Both evidence-based and subjective ideas are accepted. It is unclear what the outcome(s) of this exercise will be, they may include a "lithiwiki" that will be posted on the web for continued interaction resulting in various possible phylogenies that can be updated and refined as new evidence and insights are submitted..

Brady, James (Cal State L.A.)

[292] Opening a New Vista on Sacred Landscape in Northern Belize: A Celebration of One Aspect of Leslie Shaw's Research

Smith and Schreiber, in their review of New World archaeology, state, "For the Classic Maya, studies of sacred landscapes are dominated by research on caves." Cave archaeology, however, is extremely underdeveloped in northern Belize because the area's soft dolomitic limestone does not support the formation of large caves that might have attracted archaeological attention. For this reason, it is not until recently that archaeologists have begun to consider the possibility that small subterranean chambers might have played an important role in the ancient sacred landscape. King and Shaw were among the first to raise the possibility. Their observations led to a field study of Spider Cave at the site of Maax Na, which was the first detailed cave documentation in northern Belize. The study confirmed that a shrine in the central plaza was built in relation to the cave with the discovery of a blocked passage that surfaced near the doorway to the shrine. More recently, a second field investigation by the Rio Bravo Archaeological Project has documented another cave located in the midst of public architecture. These discoveries open exciting possibilities for more extensive landscape studies.

[33] Discussant

Brady, Jana

[172] Revealing Prehistoric Connecticut: A GIS Analysis of Archaic Sites in New Haven County

A GIS platform was created to help with site analysis and data management of over 6000 lithic artifacts recovered in ten field seasons of excavations at the West Rock Nature Center-1 (WRNC-1) site in New Haven, Connecticut. The WRNC-1 site is located near a traprock portion of the Metacomet Ridge, which extends to the Massachusetts-Vermont border, and it serves as the setting for a field school for students at Southern Connecticut State University to learn archaeological methods under the direction of Michael J. Rogers. The lithic assemblage found at the site indicates that the area was used as a seasonal camp approximately 6000-3000 B.P., coinciding with the Late and Terminal Archaic periods. I created a geo-database using ArcGIS 10.1 to both help improve data management and to see what additional analyses, like density and orientation patterning, could be used to provide more information about the site. Additionally, GIS was also used to locate other possible Late to Terminal Archaic sites in Connecticut. A cost path analysis was performed between the WRNC-1 site and other known sites of the same period to help identify likely travel routes.

Bragdon, Kathleen (William and Mary)

[338] Our Strange Garments: Trade Coats and Diplomacy in Seventeenth Century New England

This paper considers a venerable topic in the ethnohistory of contact- trade coats and other non-native items of clothing, and trade cloth, as they are documented in inventories, native language documents and contemporary descriptions, and represented archaeologically in 17th-century southern New England. Unlike earlier treatments of this subject that focus primarily on the function of imported clothing and cloth, I will consider the political and sacred dimensions of imported clothing, with special emphasis on the role played by gifts of clothing in relations among native elites and English colonial officials in the seventeenth

century. A careful look at patterns of use of imported garments among native elites demonstrates the multifaceted nature of consumption in the early contact period.

Braje, Todd (San Diego State University), Kevin Smith (University of California, Davis), Breana Campbell (San Diego State University) and Daniel Calvani (San Diego State University)

[286] *The California Sheephead (*Semicossyphus pulcher*) Fishery: Past, Present, and Future*

Beginning only in the late 1980s, the commercial exploitation of California sheephead (*Semicossyphus pulcher*) has grown to become a complex, multimillion dollar fishery. The fishery is of particular concern not only due to unsustainable harvest levels, but also to the long-term health and structure of kelp forest ecosystems. Unfortunately, very little data exists on the sizes and abundances of sheephead prior to commercial exploitation, which are critical for evaluating 2001 California Department of Fish and Game regulations. Here, we describe our work to apply archaeological data to help evaluate the long-term health and viability of sheephead fisheries in southern California.

Braje, Todd [316] see Jazwa, Christopher

Brandon, Jamie and Carl Drexler (Arkansas Archaeological Survey)

[30] *Regnat Populus: The Intersection of Historical Archaeology Research and Public Service in Arkansas*

Regnat Populus means "Let the People Rule," and it is the official motto of the state of Arkansas. Embracing this ethos, the Arkansas Archaeological Survey's mission statement encourages both research and public service. Dr. Thomas Green, while serving as director of the Survey, was a proponent of archaeologists not only doing research for research's sake, but of reaching out and making the discipline relevant to the public, both in Arkansas and further afield. This paper examines, through the lens of historical archaeology, topics such as descendant involvement, public service, working with volunteers and other ways that, under Dr. Green's directorship, the Arkansas Archaeological Survey sought to find the intersection between research and public service. Research at Van Winkle's Mill, Dooley's Ferry, and Historic Washington State Park, our statewide initiative to document endangered African-American cemeteries, and many more projects are presented to display the rich diversity of efforts that Dr. Green encouraged and supported.

Brandt, Steven (University of Florida), Jeffrey Ferguson (University of Missouri) and Lucas Martindale Johnson (University of Florida)

[249] *Lithic Raw Material Acquisition, Ethnicity and Source/Settlement Location: An Ethnoarchaeological Study of Ethiopian Craftspeople*

Southwestern Ethiopia is probably the last place on earth where craftspeople from diverse ethnic groups obtain obsidian on a regular basis to produce retouched flaked stone tools. These craft workers acquire obsidian from different sources to produce end scrapers of varying dimensions that are hafted onto wooden handles to scrape domestic animal hides. Using pXRF instruments in the field and lab, we analyzed the elemental composition of over 1200 obsidian end scrapers made by hideworkers from different ethnic groups. The results indicate strong correlations between specific source(s), settlement location and ethnic group. We conclude with a discussion of how our research may better inform archaeologists and social anthropologists about the economics of lithic production and trade, social boundaries, territoriality, land tenure, and the construction of social landscapes.

Brandy, Paul [236] see Byrd, Brian

Brannan, Stefan (University of Georgia) and Jennifer Birch (University of Georgia)

[34] *Historical Settlement Ecology at Singer-Moye: Mississippian Dynamics in the Deep South*

Singer-Moye is a large Mississippian mound center in Georgia that contains monumental architecture, demonstrates evidence of social stratification, generates assumptions of agricultural intensification, and is characterized by a dynamic history of occupation. Of note is the site's seemingly atypical upland location on a small stream near the boundaries of two major watersheds. Chronological and spatial data suggest two distinct periods of occupation, including the initial settlement of the site core between A.D. 1100 and 1300, and the expansion of residential occupation onto adjacent landforms between approximately A.D. 1300 and 1450. We interrogate the occupational history of the site at multiple scales of analysis, situating it within macro-regional interaction networks and the settlement landscape of the Lower Chattahoochee Valley. At the local level, we suggest that the cultural practices of Mississippian inhabitants interacting

with the environmentally diverse interior Coastal Plain through time led to a mutually constitutive relationship reflected in the domesticated landscape. This continuing relationship led to the fluorescence of Singer-Moye as a large community during the fourteenth and fifteenth centuries at a time when contemporaneous groups in other cultural and environmental contexts experienced abandonment, reorganization, or social instability.

Brantingham, Jeffrey [284] see Bettinger, Robert

Braswell, Geoffrey [138] see Daniels, James

Bratten, John [276] see Worth, John

Braun, David [26] see Sahle, Yonatan

Bravo, Ana [293] see Camacho-trejo, Claudia

Bray, Tamara (Wayne State University)

[121] Imperial Things: Assembling a New Social Order

This paper attempts to think through some of Latour's premises regarding the inextricable linkages between humans and nonhumans in the context of the Inca Empire. If we are to take Tawantinsuyu as a new type of social aggregate distinct from what preceded in the LIP, we need to consider what kinds of relations were produced as a result of the creation and association of new kinds of objects and actors. If the Inca were the progenitors of a new social formation, this would theoretically be visible archaeologically in the material traces of new assemblages and associations. To begin this discussion, I focus on assemblies within a sample of Late Horizon mortuary contexts from the provinces.

Breitenbach, Sebastian F. M. [201] see Aquino, Valorie

Bremer, J (Santa Fe National Forest) and Anne Baldwin (Coyote/Espanola Ranger Districts, Santa Fe Nationa)()

[87] Over a Century of Archaeological Research on the Santa Fe National Forest

The Santa Fe National Forest encompasses areas of interest to archaeologists for over 100 years. Interaction between archaeologists and those managing the Santa Fe National Forest have resulted in significant insights about the development of communities and lifeways in the Northern Rio Grande. The history of this relationship parallels the development of archaeological method and theory in the Southwest and in many cases used state of the art field techniques to collect data. This paper summarizes the history and range of archaeological research on the Santa Fe National Forest and synthesizes the contribution of that research to our understanding of the development of societies in the Northern Rio Grande.

Bremer, J. Michael [289] see Glowacki, Donna

Brenet, Michel [255] see Lewis, Jason

Brennan, Michael (University of Rhode Island, Graduate School of Oceanography)

[292] Regional Limestone Geochemistry Study of Maya Stone Resources in the Three Rivers Region, Belize

The construction of Maya site centers has long been assumed to have been accomplished using local bedrock materials. However, data collected at Maax Na and other Three Rivers Region sites challenges this preconceived notion. ICP-MS was used to analyze limestone samples from bedrock outcrops, quarries, and megaliths identified as possible monuments from three sites. The results show that at Maax Na certain monuments, including multiple stelae, do not chemically match the local bedrock. Two other sites sampled in this study, Chawak But'o'ob and Hun Tun, each equidistant from Maax Na at 7 km, have a nearly identical Mg (and therefore dolomitic) composition to that of Maax Na. In contrast, the imported monument stone from Maax Na contains < 0.5% Mg, classifying it as a pure limestone. Given the similar

chemistry at all three sites, these data suggest that the source of this other stone may be some distance away. Since this initial study, three additional sites were sampled and are now being analyzed, expanding the project to a greater regional extent. The results of this research highlight a potential regional trade in monument stone that is as yet undocumented for the Maya area.

Brennan, Michael [307] see Hanselmann, Frederick

Brenner, Mark (University of Florida), Jason Curtis (University of Florida) and David Hodell (Cambridge University)

[158] Future Directions for Studying Past Climate in the Maya Region

Stable oxygen isotope records and geochemical data from lake sediment cores provide insights into past climate in the Maya Lowlands. A new method that can distinguish between temperature and rainfall effects on oxygen isotope values in lake cores, indicates that late Holocene shifts in $\delta^{18}\text{O}$ were driven solely by changes in the ratio of evaporation to rainfall. Data from Lake Chichancanab show protracted dry events at -770-870 A.D. and -920-1100 A.D., with the intervening time period being relatively moister. These climate inferences are supported by new, well-dated, high-resolution isotope evidence for droughts from cave speleothems (stalagmites). Paleoclimate data from local "natural archives" were first generated < 20 years ago and have led to a debate about the role that climate change played in Maya cultural development. The debate is confounded by other factors that influenced culture, including growing Maya populations and their impacts on the lowland tropical landscape, interactions among Maya polities, and social influences from beyond the region. New directions in Maya paleoclimatology should: (1) explore possible new archives of paleoenvironmental information; (2) quantify the amount and duration of droughts; (3) describe the geographic extent of droughts; and (4) investigate archaeological evidence for responses to climate shifts.

Breslawski, Ryan (Utah State University) and David Byers (Utah State University)

[206] Bison Processing at Baker Cave III (10BN153), Snake River Plain, Idaho

This poster presents an analysis of the Baker Cave III (10BN153) bison materials. Baker Cave III consists of a lava tube containing a late Holocene bison processing site. Our analysis of the Baker Cave archaeofauna has identified at least 37 adult and 8 fetal bison, as well as numerous lagomorphs. Butchering marks indicate that carcasses were generally disarticulated by smashing proximal limb joints. Cut marks indicate a regular pattern of skinning, and impact scars occur along long bone diaphyses, ribs, and mandibles. Models of bone density and economic utility suggest that within-bone fat content is primarily responsible for element frequencies at Baker Cave. This finding is consistent with observations that foragers sometimes target fatty resources in periods of mid-winter scarcity.

Breternitz, Cory

[18] Summary of the NGWSP Cultural Resources Inventory

The Class III cultural resources inventory for the Navajo-Gallup Water Supply Project (NGWSP) was completed in 2013. The inventory included more than 170 miles of a 400-foot-wide corridor across the eastern and western San Juan Basin in northwest New Mexico. The San Juan leg of the project extends from the San Juan River west of Farmington to Gallup and parallels U.S. Highway 491 along the Chuska Slope with branches to Window Rock and Crownpoint. The Cutter leg of the project extends from Cutter reservoir southeast of Bloomfield to Huerfano and crosses both Largo and Blanco Canyons. These two transects across the San Juan Basin recorded hundreds of cultural resources with components that include late Archaic, Basketmaker, Anasazi, protohistoric and historic Navajo, and modern in-use sites. Ethnographic studies and interviews with Navajo residents added to our understanding of historic land use and geomorphology studies contributed to a predictive model of potential buried site locations. Results of the survey are presented in the contexts of the cultural and natural landscape approach guiding the NGWSP research design as they relate to land use, community development, and agricultural potential of the San Juan Basin over the past 5,000 years.

Brewer, Olivia and Dr. David Hill (Anthropology and Sociology at Metropolitan State University)

[46] Petrographic Evidence for the Dispersed Production of Abiquiu Black-on-gray Pottery in North-Central New Mexico

Biscuit wares represent the predominant decorated type of ceramic during the Pueblo IV period across north-central New Mexico. Recent petrographic analysis has identified two compositional groups of

Abiquiu B/g pottery from sites located on the Pajarito Plateau and the Chama and Rio Grande valleys. One composition group was distinguished by a light-colored ceramic paste that contained fragments of glassy pumice and volcanic tuff. Commonly included are fragments of minerals derived from plutonic rock. The plutonic rock fragments and associated minerals in the decorated ceramics are from the presence of xenoliths of Precambrian rocks that have been documented in the Otowi and Tshirege Members of the Bandelier Tuff. This composition group represents vessels made on the Pajarito Plateau. A second composition group has a dark brown paste that contains shards of glassy pumice but lacks the fragments of volcanic rock. This composition group represents Abiquiu B/g vessels that were made possibly in the Chama or northern Rio Grande Valley. The two paste compositions have been observed in sherds of Abiquiu B/g sherds recovered from archaeological site both on and off the Pajarito Plateau and as far north as a small sample from a rockshelter near the Colorado/New Mexico border.

Brewer, Jeffrey (University of Cincinnati) and David Hyde (Western State Colorado University)

[52] Mapping Medicinal Trail: Hydraulic Modeling at an Ancient Maya Hinterland Community
The Medicinal Trail site, encompassing an area approximately 1 kilometer in diameter, is a dispersed hinterland community located near the major ancient Maya site of La Milpa in northwestern Belize. Occupied primarily during the Classic Period (A.D. 250-900), this terraced community consists of multiple landscape modifications including terraces, depressions, and linear features. Hypothetically functioning as a decentralized water management system, these plaster-paved surface features served to direct water into the natural depressions-or reservoirs-which served as open catchment basins designed in part to collect wet season rainfall and hold sporadic surface runoff or water from more permanent canalized surfaces.

Three seasons of total station mapping have revealed distinct patterns of settlement selection and water management practices. Survey and mapping have revealed a visible spatial relationship between reservoirs and residential areas and archaeological investigation has shown that these depressions served multiple domestic functions over time. Ongoing hydraulic mapping of the site, based on contour mapping and catchment area analysis, will help us to interpret the hydrological landscape of the site through water diversion and conservation measures and accretional landscape modifications, as well as permit us greater insight into the complex interrelationship between water and people within this peripheral settlement.

[52] Chair

Brewington, Seth (City University of New York, The Graduate Center), Richard Streeter (Department of Geography & Sustainable Development, School of Geosciences, University of Edinburgh), Anthony Newton (Institute of Geography, School of Geosciences, University of Edinburgh), Andrew Dugmore (Institute of Geography, School of Geosciences, University of Edinburgh) and Thomas McGovern (City University of New York, The Graduate Center)

[29] Climate Change, Resilience, and the Shifting Patterns of Ecological Stress in Icelandic Landscapes

In the pre-modern North Atlantic islands, climate change is likely to have decreased food security because of its direct effects on domestic animal mortality and the availability of grazing. Shortfalls in domestic-animal food production could potentially be buffered through either increased exploitation of wild (particularly marine) resources or the importation of alternate foodstuffs. New archaeofaunal data from the late-13th/early-14th century period at the site of Hofstaðir, in the Lake Mývatn district of northern Iceland, indicate a set of responses (including a significant use of marine mammals) consistent with dietary stress. Though the effects of climate change are not uniformly expressed across landscapes, the spatial patterning of impacts is predictable and can therefore be assessed with numerical modeling. In this paper, we identify these patterns of increased vulnerability through the use of models that simulate shifting patterns of climate stress across the landscape, focusing in particular on northern Iceland. We then test whether or not late 13th-century climate change is likely to have had a significant impact on food security at Hofstaðir. Finally, we discuss the potential further applications of such analyses in the study of social-ecological system responses to climate change.

Bria, Rebecca [104] see Bowen, Corey

Bria, Rebecca (Vanderbilt University)

[150] Emplacing Recuay Authority: The Local Roots of Regional Elites in the Highland Andean Early

Intermediate Period (Ancash, Peru)

Neo-evolutionary frameworks have long structured archaeological accounts of social transformation and political change. In the Andes, scholars uncritically apply such frameworks in describing “horizons” as epochs of civilizational achievement and “intermediate periods” as eras during which people passively responded to broader political economic changes or periods lacking in sociopolitical innovation. This paper challenges these frameworks by presenting recent excavation data from Hualcayán, a ceremonial center and town in highland Ancash that was rebuilt during the Huarás Phase (200 B.C.E.–200 C.E.) as aspiring elites drastically transformed the Chavín-affiliated temple mounds of Hualcayán. These local actors declared their local authority in theatrical practices such as expedient feasts and termination rituals that decommissioned Chavín religious spaces and symbols. The feasting practices of the Huarás Phase became the basis of a regional elite authority during the Recuay Period (200–700 C.E.), when lineage leaders forged formal and recognizable elite identities, casting themselves as providers for the local community by hosting ceremonies in exclusive ritual spaces. Far from an unenlightened moment of political disintegration, Recuay communities flourished through the creative redefinition of established spaces and boundaries, and in doing so, forged new forms of political authority and lineage-based social organization.

Bria , Rebecca [152] see Cruzado Carranza, Elizabeth Katherine

Briceño Rosario, Jesus [198] see Boswell, Alicia

Briceño Rosario , Jesús [104] see Hudson, Jean

Bricenoe, Jesus [104] see Teetelli, Loren

Brickley, Megan [28] see Lockau, Laura

Bridges, Elizabeth (University of Michigan)

[41] *Synthesizing Archaeology and Epigraphy: Imperial Vijayanagara through Keladi-Ikkeri Nayaka Inscriptions*

The Keladi-Ikkeri Nayakas (1499–1763 A.D.) were established as regional leaders under the Vijayanagara Empire and later ruled as an independent state based in modern Shimoga District, Karnataka, India. Most of what is known about Keladi-Ikkeri Nayaka history is based on an epigraphic record of stone, copper plate, and temple donation inscriptions; this is supplemented by architectural studies of period temples and by a recent archaeological survey of the first two of three Keladi-Ikkeri capitals. This paper reviews these material and textual sources and examines how they can be integrated to explore changing strategies of regional governance by the Keladi-Ikkeri Nayakas. The epigraphic record is then reconsidered as a material rather than simply textual historical source. Inscriptions of modern Karnataka State were first recorded and published during the Colonial Period, and this legacy of antiquated methodology, and colonial political divisions and agendas still plagues modern interpretation of the historical record. I argue that epigraphs should be rematerialized as spatially anchored and physically embodied objects and that archaeological method and theory contribute to accomplishing this task. The Keladi-Ikkeri Nayaka epigraphic record is analyzed as a case study of integrating these data with results from archaeological survey.

[41] *Chair*

Briggs, Rachel (University of Alabama)

[11] *Nixtamalization in the Prehistoric Southeastern United States*

Nixtamalization is a method of alkaline processing used to enhance the nutritional quality of maize by first soaking the food in an alkaline solution and then boiling it. Though a common practice in Mesoamerica as well as the American Southwest, this cooking method has not been thoroughly documented in the Southeastern United States, where, it was believed, the common bean was used to nutritionally enhance a maize-based diet and prevent pellagra, a degenerative disease that results from malnutrition. However, studies have shown that *Phaseolus vulgaris* (the common bean) was rare in the greater Eastern Woodlands before 1300 AD, centuries after the initial appearance of maize in the area (between 800 A.D. and 1100 A.D.). Instead, based on ethnohistoric and ethnographic sources, it seems more likely that prehistoric groups in the area were nixtamalizing their maize using wood ash. This poster reviews the

evidence for the diffusion of nixtamalization into the Southeast from the American Southwest during the late prehistoric period and explores the relationship between maize, alkaline cooking, and the standard Mississippian jar, the latter a vessel that may be a specific adaptation developed to address an increased need for boiled food.

Briggs, Clive [343] see Gilmore, Kevin

Brighton, Stephen (University of Maryland)

[213] Theorizing Comparative Diasporas: A Critical Material Approach

The study of diasporic groups in anthropology is moving in a new direction striving to reposition and rethink the meaning and use of the term. In this context the importance rests with working on larger scales of reference illuminating patterns or commonalities amongst diasporic groups. In archaeology the term is not employed critically however, but is simply viewed as epiphenomenal. This somewhat a-theoretical structure downplays its role in the discourse of power relations when studying conflict and negotiation of social identity, injustices and racialization, as well as gender and class bias. This paper represents a larger research program seeking to bring historical and material data from diverse diasporic groups such as African, Irish, and Chinese, to critically evaluate similar patterns of social, political, and economic relations and experiences. The use of theory from contemporary anthropology can provide the necessary framework to move past traditional concepts of assimilation and resistance and towards a dynamic discourse uncovering the materialization of experienced racialization and levels of alienation, incorporation, and transnationalism.

Bringelson, Dawn

[172] The Conundrum of the West Unit: Understanding Dune Land Prehistory along Southern Lake Michigan

Indiana Dunes National Lakeshore contains some 15,000 acres of the last remaining intact dune lands within the highly modified landscape between Chicago, Illinois, and Michigan City, Indiana. Artifacts from the Lakeshore suggest connections between Lake Michigan's southern tip and cultures across the Midwest, but the nature of these connections remains unclear. This is partly due to difficulties in relating dune archaeology to that found in other settings. Apparent inconsistencies in precontact land use across the Lakeshore provide a chance to look more closely at dune archaeology. Park-wide inventories over recent decades indicate differences in the distribution and density of materials between the Lakeshore's East and West Units. Intact dunes in the Lakeshore's West Unit, between Gary and the Port of Indiana, contain a surprisingly sparse record in comparison to that found in the East Unit (stretching from the Port toward Michigan City). Current research examines explanations for this discrepancy, including relative landform age, sedimentary processes within dune formations, and middle to late Holocene human land use.

Brink, James [109] see Bousman, Britt

Britton, Emma

[144] Results of Petrographic Analysis of Polychrome Ceramics from Site 204, Chihuahua, Mexico

Multiple studies have suggested that specific Chihuahuan polychrome types may be more common in some geographic contexts than others (see Brand 1935; De Atley 1980; Findlow and De Atley 1982; Kelley et al. 1999; Larkin et al. 2004 for more complete discussions). However, these studies are often criticized as they assume that polychromes recovered at sites are made locally, as opposed to being traded (Douglas 1995; Minnis 1984, 1989). In response, some studies have re-focused on the production of polychromes (see Carpenter 2002, Sphren 2003, Woosley and Olinger's 1993, among others). However, these studies have generally resulted in contradictory interpretations, partly as a result from the lack of complementary data sets and techniques. In my presentation, I will discuss the results of petrographic analysis of polychrome sherds recovered from Site 204, also known as the Tinaja site. These sherds were recovered from a midden context, which is unusual in the Casas Grandes world, and will help describe ceramic diversity at a single site, through time. Preliminary analysis (Britton 2012) suggests that this assemblage demonstrates high diversity. This analysis is the beginning of a regionally comprehensive study that utilizes the same material science techniques to describe Casas Grandes polychromes through space.

[144] Chair

Briz I Godino, Ivan and Myrian Álvarez (CONICET-CADIC)**[118] Production and Consumption: Theory, Methodology, and Lithic Analysis**

During recent decades, archaeological research has focused on the dynamics of production in past societies from multiple theoretical and methodological perspectives; in contrast, the study of consumption remains relatively unexplored, with some exceptions. Processes and practices of consumption in human societies encompass both economic and symbolic aspects, and they play significant roles in historical and cultural change. Moreover, archaeological models of the organization of production cannot be isolate production from practices of consumption. In this paper, we discuss the relationship between production and consumption, offering a methodological framework to analyze lithic assemblages.

Brock, Daniel (University of Tennessee, Knoxville), Howard Cyr (University of Tennessee, Knoxville) and Stephen Yerka (University of Tennessee, Knoxville)**[117] Practical Solutions to Managing Cultural Resources: The Benefits of Multidisciplinary Approaches as an Alternative to Standard Investigative Techniques.**

Geoarchaeological and geophysical techniques have long been used successfully in archaeological research. However, rarely are the two explicitly integrated into a Cultural Resource Management survey program. This paper focuses on the benefits of multidisciplinary investigations using these combined techniques at two distinct sites in the southeastern United States. One site represents a natural depositional environment and the other an anthropogenically modified landscape. These cases illustrate the effectiveness of the two techniques to provide data on site formation processes, subsurface stratigraphy, and associated features in an efficient and cost effective manner. In addition, this combined approach is minimally invasive, allows for large contiguous areas to be surveyed in a shorter amount of time, and provides subsurface data at logically complex sites. Most importantly, these multidisciplinary studies provide independent results that strengthen archaeological interpretations. The combined use of geoarchaeology and near-surface geophysics supplies archaeological researchers and cultural resource managers with a reliable cost-effective survey solution that can either be implemented as an alternative to standard investigative techniques or included as part of a larger survey program to aid in defining areas of high potential prior to conventional survey methods.

Brock, Daniel W.H. [196] see Yerka, Stephen

Brock, Terry (Michigan State University)**[258] SHA Social: Developing a 21st century Social Media Strategy for the Society for Historical Archaeology**

In 2010, the Society for Historical Archaeology began developing a social media strategy called SHA Social. It was designed as a tool for using social media in order to engage current and future members in the activities of the organization. This paper will discuss the design and implementation of the strategy, and the way that the SHA has used tools like a blog, Twitter, Facebook, and LinkedIn to engage with members and advance the mission of the organization. It will examine some of the success, pitfalls, and obstacles that emerged in the process of establishing SHA Social, and discuss the benefit of using these tools to engage with membership, attract new members, and advance the mission of professional archaeological organizations.

Brodie, Neil (University of Glasgow)**[273] Internet Market in Precolumbian Cultural Objects**

This paper presents new quantitative research examining the Internet market in Precolumbian cultural objects, assessing the volume and value of the market, and with a special emphasis on the provenance and provenience of objects being sold.

Bromley, Gordon [69] see Rademaker, Kurt

Brooks, Alison [26] see Ranhorn, Kathryn

Brooks, Alison (George Washington University), Richard Potts (Human Origins Program, Smithsonian Institution) and John Yellen (National Science Foundation)**[26] Early Levallois Technology and Its Implications: New Data from Olorgesailie, Kenya**

The Olorgesailie basin, in the Rift Valley of southern Kenya, is well-known for its spectacular concentrations of Acheulean handaxes and large game butchery sites, dating from over 1 Ma to 493 ka, as well as for pioneering studies in landscape archaeology. New excavations since 2001 have revealed that these early occupations were followed by a long sequence of Middle Stone Age occupations without handaxes, beginning well before 315 ka and ending before 64ka. In this presentation, we compare cores from the later Acheulean horizons of Members 11 and 13 of the Olorgesailie formation (between 625 and 550 ka), to those of MSA sites dating from over 315 ka to after 220 ka. We demonstrate that Levallois technology begins to emerge early on in this sequence during the Acheulean, well before its appearance in dated Middle Eastern or European contexts, and we consider the implications of this for human evolution. We also show that Levallois cores are made in many different raw materials, both local and transported, and that their frequency is episodic and non-linear through time. From 220 ka on, however, most sites are characterized by industries with small standardized Levallois cores.

Brooks, Jason (Louisiana State University)

- [232] *A Plantation Landscape: A Preliminary Discussion of the Differences in Spatial Organization between Sugar and Cotton Plantations*

In a time period when cotton was still 'king', plantations in south Louisiana were primarily growing sugarcane. In addition, many of these plantations were also processing the cane within their own plantation complexes. As such, sugar plantations could be seen as being more industrial than their cotton growing counterparts. As part of my dissertation project, this research seeks to determine if any differences exist in terms of spatial organization between the built landscapes of cotton and sugar plantations. Although the overall project will focus on the broader plantation landscape, this poster focuses primarily on the quarters areas of these plantations. As there may be differences in power relations between owners and laborers of these two plantations types, based on the more industrialized nature of sugar production versus the more traditional agricultural nature of cotton, I expect differences in spatial organization exist between the two.

Brosman, Christopher (National Park Service) and Chris Finley (National Park Service)

- [343] *The Lost Tipi Poles of Bighorn Canyon: The Use and Abandonment of Structural Materials along the Bad Pass Trail in Southern Montana.*

The Bad Pass Trail located in Bighorn Canyon National Recreation Area has served as a travel corridor in the Northwestern Plains since the Late Archaic Period. Recent investigations conducted due to the replacement of a transmission line through the park have revealed the location of over 30 tipi and travois pole fragments in an exposed surface context. These poles are likely of Protohistoric Crow origin, and show a remarkable level of preservation. In this paper we will discuss the distribution of the poles and their relationship to the visible portions of the Bad Pass Trail. We will also talk about the analysis of the individual poles based on deterioration and function. The topography of this portion of the Bad Pass Trail proved detrimental to many poles and the travois systems used to carry them. Radiocarbon dating and the presence of a dog travois pole point to a critical time in plains groups' history that may provide more insight into the adoption of the horse into Crow culture.

Broughton, Whitney (University of Mississippi)

- [306] *Childhood Growth in an Oneota Community: Relating Social Stress to Biological Stress at Norris Farms 36*

Oneota migration into the Central Illinois River Valley around A.D. 1300 has traditionally been interpreted as resulting in violent interactions between Oneota and resident Mississippian groups. Some researchers suggest that the threat of violence caused these Oneota communities to limit their subsistence activities to circumscribed areas close to their settlements, thereby reducing their resource base. The nutritional impact of this hypothesized circumscription would have resulted in biological markers that can be seen in the skeletal population at Norris Farms 36. This paper will take a new approach to the effects of violence on this Oneota group by exploring growth patterns amongst the most susceptible members of the group, the sub-adults; in doing so, this paper will lend to a better understanding of the biosocial relationship between violence and physiological growth at the site.

Broughton, Jack [316] see MacDonald, Sarah

Brouwer Burg, Marieka

- [229] *Moderator*

Brown, Tony [17] see Basell, Laura

Brown, Tony (University of Southampton, UK)

[17] Examining the Archaeology-Soil Erosion Paradox

Geoarchaeology lies at the heart of archaeological debates about societal stability and change. Geomorphological research has been used as a foundation for simplistic models of resource depletion based almost entirely on the comparison of soil erosion rates with long-term so-called "geological" rates. However, the neo-catastrophic collapse of complex agricultural societies is rare, and where it is convincingly demonstrated it is even more rarely moncausal. Indeed many societies appear to have continued agricultural exploitation of climatically marginal lands for far longer than soil depletion estimates would forecast. One reason may be that this soil depletion approach has grossly simplified soil creation through weathering, and neglected how past agriculture also affected the soil creation rate (especially on some lithologies) and how soil was conserved (terraces) and utilized even after transport. However, we now have some potentially valuable new tools, including mineral magnetics and cosmogenic nuclides, which can be used to estimate changing soil weathering rates. This approach will be discussed with examples from both the temperate and Mediterranean climatic zones and in relation to causative models of change in complex agricultural societies.

Brown, M. Kathryn (The University of Texas at San Antonio)

[31] Preclassic Investigations at Xunantunich, Belize

The Mopan Valley Preclassic Project has been investigating a Preclassic center at Xunantunich, Belize, since 2008. This location has large monumental architecture dating from the Middle Preclassic, including an E-Group architectural complex, large flat-topped platforms, and a ballcourt. New LiDAR data have added significantly to our understanding of the site's formal arrangement. It appears that this location was the original site core of Xunantunich and was abandoned sometime before the Early Classic period. Our efforts to date have concentrated on the E-Group and the associated buried features in the plaza. Excavations in the plaza in front of the central eastern pyramid revealed a large platform with unusual ramp features. The placement of this platform restricts direct access to the central staircase of the eastern pyramid while the ramps allowed access from the side. The complex architectural arrangement of the Xunantunich E-Group suggests an intentionally constructed landscape that functioned as an elaborate stage for ritual activities and processions. Although this location was abandoned at the end of the Late Preclassic, it continued to be an important place for rituals through the Postclassic.

[252] Chair

Brown, Gary (National Park Service)

[56] Beyond Chaco: Testing the Boundaries of the Middle San Juan Region at Aztec

Do Chacoan outliers provide evidence of migration from Chaco Canyon into surrounding areas? Research in the Middle San Juan region supports this assumption at some outliers, while indicating that emulation of Chacoan greatness is more likely at others. Architectural analysis supports the view that Aztec and Salmon were colonized by Chacoan migrants between A.D. 1090 and 1115. Emulation preceding colonization suggests that experts in the design, planning, and construction of Chacoan buildings would have been welcome, particularly at Aztec where the northern great house was built in vernacular fabric prior to construction of the western great house where collaboration between locals and Chacoan migrants produced an architectural hybrid.

Brown, Terry (University of Manchester)

[241] Genotypes of Historic Strains of *Mycobacterium tuberculosis* from Archaeological Remains

Archaeological remains sometimes contain ancient DNA (aDNA) from bacteria and other disease-causing pathogens. Most work has been done with tuberculosis (TB) as *Mycobacterium tuberculosis* infection sometimes results in changes to the bone structure that can be recognized when archaeological skeletons are examined. We typed 228 variable sequences in *M. tuberculosis* aDNA from the skeleton of an adolescent female who died in Leeds, UK, late in the 19th century. The genotype was similar to a strain of *M. tuberculosis* that is relatively uncommon today but is known to have been present in North America at that time. We have also obtained less complete genotypes for nine other *M. tuberculosis* strains from the 2nd–19th centuries, showing strain variations over time that fit the evolutionary scheme for *M. tuberculosis* predicted by genome sequencing of extant strains. DNA extracted from archaeological

bones also contains sequences derived from gut and respiratory tract microflora, including pathogens that cause disease in their own right or as co-infections with TB.

[99] *Discussant*

Brown, Clifford (Anthropology Dept., Florida Atlantic University), Ramiro García-Vásquez (Independent Researcher) and Sandra Espinoza-Vallejos (Directora del Museo Chorotega Nicaraao)

[153] *Recent Investigations in the Department of Chinandega, Nicaragua*

Since 2009, we have been exploring the previously-unstudied Department of Chinandega, in northwest Nicaragua, to investigate migration, ethnicity, and border processes. In 2013, we spent 6 weeks in the field conducting site survey and evaluation. To date, we have located 33 sites, conducted test excavations at 6 of them, shovel tested 2 others, and made surface collections at 10 others. Most of the sites are prehistoric. Some contain architectural remains, mounds or foundations or both. Some appear to be salt-making sites. One may be a chert quarry. Two sites contain significant historic occupations with contemporaneous architectural remains. Our ceramic studies demonstrate that the department of Chinandega does not participate in the ceramic sphere associated with the Gran Nicoya subregion but rather is closely linked to neighboring areas of eastern Honduras and El Salvador. Our lithic analyses document a wide range of raw materials and industries. We have also carried out paleoethnobotanical and geoarchaeological studies. Despite our extensive efforts, we still have much to do. Large areas, such as the Peninsula of Cosegüina, need further exploration, and the cultural sequence remains embryonic. Site destruction caused by mechanized agriculture and aquaculture appears to be unusually severe in the region.

[335] *Discussant*

Brown, Kaitlin (University of California, Santa Barbara), René L. Vellanoweth (California State University, Los Angeles), Richard B. Guttenberg (California State University, Los Angeles) and Jacques Connan (Laboratoire de Biogéochimie Moléculaire, UMR 7177,)

[163] *Archaeological Evidence for Asphaltum Production on San Nicolas Island, CA: Acquisition, Processing and Application at the Tule Creek Village Site*

Asphaltum (bitumen) is a petroleum product that was used extensively as an adhesive and water proofing agent for thousands of years in California. Fragments, cakes, and other asphaltum encrusted artifacts preserve well in the archaeological record, allowing for a thorough analysis of the asphaltum production process. This study uses a multidisciplinary methodology to trace the sequence of events in which asphaltum was acquired, processed, and applied at a Late Holocene site on San Nicolas Island. Spatial distributions are used to interpret activity areas within the village space. These data show that villagers acquired asphaltum from the island's shore and utilized the substance for a variety of applications that supported village autonomy.

[163] *Chair*

Brown, Thomas (Portland State University)

[173] *Settlement Patterns and Demography: A Look at Issues Regarding the Inconsistent Reporting of ¹⁴C Dates in Archaeological Literature*

The reporting of ¹⁴C dates in archaeological literature remains inconsistent, despite published standards and the method's centrality to archaeology. I am currently assisting in the development of a regional ¹⁴C date database for the northern Northwest Coast, which is to be used for the construction of regional sequences, reconstruction of settlement pattern and demographic changes using Bayesian methods across the Holocene. I have encountered a range of problems in old and recent reports and other literature. I provide select (and anonymous) examples of these problems, discuss methods to address them and propose a standardized format for reporting radiocarbon data.

Brown, David (University of Texas at Austin) and Meredith Dreiss (ArcheoProductions, Inc.)

[237] *Plant of a Thousand Uses: Agave in Culture*

Found in early cave deposits, Agave has long been exploited by cultures of Greater Mesoamerican and the American Southwest. Used not only for food and drink, it was also an important source of fiber for cordage and clothing. The widespread use of agave cordage may have garnered it a position within the ritual universe long before the development of agriculture. Suspected to be one of the first plants domesticated by hunter-gatherers, it was farmed on a large scale by the Hohokam in late first millennium AD southern Arizona where agave ovens near ballcourts and mounds indicate its continued use in ritual. By the postclassic, the spread of pulque consumption across central Mexico brought a series of

associated local deities led by the goddess Mayahuel. Despite its multivalent presence in the cultures of the region, agave has never been accorded the respect of better known cultigens. In this paper, we present selected highlights of agave-human interactions over the past few millennia and offer suggestions for a reassessment of its historical significance.

Brown, James (Northwestern University) and John Kelly (Washington University)**[251] Canonical Meanings and Ritual at Cahokia**

This paper addresses the ways in which ritual contexts at Cahokia have been identified by generations of archaeologists. Differing expectations about how ritual is materialized have impacted observations of ritual manifestations at Cahokia, and with it the communicative aspect of visual symbols during the period between A.D. 1000 and 1400. We argue that canonical meanings are generated by ritual that, in Norbert Elias' terms, creates social figurations among ritual actors. As the number and complexity of these figurations grow, visual symbols will take on canonical meaning that will spread communication throughout the subcontinental web of these figurations.

Brown, Sarah (University of California, Davis), Christyann Darwent (University of California, Davis) and Ben Sacks (University of California, Davis)**[320] Ancient DNA Analysis of Paleoeshimo and Thule Dog Remains from the North American Arctic**

The peopling of the High North American Arctic, occurred in two waves. First the Paleoeshimo people migrated from Siberia roughly 4000 B.P., followed by the Thule people ca. 1000 B.P. The Thule people are known for their innovation and rapid colonization of the North American Arctic, compared to small population sizes of the Paleoeshimo. A distinguishing characteristic of Thule culture relative to previous Arctic cultures was increased use of dogs, particularly for dogsled traction. Use of dogs by the Thule is reflected in the archaeological record by a dramatic increase in dog remains in zooarchaeological assemblages. Here, we present results from an Arctic wide survey of over 450 ancient dog samples and analysis of the temporal and spatial distribution of dog remains and their genetic characteristics. We compare diversity of the D-loop region of the mitochondrial DNA in Thule and Paleoeshimo dogs from Siberia, Alaska (Interior as well as Coastal), Canada, Greenland to assess origins, interchange, and changes through time. We show that, similar to their human companions, domestic dogs colonized the North American Arctic in two waves.

Brown, Christopher A. [335] see Watson, Adam

Brown Vega, Margaret (IPFW), Nathan Craig and Gerbert Asencios Lindo**[146] Awqa Pacha: Fortified Landscapes of the Pativilca Valley, Central Coast of Perú**

This paper presents data from newly documented fortified features in the Pativilca Valley, on the central coast of Perú. Using spatial data collected from the mapping of architecture and surface assemblages, the relationships between defensive architecture, fortified attributes, and landscape features are explored. Pottery and lithic types, as well as special artifacts, yield insight into the temporal assignment of sites, many of which are multicomponent. The earliest fortifications in the valley date to the Early Horizon (ca. 900-200 B.C.), or the transition to the Early Intermediate Period (ca. 200 B.C. – A.D. 200). Extensive fortified complexes characterize the Middle Horizon (ca. A.D. 500-1000). There is little indication that forts were heavily used in subsequent time periods. These data are considered along with regional data on fortifications from neighboring valleys. Analysis of the overall distribution of forts both temporally and chronologically indicates a distinct pattern of fortification for the Pativilca Valley. Results add to a growing database of fort locations and attributes for the coastal region of Perú, and lend further support to the need to consider conflict or defensive measures in local historical sequences.

Browne Ribeiro, Anna (The Ohio State University)**[149] Every Little Bit Helps: Micro-Analyses as a Vector for Understanding Causation in Social-Ecological Shifts**

Terra preta, a type of Anthropogenic Dark Earth found throughout the Amazon, has become an important piece of evidence in exploring forms of habitation in pre-Columbian Amazonia. Seen as evidence of densely-settled permanent towns, terra preta is one among many indices of anthropogenic environmental engineering in what was previously thought to be a pristine forest. Contemporary literature on Amazonia has more than confirmed a correlation between intensification in terra preta production and settlement growth, increased investment in terraforming, and refinement of technical industries. As a step toward understanding the nature of this transition, conceptualized in this paper as a regime shift, I propose that

every ecological shift has a primary or principal causal vector. For terra preta, the principal manner that human influence is transmitted to the soil is through momentary or microscopic encounters, such as individual acts of deposition or sealing of contexts through construction. The sum of such minuscule encounters of social and ecological systems is what eventually leads to regime shift.

Bruhns, Karen (Fundacion Nacional de Arqueologia de El Salvador)

[281] *Heads in the Sand, Feathers in the Air: Undocumented Antiquities and American Archaeology*
Artifacts purporting to be Precolumbian have been common in South America since at least the 1880s, a fact which has been just as continuously ignored by art historians and most archaeologists. With the enormous boom in the collecting market beginning in the 1960s forgery has become a major industry, filling the galleries, private collections and museums of the world, including many in South America, with art works of highly dubious authenticity. This, in its turn, has severely impacted reconstructions of ancient cultures and their ideological systems and threatens to make ludicrous many more interpretative schemes. It is more than time for the mantra of authenticity for undocumented artifacts to change from real until proven fake to fake until proven genuine.

[153] *Discussant*

Brumbach, Hetty Jo [73] see Jarvenpa, Robert

Brunelle, Andrea [317] see Hart, Isaac

Brunette, Jeremy (University of Nebraska - Lincoln) and Christine Nycz (Midwest Archaeological Center)

[79] *Archaeological Investigations of the Platt Historic District at Chickasaw National Recreation Area: Results of 2013-2014 Field Work*

The Platt Historic District in Chickasaw National Recreation Area (Murray County, Oklahoma) presents a landscape of natural mineral and fresh-water springs which create an inviting place for people to settle, develop, and enjoy. From pre-contact use, to resort town, rustic National Park, and further development by the CCC, the area has experienced a number of iterations. The many facets of the historic town will be explored as one aspect of a joint project between the University of Nebraska-Lincoln, the Midwest Archaeological Center, and Chickasaw National Recreation Area. This poster will highlight the research design for the archival research and historic map analysis that was used to discover locations of features and structures that span the human utilization of the park and preliminary results of field work conducted in 2013-2014.

Bruno, Maria (Dickinson College)

[99] *Discussant*

Brunswig, Robert [206] see Reynolds, Cerisa

Brush, Nigel [266] see Kardulias, Paul

Bryan, Adrienne (University of California, Los Angeles) and Rene Pilco Vargas (Universidad Nacional de San Antonio Abad, Cusco)

[105] *The Materiality of Death: Functional Materialism and the Kusikancha Burials*

In the ancient and modern world, the dead from elite groups are interred with finely crafted objects made from precious materials in their tombs. Often for the elite, many high quality and precious objects have been preserved, making it possible for archaeologists investigating the ancient world to partially reconstruct these ceremonies and begin to understand these cultures' view of death. Using Dr. Kathryn Cooney's idea of functional materialism, I will probe the relationship between the eternal body of the deceased and the objects they were buried with and analyze the types of burial objects used in the rituals and placed in the tombs. For this project, I am studying the dataset from the burials at the Kusikancha, a ritual site that contained 22 Inca elite mummies in the Inca capitol. During this period, the Inca polity was a regional state with a large area of influence, focused materially, interested in the preservation of the body in the afterlife, and supported a stable elite. By using the idea of functional materialism, we can arrive at a clearer understanding of how regional states institutionalize the funerary process and celebrate

their elite in death as they did in life.

Bryant, Vaughn (Texas A & M University)**[283] Forensic Archaeology & Pollen: Why Use It**

Sampling for pollen at forensic archaeological sites should become a standard procedure. Not all samples need to be examined, but samples should be stored correctly to prevent post-collection contamination and to retain their value as trace evidence. Once the crime scene is disturbed during recovery, the opportunity to obtain later samples is impossible. Pollen recovered from burials and other features associated with the recovery of materials related to criminal or illegal civil activities can sometimes be of great value in helping to understand the recovery site and its contents. Pollen might be able to assign a geolocation to the person or material that is recovered from a site. Secondary burials resulting from the removal of items from one location, which are then reburied at a new location, can often be detected through examining the included pollen. Determining the origin of the fill materials at a burial or feature could be enhanced through the recovery of included pollen. Associating pollen from a crime scene with clothing or an item owned by a suspect could provide essential evidence. Finally, in some cases the season of burial or season of usage might be revealed from the included pollen in the feature.

Bryant, Jeff**[341] Soil is Social: Investigating Maya Soil Dynamics and Social Stratification during Climate Change with X-Ray Fluorescence Spectrometry (XRF).**

This paper will investigate both social stratification and agricultural potential in the Petén Maya lowlands using both traditional measures of available soil nutrients and total elemental concentration as reported by X-Ray Fluorescence Spectrometry (XRF). A comparison of the data will demonstrate the need for building an understanding of the local nutrient cycle dynamics when interpreting soil data. The capacity of the soil to make nutrients available has major implications for how much of a chemical will be detected, and how we use our data in answering questions about the environment and society. This study will investigate a local problem in the phosphorus nutrient cycle and test if elite sites are more fertile than commoner sites for anthropogenic reasons. Potential uses for XRF in soils archaeology will also be discussed such as detecting and measuring processes of erosion and intensive cultivation over time.

Bryce, William (Southwest Archaeology Research Alliance) and Heidi Roberts (HRA, Inc.)**[141] From Here and There: Flaked Stone from the Obsidian Cache Pithouse Site of Southwest Utah**

The excavation of site 42Ws4474 in 2006 by HRA, Inc. recovered a notable flaked stone assemblage. In particular, a burnt pithouse dating from cal A.D. 60 to 240 (Beta-Analytic sample 240766), contained two caches of obsidian flakes, scattered debitage, five bifaces, and nine projectile points. The flaked stone assemblage was analyzed in co-operation with the Northern Arizona University Anthropology Department. The analysis concluded that multiple, locally available material types, as well as obsidian sourced to two locations to the northwest, were used in a variety of tasks. In general, cobbles of suitable material underwent unpatterned core reduction for flake production. Flakes were then used as tools, as well as for blanks, to create bifacial tools. The corner- and side-notched projectile points show similarity with other Basketmaker II assemblages. Quantitative and stylistic comparisons with Basketmaker II collections from Cedar Mesa, the Rainbow Plateau, and the Durango area (Bryce 2010) show the greatest similarity with bifacial tools from the Rainbow Plateau collection.

Bryce, William [182] see Whittaker, John

Brzezinski, Jeffrey (University of Colorado at Boulder), Arthur Joyce (University of Colorado at Boulder) and Sarah Barber (University of Central Florida)**[8] The Construction and Use of Public Space at Cerro de la Virgen, Oaxaca, Mexico**

This paper presents the results of recent archaeological investigations at the site of Cerro de la Virgen, a secondary political center located in the hinterland of the lower Río Verde Valley, Oaxaca, Mexico. Research at Cerro de la Virgen is designed to examine the articulation between outlying sites and political centers, with a focus on how contestation and negotiation at a regional scale influenced political organization. During the Terminal Formative period (150 B.C.–A.D. 250), the lower Verde witnessed the brief fluorescence of a complex polity with its political seat located at the urban center of Río Viejo. Excavations conducted in early 2013 at Cerro de la Virgen examined the construction techniques and use

of public space within the ceremonial core of the site to compare them to similar contexts at Río Viejo and other outlying sites. Preliminary analysis indicates significant differences in the ways people constructed and used public buildings at Cerro de la Virgen compared to other sites in the region. We argue that this variability supports the hypothesis that regional integration at the end of the Formative in the Río Viejo polity was limited, and these public, sacred landscapes were planned and built by local populations.

Buchanan, Meghan (Indiana University)

- [15] *Reconfiguring Regional Interactions in the Face of Cahokian Decline: A View from the Common Field Site, MO*

Following the Cahokian Big Bang (ca. A.D. 1050), regional interactions in the Midwestern United States were drastically reconfigured as immigrants and pilgrims came to the American Bottom, traders and missionaries interacted with new people, places, and materials, and polities throughout the region rose and vied with each other for power and prestige. Several models and theories have been proposed for explicating the beginnings and political climax of Cahokia. However, the later dissolution of Mississippian polities (especially the Cahokia, East St. Louis, and St. Louis mound centers) and their impacts on regional interactions are less well understood. In this paper, I assess the utility of Green and Coston's Model of Cross-Cultural Interactions for this period of political turmoil, negotiation, shifting borderlands, and eventual abandonment during the late 12th-14th centuries in the Midwest. In particular, I focus my attention on the Common Field site, a political and religious center located in a region that had been sparsely populated prior to A.D. 1200. I suggest that rather than focusing on former political centers, communities that are established during periods of decline and collapse (like Common Field) hold the keys for understanding novel, shifting, and dissolving interactions.

Buchanan, Courtney (California State University Channel Islands)

- [89] *Using Portable Antiquities to Understand Identity Creation: A Case Study from Viking Age Scotland*

This paper explores the portable, non-indigenous material culture strongly related, but not exclusive, to one ethnic group in the medieval period: the Vikings. It is based on the ideas that people from different cultural backgrounds cannot come into contact with each other without having their identities altered in some significant way, and that these altered identities will be expressed in their material culture. During the period from approximately A.D. 800 to 1100, the Vikings initiated contact with inhabitants of Britain, first by raiding and attacking, then by trading and settling amongst the local populations. Whereas most research of Viking and local interaction has focused on Viking settlements in the Northern and Western Isles of Scotland or the Danelaw of England, this paper focuses on peripheral regions where there are increasing amounts of evidence of Viking activities and interactions with the local peoples. Three key research questions are asked of materials found within this region: (1) How and why did items of Viking material culture enter regions outside the centers of traditional Viking settlements? (2) How and why were these items used to conduct meaningful contacts and interactions with local groups? (3) How and why were identities constructed in these regions?

Buchanan, Briggs (University of Tulsa)

- [193] *Point Type Diversification: A Quantitative Test of Competing Hypotheses*

Understanding the causes of spatial and temporal variation in the number of point types is an important task for archaeologists. In this study we tested two hypotheses regarding drivers of point type richness. One avers that point type richness is dependent on population size such that larger populations will have more types than smaller populations. The other hypothesis argues that the number of point types utilized by a population is governed by environmental risk. We tested these hypotheses with data from Texas. We calculated point type richness by region and time period, and then measured the statistical association between point type richness and proxies for population size and environmental riskiness. Point type richness was uncorrelated with population size in both analyses. In contrast, point type richness was negatively and significantly correlated with one of the risk proxies—average annual precipitation—as predicted by the risk hypothesis. Our results suggest that risk was a more important driver of point type richness than was population size in the area that is now Texas, and therefore add weight to the argument that variation in point type richness should be interpreted as adaptive.

- [193] *Chair*

Buck, Paul (Nevada State College/Desert Research Institute) and Donald Sabol (Desert Research Institute)

[13] *Sub-Pixel Detection of Archaeological Materials Using NASA Satellite and Aircraft Data*

For this NASA-funded project (award NNX13AP66G) we examine whether sub-pixel artifacts (i.e. site middens, obsidian artifacts, and pottery sherds) can be directly detected/identified using airborne and spaceborne image data. Our objectives are to: (1) use NASA image data in conjunction with actual field/laboratory measured spectra of archaeological materials to test the detection limits of the selected artifact classes at the sub-pixel scale by applying previously demonstrated theoretical detection limit modeling; (2) examine the influence that background, seasonal vegetation change and other on-site changes have for the detectability of these objects in image data; (3) establish the instrumentation, spatial scale, and spectral bands needed to improve the detectability of these objects; and (4) to test predictions of new locations for artifacts at specific (spatial) densities in other image scenes and ground truth these predictions. We are investigating locations at Glass Mountain, CA (obsidian) and southern New Mexico (pottery). Visible and TIR are the primary image data used. Spectral characteristics of targets and backgrounds will be measured and a mixture model constructed linking these spectra to image data. Success will be evaluated by mapping predicted concentrations nearby and conducting ground truthing to determine accuracy.

Buck, Ian [76] see Beaver, Joseph

Buckler, Edward [207] see Swarts, Kelly

Budar, Lourdes [62] see Sauza, Maximiliano

Budar, Lourdes (Universidad Veracruzana) and Philip J. Arnold III (Loyola University Chicago)

[62] *Olmec-Style Sculpture on the Sierra de Santa Marta, Los Tuxtlas, Veracruz: Reflections*

Six seasons of archaeological fieldwork in the Sierra de Santa Marta, Los Tuxtlas, Veracruz, have documented several pieces of sculpture executed according to Gulf Olmec stylistic cannons. In combination with previously published pieces, such as the San Martine Pajapan sculpture No.1, this collection displays notable similarities and differences in the expression of Gulf Olmec sculptural traits. In this paper we reflect on possible reasons for these patterns, arguing that synchronic social distance, rather than diachronic distortions, played a major role in this regional stylistic variation.

Buikstra, Jane (Arizona State University)

[25] *Discussant*

Buikstra, Jane [157] see Herrmann, Jason

Bukowski, Julie [272] see Hargrave, Eve

Bulger, Teresa (WSA Archaeological Consultants)

[111] *Changing the Parlor: Household Life-Cycles and Redefining the Home's Public Space*

The Victorian parlor is often held up as a space where late-19th century families exhibited their worldliness and social acumen. These spaces were not static monuments to Victorian values, however, as they served specific, and shifting, purposes for the families who kept them. In this paper, I consider the ways in which the parlor of a prominent late-19th-century San Francisco family, the Hutchinsons, changed as the life-cycle of the family progressed. In the 1870s, the Hutchinson parlor was created as a place for the performance of an elite family class status. In the 1890s, however, the younger generation of the family, including daughter Kate F. Hutchinson, began to tend to the family home more actively. Kate was involved in the Ladies Protection and Relief Society, carrying on the tradition of social activism that her father James S. Hutchinson had set as a founding member of the San Francisco SPCA. When she became the matriarch of the household, parlor furnishings changed, with expensive and ostentatious items hidden away. I argue that home furnishings and other material culture were involved in the generational negotiation of the meaning of the parlor and its relationship to one's performance of gender and public persona.

Bullion, Elissa (Washington University in St. Louis), Michael Frachetti (Washington University in St. Louis) and Taylor Hermes (University of Arizona)

[301] *Landscapes of the Dead: Spatial and Typological Analysis of Burials in the Byan-Zherek Valley, Kazakhstan*

Burial archaeology has been a primary focus of Central Asian archaeology since before the Soviet era, and continues to be a valuable source of information for bioarchaeological and materials based research today. This project seeks to compare burial construction and distribution in the Byan-Zherek Valley in eastern Kazakhstan against a general typology for Central Asian burials. Preliminary ground survey as well as Google Earth was used to identify and categorize burials chronologically based on structural elements and spatial characteristics. The structural elements focused on are size, form, and, if possible, material of construction. The spatial analysis, conducted through the use of GIS, looks at grouping of burials and patterning with regards to other burials and landscape features. By examining the similarities and deviation of this valley's burials from the general typology, we hope to comment on the region's participation in or rejection of cultural processes relating to burial practices. Analyzing burials on multiple temporal and spatial scales will also inform us about the value and weaknesses of typologies for this region and the need for reevaluating what have otherwise been seen as universal attributes.

Bunbury, Judith [17] see Rowland, Joanne

Bunn, Cherise [333] see Schleher, Kari

Bunting, Augusta (University of Auckland), Judith Littleton (University of Auckland) and Peter Sheppard (University of Auckland)

[67] *Cosmopolitan Populations? Strontium Isotope Analysis from ed-Dur, UAE*

A cosmopolitan population involved in an extensive international trade network, demonstrated by the presence of foreign artifacts, would have been made up of individuals of mixed origins. The coastal site of ed-Dur, located in the modern-day Emirate of Umm al-Qaiwain occupied primarily from A.D. 0-250, was a strategic part of an extensive international trade network. Strontium isotope analysis is a useful tool for exploring hypotheses surrounding origins and migration in archaeological populations. By acting as a geochemical marker of a particular region, the ratio of strontium isotopes in teeth can be used to identify an individual's origin.

This study investigates origin in six individuals buried at ed-Dur. Of the six individuals tested, four showed strontium values comparable to the local signature. The other two exhibited signatures indicative of foreign origins but do not appear to have come from the same place. A tooth from a camel interred among the human remains was also tested and showed an analogous signature to one of the foreign individuals. The results indicate multiple origins, congruous with the notion that the population at ed-Dur was cosmopolitan.

Burbank, Joshua (Michigan State University), Amy Michael (Michigan State University), Gabriel Wrobel (Michigan State University) and Rebecca Shelton (AR Consultants, Inc.)

[70] *Interpreting a Specialized Cache of Human Remains in Actun Kabul, Central Belize*

Excavations by the Central Belize Archaeological Survey in Actun Kabul, a large cave in the Roaring River Valley of central Belize, focused on two discrete features containing high frequencies of ceramics and human remains comprising teeth and phalanges. While commingled burials are found en masse in the terminal chamber, these caches containing very specific elements are located in the middle portion of the cave where no primary or secondary burials occur. We attempt to interpret the nature of these unusual deposits using clues derived from spatial and archaeological data relating to their placement within the cave, a bioarchaeological analysis and inventory of the elements, and analogies with caching practices involving human remains found in ethnographic, ethnohistoric, and epigraphic sources. This study specifically relies on models of analysis for cave contexts championed by James Brady, including the identification of specific rituals, as well as the investigation of how spaces within caves were differentially used by the Maya.

Burchell, Meghan [286] see West, Catherine

Burentogtokh, Jargalan (Yale University)

[313] Discussant

Burger, Rachel (Southern Methodist University), J. Andrew Darling (Southwest Heritage Research, LLC) and B. Sunday Eiselt (Southern Methodist University)

[46] New Perspectives on Sapawe Flutes and Whistles

Bone flutes and whistles recovered from archaeological sites of the Chama Valley are recognized widely as markers of the ceremonial elaboration that accompanied the concentration of large populations in ancestral Pueblo settlements and set the Pueblo IV period (A.D. 1275–1600) apart from earlier occupation in the Valley. And yet, we know very little about how these instruments were played and even less about the socio-cultural contexts of whistles and flutes and their relationship to sound generation for musical performance or, even perhaps, avian husbandry. Using perspectives derived from theory in Music Archaeology, faunal analysis, and acoustic modeling, this poster challenges existing conventions that flutes from the site of Sapawe were produced strictly from turkey bone and reconsiders the functional differences in the utilization of flutes with multiple tone holes versus whistles assumed to be bird calls. We further consider the role of Sapawe as a potential center for flute and whistle production, and the performance aspects of playing flutes and whistles alone or in groups that in turn may have influenced not just the dynamics of sound production but also those of supply and demand.

Burger, Richard (Yale University), Lucy Salazar (Yale University) and Jorge Silva (Universidad Nacional Mayor de San Marcos)

[281] Lost in the Mist of the Ceja de Selva: A U-shaped Formative Complex in Moyobamba?

This talk considers an anomalous site with impressive stone masonry located near the town of Moyobamba in the Peruvian ceja de selva. The hypothesis that this site corresponds to an Initial Period or Early Horizon U-shaped complex related to Chavín de Huantar and other coeval centers on the coast and in the highlands is evaluated and rejected. Archaeological and historical evidence is presented that the site was probably the result of the Inca efforts to conquer the ceja de selva. If so, it would be one of the easternmost archaeological examples of these imperial efforts in what is now northern Peru.

Burghardt, Laura (University of Arizona)

[79] The Vernacular Architecture of Homesteads in Cebolla Creek, New Mexico

Vernacular architecture is an expression of culture, and the study of buildings can reveal much about those who designed and constructed them. This project explores the architecture of several late nineteenth and early twentieth century homestead sites in the Cebolla Creek area of west-central New Mexico. The dwellings in this isolated canyon were constructed very differently, varying in materials, construction method, and architectural style. The individuals who constructed these homesteads came from different locations, had different occupations, family statuses, ethnicities, and life stories. Moving to a new place, homesteaders made decisions about building construction to meet their needs, considering the ecosystem and available resources, but much of the knowledge used in construction and design was cultural. Were some of these factors more influential in the architectural differences among the homesteads? This poster presents the results of combined biographical and architectural research at these sites and interpretation of the reasons behind the architectural differences.

Burgos, Walter [161] see Barrios, Edy

Burgos, Walter (USAC), Edy Barrios (CUDEM/USAC) and Paola Torres (USAC)

[191] Descifrando la identidad de un pueblo fronterizo: Investigaciones en el sitio Río Amarillo, Copán

Located in the eastern section of the Copan Valley, Honduras, lies the Precolumbian settlement of Río Amarillo. Previously, several scholars, on the basis of site maps, proposed that the East Group of the Ceremonial Core was inhabited by a non-Maya population. From 2012-2014 excavations conducted in this area by the Proyecto Arqueológico Río Amarillo-Copán (PARAC) have provided significant information on the identity of the Late Classic period population in this residential zone. While building styles largely employ river-cobble architecture, with occasional cut-stone blocks of toba, the ceramics reflect a participation in the economic sphere of Late Classic Copan as well as some exchange with the interior of Honduras. During at least one period of occupation of the East Group, the inhabitants employed an effigy of K'inich Yax K'uk' Mo' in their religious practices, suggesting an affinity with ritual practices of the great city to their west.

Burke, Ariane (Université de Montréal), Dario Guiducci (Université de Montréal) and James Steele (University College London)**[16] Seeing our Way: Perception of the Landscape and Patterns of Hominin Dispersal**

The scope of hominin dispersals and their chances of long-term success must have depended upon the ability of individuals to plan and navigate their way through the landscape (wayfinding), communicate spatial information to others, follow established routes and recognize landmarks. In this paper we consider how landscape legibility could have affected the ease with which Middle Paleolithic hominins developed cognitive maps, oriented themselves and navigated through the landscape (Lynch 1960). Following Golledge (2003) we consider three aspects of legibility: (1) spatial coherence ("legible" environments have spatial coherence, enabling object clustering and feature characterization as well as hierarchical ordering of phenomena); (2) ease of travel (the facility with which people can move through an environment); and (3) the way in which sociocultural meanings impart legibility (by imparting meaning to certain landmarks even though their physical characteristics would not normally distinguish them from similar, nearby features). The goal of this research is to develop a means of operationalizing these concepts, applying them to archaeological analyses of hominin dispersal patterns during the Late Pleistocene.

Burke, Tommy [106] see Alonzi, Elise

Burke, Adam**[308] Dark Waters and Darker Artifacts: Using PXRF to Analyze Chert Provenance and Patina Formation in the Aucilla River, Northwest Florida**

This paper will present the results of an extensive Portable X-ray Fluorescence Spectrometry (PXRF) study analyzing the ability of PXRF to determine chert provenance. A sample of 110 artifacts from the Wayne's Sink Site (8JE1508/8TA280), a submerged quarry located in the Aucilla River in Northwest Florida, was compared with raw material samples collected from the chert outcrop at Wayne's Sink. This quarry was only accessible until the Early Archaic period, when it was inundated by rising sea levels. The assemblage analyzed was excavated from deflated and submerged context, and has thus acquired a range of heavy patinas of unknown origin. This research will determine not only the applicability of PXRF to chert provenance studies, but also the geochemical changes and environmental factors that have resulted in the heavy staining of stone artifacts regularly found in the Aucilla River.

Burke, Chrissina (Northern Arizona University) and Gary Haynes (University of Nevada, Reno)**[320] Carnivore Modification of Plains Bison Bonebeds: Explaining Variability Using the Scavenging Ecocenter Concept**

Bison bonebed assemblages of the Northern Great Plains exhibit varying degrees of overall carnivore modification. In previous research studies these data have been quantified and used in isolating taphonomic events or patterns influencing site formation processes. This paper presents the Scavenging Ecocenter, a conceptual framework for evaluating the variability in degree of carnivore destruction to large ungulate mass kills. Using several bison kill sites from Colorado and Wyoming, the Scavenging Ecocenter is explained and employed in analysis, allowing archaeologists to draw conclusions from zooarchaeological assemblages that not only represent site formation processes, but are also useful in identifying the human impact that hunting large numbers of bison had on scavenging predators. While the results of this study are preliminary, this research illustrates that more information can be gained from taphonomic patterns than merely explanation of taphonomic processes.

Burks, Jarrod (Ohio Valley Archaeology, Inc.)**[196] Geophysical Survey in Cemeteries: It's About More Than Just Finding Graves**

Cemeteries are perhaps one of the most common places to conduct geophysical surveys in the United States, especially in the context of cultural resource management. And yet, graves are notoriously difficult to detect on a regular basis, being subject to the vagaries of soil types, weather/soil moisture conditions, and grave specifics (e.g., grave size, content, and age). Graves often elude detection even when three or more geophysical instrument types are used. However, there often is more to a cemetery than its graves. Other features, such as roads, fences, plot markers, building foundations, grave-side furniture, and plow marks around the outside of cemetery, to name some of the major ones, can be quite useful for determining the structure of a cemetery. In this presentation I discuss the geophysical signatures of a variety of non-grave cemetery features and show how they might be used to zero in on the location of unmarked graves.

Burnett, Paul (SWCA Environmental Consultants)

[77] *Adaptive Management in the Niobrara Oil Play: Probability Modeling for Cultural Resources*
Cultural resource management in Northeast Colorado is adapting to the demands brought on by the Niobrara Oil Play such as threat of impact from geophysical exploration and infrastructure development (e.g., well pads, pipelines, and roads). As most of the land is privately held, both public land managers and privately held companies face a challenge of effective management on properties controlled by others. Adding to that challenge are the competing goals of minimizing commercial costs and maximizing public resources values. Probability models developed for various types of archaeological sites in the region help resolve these challenges. Models, as exemplified here, benefit the situation from a purely archaeological perspective by identifying broad patterns in the archaeological record, reaching across private and public lands, while giving managers and companies another tool for use in project planning, reducing uncertainty.

Burnett, Paul [265] see Kennedy, John

Burns, Jonathan (AXIS Research, Inc.)

[304] *Teaching Archaeology in the Trenches: Academic Departments, Non-Profits, and Historic Preservation in Pennsylvania*

As state and private anthropology departments compete for student enrollment, those involved with hiring in cultural resource management (CRM) are typically less than satisfied with the training students are receiving in academic programs. Two Field Schools, offered by the Pennsylvania State University and Juniata College, serve as examples of the successful pairing of undergraduate courses in applied anthropology with significant local archaeological projects. The involvement of non-profit organizations helps to further cohesion and integration of the projects by providing stable platforms for networking and mentoring. With this new approach to education, students are empowered because of the training and trust instilled in them through participation in experiential learning, making them qualified candidates for the practical roles that archaeologists serve in the twenty-first century.

Burns, Clareanna

[324] *To Quarry or Not to Quarry, That Is the Question*

Lake County, Oregon hosts some of the oldest Northern Great Basin cave sites including Fort Rock and the Paisley Caves, as well as numerous lithic scatters and notable rock art sites. Lithic assemblages from this region often contain up to 30% basalt. In August of 2013, the Dismal Spring Basalt Quarry in the South Warner Valley was recorded with the Lakeview District Bureau of Land Management. Being the first recorded prehistoric basalt quarry with the Lakeview District BLM, the Dismal Spring Basalt Quarry poses challenging questions. Why haven't more basalt quarries been recorded? Is this because we have failed to locate and document basalt quarries thus far? Or is it more attributable to sporadic prehistoric procurement patterns that vary significantly over time and geography? This investigation probes our understanding of prehistoric basalt procurement and use patterns using the Dismal Spring Basalt Quarry as a preliminary model for future basalt quarry research in the Warner Valley and Northern Great Basin archaeology.

Burillo, Ralph (University of Utah)

[207] *Beans, Baskets and Basketmakers: A Test of Cooking Limitations in the Pre-Ceramic Southwest*
Paleodietary reconstruction attests to heavy reliance on maize among Basketmaker II groups living in the Colorado Plateau region by at least 400 B.C. Maize is notably deficient in two essential amino acids, lysine and tryptophan, making it a poor protein food on its own. Early Mesoamerican farmers mitigated this shortfall by supplementation with beans, but beans do not appear in the archaeology of the Basketmaker region until around 500 A.D. Researchers have long assumed that the late arrival of beans is contingent upon the need for ceramic cooking vessels, and have advanced numerous hypotheses to account for concomitant nutritional implications. To test this assumption, a series of experiments was designed to examine the feasibility of preparing beans in pitch-lined baskets. Results of these tests offer clues about the subsistence strategies and diet breadth of pre-ceramic Basketmaker populations.

Burrow, Ian

[100] *Discussant*

Burton, James H. [21] see Freiwald, Carolyn

Burtt, Amanda (Indiana University), Laura Scheiber (Indiana University), Lawrence Todd (Greybull River Sustainable Landscape Ecology (GRSL), Ryan Kennedy (Indiana University) and Haskell Samuel (Indiana University)

[265] *Post-Fire Inventories and Hunter-Gatherer Use Intensity as Exemplified at the Caldwell Creek Site (48FR7091), Fremont County, Wyoming*

Interpreting the use of mountainous regions by prehistoric and historic hunter-gatherers has been hampered through the years by difficult access, excessive ground vegetation, and wilderness restrictions. With the advent of forest fires that burn thousands of acres and expose hundreds of archaeological sites every summer, our knowledge of campsite structure and extent has grown rapidly. We now know that remote campsites often contain tens of thousands of artifacts that represent a greater commitment to mountain resources and places than previously considered. New recording methodologies have been employed to properly document these sites. In this paper, we describe recent efforts to inventory the Caldwell Creek site, which was exposed by the Norton Point fire in 2011. In addition to an overwhelming number of lithics, the fire also revealed numerous diagnostic Mountain Shoshone artifacts, including ceramics, side-notched and un-notched projectile points, and a wide variety of Shoshone knives and bifaces.

Busch, William [157] see Moffat, Ian

Bush, Leslie (Macrobotanical Analysis)

[95] *Evidence for a Long-Distance Trade in Bois d'Arc (*Maclura pomifera*, Moraceae) Bows in 16th-Century Texas*

A single piece of bois d'arc wood charcoal was recovered from a Late Prehistoric Toyah Phase component in Menard County, Texas. Although evidence for the prehistoric distribution of the species is sparse and identifications not always precise, investigation into the ecology, physiology, archaeological and early historic distribution of bois d'arc indicates a limited range for the species that was exploited by ancestral Caddo producers and Jumano traders.

[95] *Chair*

Bush, Mark [117] see Cyr, Howard

Butler, Ethan [23] see D'Alpoim Guedes, Jade

Butler, Scott (UCL Qatar)

[221] *Archaeological Data Recovery at Mitchelville (38BU2301), a Freedmens Village, Hilton Head Island, SC*

Brockington and Associates undertook a Phase III data recovery at Site 38BU2301 at the Hilton Head Island Airport, on Hilton Head Island, Beaufort County, South Carolina. Site 38BU2301 represents a portion of Mitchelville, a village first established by Federal authorities in 1862 during the Civil War as a freedmen's community. Unlike other contraband camps, Mitchelville developed as an actual town, with neatly arranged streets, quarter-acre lots, elected officials, and compulsory education. Archaeological investigations recovered the remains of individual houses and larger features, including barrel wells, trash middens, and trash pits.

Butler, Virginia (Portland State University), Sarah Campbell (Western Washington University), Kris Bovy (University of Rhode Island), Mike Etnier (Western Washington University) and Sarah Sterling (Portland State University)

[286] *A Drop in the Bucket: Characterizing Complex Middens with 10 Liter Sample Units*

Our ongoing project is examining intra-community response to high magnitude earthquakes and other environmental change through analysis of the faunal remains and, by extension, subsistence strategies, from a large coastal village in Washington occupied 1800-100 B.P. The extensive horizontal exposure (> 500 m²) yielded enormous faunal samples, and the remains of multiple houses that reflect variable social status or specialization. Detailed geoarchaeological field recording of deposits produced a high-resolution view of prehistoric activity and temporal change. One methodological goal was to address

previous limitations with Northwest Coast faunal sampling, where major differences in excavation volume and mesh size preclude direct comparison of taxonomic representation of different animal classes (e.g., sea lions to herring). Field sampling was explicitly designed to allow for integration of all classes of faunal data (birds, fish, mammals, and invertebrates) and obtain a high-resolution picture of faunal change. One 10-liter bucket of sediment from each uniquely defined deposit was water-screened through graded mesh (down to 1/8"), while additional buckets from the same deposit were retained but treated less rigorously. Our presentation reviews the efficacy of this approach for addressing a range of questions, based on faunal remains from one house.

Buttles, Palma (Carnegie Mellon University/Software Engineering Institute) and Fred Valdez (The University of Texas at Austin)

[31] *An Archaeological Snapshot in Time and Space: Colha and the Preclassic Communities of Northern Belize*

Since its original recording in 1973 by Normand Hammond, Director of the British Museum-Cambridge University Corozal Project, the site of Colha has experienced a long (17 seasons) and diverse history of multi-disciplinary investigation. The results of these efforts have greatly contributed to the understanding of the biophysical Preclassic environment of northern Belize, the people who inhabited and manipulated it, the cultural, economic, and ideological systems that sustained it, and the material culture that functioned within it. In this paper we will compare and contrast the Preclassic community of Colha with its northern Belize neighbors to create a snapshot of the Preclassic regional landscape.

Buttles, Palma [33] see Valdez, Fred

Buvit, Ian

[114] *Geoarchaeology and the Search for the First Americans*

When did humans first settle the Americas? This question has eluded science for over a century, yet today we are closer to the answer than ever before. The debunked Clovis-First Hypothesis dogged our understanding of the truth for decades, and we now know that humans were in the Western Hemisphere for at least several millennia before Clovis. Despite outstanding gains, questions persist regarding fundamental aspects of the oldest sites in the Americas. For example: What processes have affected the distribution of their artifacts, geofacts, and ecofacts? What is the landscape context of the earliest sites and what was it like in the past? How old are they exactly? In many respects, geoarchaeologists are uniquely qualified to address these questions. In this paper, I present the history of geoarchaeology's contribution to our understanding of American prehistory before Clovis and demonstrate a few parallels between the efforts that are taking place today and those that were undertaken over a century ago when geoscientists helped prove a Pleistocene human presence in the Americas. I also touch on how geoarchaeology can continue to take a leading role in the debate.

[114] *Chair*

Buvit, Ian [223] see Terry, Karisa

Buzon, Michele [15] see Smith, Stuart

Bybee, Alexandra

[155] *Food Remains and Other Biological Materials from Abdominal Soil Samples: What Seeds and Other Biological Substances Can Tell Us about Historic-Period Dietary Consumption Patterns and Medicine*

Soil samples collected from the abdominal regions of historically interred individuals provide a wealth of information about past food consumption, and also about potential medicinal uses of certain plants as folk remedies during the historic period. This paper presents data about the seeds, fruits, and other biological materials that have been collected from flotation samples from several cemeteries in Kentucky and West Virginia. The presence of certain seeds and fruits, such as raspberry/blackberry, can almost certainly be attributed specifically to dietary consumption, whereas the presence of others, such as nightshade, may have been from medicinal use. Possible dietary and medicinal uses of a variety of plants found in the southeastern United States are explored, and recommendations for collection strategies are presented.

Byerly, Ryan (Far Western Anthropological Research Group, Inc.) and D. Craig Young (Far

Western Anthropological Research Group, Inc.)

- [315] *Geomorphology of the Pipes Wash Fan: Implications for Early Site Preservation near Emerson Lake, California*

Archaeological investigations conducted over the last 15 years in the Emerson Lake training area at the Marine Corps Air Ground Combat Center outside Twentynine Palms, California have revealed a number of Early-Middle Holocene sites distributed across the terminal portions of the Pipes Wash Fan, an expansive alluvial landform south of the Emerson Lake playa. This poster summarizes past and recent geomorphologic data for this area, highlighting recent investigations demonstrating the presence of localized buried surfaces that have the potential to preserve early archaeological sites. This potential is discussed in the context of millennial-scale changes in climate, particularly with regard to how these changes impacted water and associated resource availability.

Byerly, Ryan [316] see Roberson, Joanna

Byers, David [206] see Breslawski, Ryan

Byrd, Brian (Far Western), Andrew Garrard (Institute of Archaeology, University College London) and Paul Brandy (Far Western Anthropological Research Group)

- [236] *Modeling Territorial Ranges and Spatial Organization of Late Pleistocene Hunter-Gatherers in the Southeastern Levant*

This talk explores the nature of hunter-gatherer spatial organization during the terminal Pleistocene in the southern Levant. Archaeological research has demonstrated that both the western more forested areas and the surrounding steppe grassland and desert witnessed substantive occupation 21,000-15,000 years ago. This research study focuses primarily on exploring daily foraging ranges and potential annual territorial ranges associated with major base camps/aggregation sites in the steppe-desert region of east-central Jordan. Daily foraging ranges are modeled using least-cost GIS analysis that uses kilocalories as currency, and assuming individuals return to the base camp by the end of the day. The study also employs GIS-based landscape analysis to explore territorial ranges and boundaries, with the objective of generating multiple scenarios that can be tested with future research. The talk concludes with a consideration of social agency, supra-regional interaction, and how spatial patterns may have varied within the southern Levant.

Byrne, Roger [158] see Bhattacharya, Tripti

Byrne, Chae (University of Western Australia)

- [244] *Issues in Archaeobotanical Recovery and Sampling within a Terminal Pleistocene Cave on Barrow Island, NW Australia*

Anthroecology (wood charcoal analysis) can generate valuable data surrounding past relationships between people and plant communities. This paper will discuss the preliminary identifications of charcoal fragments recovered from the first field season at Boodie Cave, Barrow Island, northwestern Australia. Analysis of species diversity will provide insights into the changing vegetation of Barrow Island as it transitioned between a high range on the extensive northwest shelf towards its current status as an island. There are proxy archaeological signatures (e.g., flakes from edge-ground axes and locally extinct fauna) to indicate the now drowned-coastal plain hosted very different assemblages to the spinifex dominated ones found on Barrow Island today.

Byrne, Fergus (Institute of Archaeology, UCL), Tomos Profitt (Institute of Archaeology, UCL, London), Adrian Arroyo (Institute of Archaeology, UCL, London) and Ignacio de la Torre (Institute of Archaeology, UCL, London)

- [255] *Bipolar Experiments with Quartzite from Olduvai Gorge (Tanzania)*

An ongoing experimental program with raw materials locally available at Olduvai Gorge (Tanzania), aims to replicate the lithic technology of Oldowan and Acheulean assemblages from Beds I and II. In this paper, we focus on bipolar experiments carried out with quartzite from Naibor Soit, an inselberg close to some of the most relevant assemblages from the eastern side of the Olduvai paleo-lake. Our experiments compare free-hand with bipolar flaking using a range of interrelated techniques and aim to discern the features on flakes and cores that distinguish both techniques. Overall, our target is to set analytical criteria to better identify and understand the flaking methods employed by the Lower Pleistocene knappers from Olduvai Gorge.

Byrnes, Allison (Mercyhurst University, Erie, PA), Allen Quinn (Mercyhurst University, Erie, PA) and David Pedler (Mercyhurst University, Erie, PA)

[342] *A Spatial Analysis of Surface Artifacts from the Ripley Site: An Iroquoian Manifestation on Lake Erie*

The Ripley Site (NYSM 2490) in western Chautauqua County, New York, has garnered interest from archaeologists for over 100 years. Situated on a bluff overlooking Lake Erie, this Late Woodland through Protohistoric Iroquoian site has long been recognized by the scholarly and avocational communities; however, the site's function remains problematic. In an attempt to address this and other issues, GIS is used to identify the spatial patterning of artifacts recovered during a recent surface survey and mapping project.

Cabadas Báez, Héctor Víctor [140] see Sandoval Mora, Cindy Cristina

Cable, Charlotte (Michigan State University)

[67] *Tombs in Time and People in Space: Making sense of the Third Millennium B.C. Hafit-Umm an- Nar transition in North-Central Oman*

In current explanations of 3rd Millennium B.C. Oman there is simultaneously a recognition of the Hafit as part of the Umm an-Nar culture and a sense that it is somehow distinct from the Umm an-Nar period that followed. I argue that the developments of the Umm an-Nar period rest solidly on Hafit creations of social, political, and economic solidarity and heterogeneity – but that the Umm an-Nar culture eventually extends beyond its foundation. Referencing Hafit practices that consolidated group identity while maintaining local autonomy was critical during the Umm an-Nar period, when communities concentrated on local resource acquisition as a strategy for access to broader resources. In spite of this, the construction and maintenance of Umm an-Nar “towers” in oases such as Bat and ad-Dariz South, and the increasingly complex mortuary tradition, suggest that local groups in the Umm an-Nar period may have experienced difficulty in maintaining a worldview of regional solidarity. Using the Wadi al-Hijr in north-central Oman as a case study it is possible to follow these broad changes across the 3rd Millennium B.C.

Cabrera Castro, Rubén [63] see Robertson, Ian

Cabrera Cortés, Oralía [63] see Robertson, Ian

Cabrero, Teresa (Shaft Tomb)

[189] *Descubrimiento de Tumbas de Tiro Selladas en Bolaños*

Tumbas de Tiro selladas en la Cultura Bolaños, Jalisco, Mexico.

El hallazgo de 3 tumbas de tiro selladas dentro del centro ceremonial del sitio de El Pirión perteneciente a la cultura Bolaños permitió conocer el patrón de comportamiento regional de esta singular costumbre funeraria. Con base en ellas se logró entender las tumbas de La Florida y de Pochotitan todas ellas saqueadas. Las tumbas de tiro selladas proporcionaron en conocimiento de la colocación y orientación de los individuos dentro de la cámara; de los objetos de ofrenda y gran parte de la ideología religiosa.

Cadeddu, Francesca

[5] *Settlement Strategies and Socio-Political Organization: A Methodological Approach to the Case Study of the Sardinian Bronze Age*

In this paper, we introduce a spatial analysis (i.e., viewshed analysis and Thiessen polygons) of GIS data on the settlement patterns of the Nuragic civilization with the aim to perform a test of the major hypothesis proposed by scholars concerning the social organization of the Nuragic society, the sistema cantonale (cantonal system). With a geoarchaeological approach and a multidisciplinary perspective this paper points out new aspects in the settlement strategies and provides new data and an insight into the social, political and economic organization of the Nuragic civilization, a long-lasting culture that existed in Sardinia (Italy), from the Middle Bronze Age (ca. 1600 B.C) to the first Iron age (ca. 800 B.C.).

With the use of the Earth Observation (EO) methods and the GIS platform, in addition to the appraisal of the parameters acquired with the reference work, we reconstruct for the Nuragic civilization a hierarchical settlement strategy confirming the hypothesized cantonal system. Its organization lies on the existence of territorial systems, formed by interconnected communities that share common attributes in their economic and settlement strategies. Our results allow us to reconstruct the social and political organization of

complex chiefdoms during Sardinian Bronze Age.

Cahieppati, Frank [248] see Hayward, Michele

Cai, Yan (University of Pittsburgh)

[51] Native or Foreigner? The Craft Organization of the Qin-Han Empire

Research presented here focuses on the economic organization of tile production from the Warring States period through to the early Han Dynasty. This research reveals how the first Chinese empire was able to control such a large territory as it did, by analyzing the production of tile endings in different cities, namely Yong, the capital of the Qin Dynasty, to three frontier sites: Suizhong, Minyue, and Shouchun, in order to determine to what extent these industries were in fact under political control. The result of the comparative analysis indicates that Yong's workers were mostly professional craftsmen of the official manufacturing system of the empire, and their production had the highest degree of craft standardization. Suizhong's workers were foreigners who were the common people in the center of the empire. Therefore, their techniques were unprofessional and the degree of standardization was lower. Shouchun's workers included native workers and foreign craftsmen. Foreign craftsmen had higher degrees of standardization whereas natives had lower. Minyue Wangcheng's craftsmen were all native and the degree of standardization was lowest. These finds suggest that Qin-Han dynasties had different levels of economic control across the empire's territory.

Cain, Kevin (INSIGHT) and Philippe Martinez (MAFTO, CNRS, INSIGHT)

[154] An Open Source Data Archive for Chichén Itzá

In this paper we survey an open source data archive for Chichen Itza. The archive contains 3D data, photographs and other field data gathered on site and at museums in the Yucatan. In the first part of the paper we survey the data available in the archive, with special emphasis on point clouds obtained with laser scanners and digital models created as data-driven archaeological reconstructions of structures at Chichen Itza. Next, we introduce several tools built to enable researchers to make productive use of the archive, stressing real-world applications for the archive. We conclude with some of the uses for the archive to date, and an assessment of future work.

More information is available at www.mayaskies.net and www.insightdigital.org. Field access at Chichen Itza was provided by the Instituto National de Anthropologia e Historia (INAH). Financial support from the National Science Foundation.

Cain, Tiffany C. [330] see Leventhal, Richard

Caine, Alyson (Durham University), Charlotte Roberts (Durham University), Janet Montgomery (Durham University) and Derek Kennet (Durham University)

[67] Disparities in Health: An Investigation into Mobility and Dietary Impacts on Disease Prevalence in Two Wadi Suq tombs at Ra's al-Khaimah, UAE

Human migration across the Persian Gulf undoubtedly influenced the lifestyle of local Bronze Age populations in the Oman Peninsula and may have introduced new pathogens impacting health. However, few bioarchaeological studies have addressed the response of the human body to migratory stressors. The aim of this study was to explore the relationship between mobility and health in the United Arab Emirates during the second millennium B.C. using both stable oxygen isotope analysis and skeletal indicators of pathology, specifically infectious and metabolic disease as well as dental developmental defects. Human remains from two Wadi Suq (2000-1300 B.C.) tombs at the Qarn al-Harf cemetery in the Emirate of Ra's al-Khaimah were utilized in this assessment: QAH5 (MNI: 39) and QAH6 (MNI: 145). Due to preservation, only 16 teeth were available for biogeochemical analysis. A higher prevalence of cribra orbitalia, LEH, and non-specific new bone formation was observed at QAH6 (33%, 5%, 9%) than QAH5 (0%, 0%, 6%). Mean $\delta^{18}\text{O}$ ratios for QAH5 ($27.8 \pm 1.0\text{o}$) and QAH6 ($28.1 \pm 0.5\text{o}$) did not differ significantly. These results suggest disparities observed in disease prevalence are not a consequence of migration, but likely result from differences in subsistence strategies between those interred in these tombs.

Cali, Plácido (Cali, Plácido) and Marianne Sallum (SALLUM, Marianne)

[76] Cultural Heritage Education Programs in Brazil: Sharing Experiences with Local

Communities

The present work offers an overview of a series of educational activities performed, in many Brazilian cities, by the licensing company Gestão Arqueológica e Consultoria em Patrimônio Cultural (Archaeological Management and Consultancy in Cultural Heritage) on cultural heritage education. In this educational program, a group of professionals including performing and visual arts, archaeologists and historians—after attending training courses—carried out practical experiences in schools, cultural centers, adult literacy hubs and indigenous communities, amongst others, aiming at opening a dialogue with the local communities about the archaeological remains found during the studies realized in those regions and, also, sharing experiences concerning material and immaterial heritage in the region and its surroundings. The results are achieved through performing dialogued presentations and practical activities such as studies of the pottery material culture. Also, the local attendants are invited to perform dance and music from their own community. The whole set of activities proved to be highly synergetic, due to the active participation of the communities. Therefore, it became clear that all these people have a lot to be shared and they always offer an indispensable contribution to the development of the cultural heritage education programs in Brazil.

Cali, Plácido [323] see Sallum, Marianne

Callisto, Christina**[232] Women and Children of the Turpentine Era**

The back-breaking gum industry was built on eighteenth century slave labor concentrated in the Carolinas where the pine trees made it a naval stores hub providing the tar and pitch that would seal and waterproof ships. As the Carolina trees were ravaged by the box-cutting methods used to collect the gum, slaves were sent farther south and west to the virgin longleaf pine forest of the Gulf States. After emancipation, freed black men and their families were continually drawn the industry and its constant needed workforce even as it evolved from naval stores to turpentine distillation. Census records indicate that black and white men and women were employed well into the twentieth century and documents reference children assisting with the family's workload. While photographs often show older, usually black, men working, there are some that show the women and children who lived at the camps and often worked beside the men collecting and processing gum. These photos of members of both black and white turpentine families from the 1800s to the 1940s offer a window into the evolving quality of life within the social constructs of the era of this industry.

Calvani, Daniel [286] see Braje, Todd

Camacho-trejo, Claudia and Ana Bravo (INAH-Zona Monumentos Arqueológicos de Teotihuacan)**[293] Iconographic Usage of Plumage in Teotihuacan**

The Teotihuacan Proyecto de Conservaci6n de Pintura Mural focuses on restoring and analyzing, both in situ and archive, over 60,000 mural fragments recovered from previous onsite excavations. The project aims to expand current knowledge and obtain new insights by restoring mural scenes that are yet, unknown to the public. Murals in Teotihuacan are a particularly important form of visual communication that reinforced the canons by which this great metropolis lived. Teotihuacan cosmology is expressed in pictorial art. Teotihuacan murals also serve as frames and backdrops to pictorial glyphs that are now the topic of major decipherment efforts. Today more than 15,000 mural fragments had been analyzed with impressive revelations as to new pigments and iconographic motifs. Operating within the framework of this project, this presentation will focus on the analysis of the usage of plumage in Teotihuacan mural art. In addition to headdresses and other items of personal adornment, plumage is also found on edgings known as cenefas. It is by way of this study and the revelations of new pigments that we are able to provide a chronology for the creation of the murals and enhance our understanding of the iconography utilized in the murals.

Cambra, Rosemary [119] see Leventhal, Alan

Cameron, Ian [160] see Angelbeck, Bill

Camp, Anna [148] see Rhode, David

Camp, Anna (University of Nevada, Reno)

[262] *From Catlow to Klamath: Exploring Technology and Identity through Great Basin Textiles*

Archaeologists have often used lithic artifacts as markers of change and adaptation in the Great Basin. While lithics play an important role in key technological changes, textiles also offer a diverse perspective on the past. Based on Direct Accelerated Mass Spectrometry dates and limited typological analysis, Catlow Twine textiles appear in the archaeological record around 9000 B.P. and continue into historic times. Through detailed analysis of Catlow Twine and ethnographic Klamath basketry, this research focuses on the continuities and discontinuities of textiles through time and space and explores how this type of material culture may represent an example of technological stability. This research adds to our understanding of Great Basin chronology, the movement of people and material culture, and ideas about identity as it is manifested through the archaeological record.

Campán, Patricia [104] see Barrientos, Gustavo

Campbell, Kendall

[54] *Discussant*

Campbell, Roderick (Institute for the Study of the Ancient World)

[162] *The Wild and the Sacred: The Shang Royal Hunt*

The Shang royal hunt appears to be the beginning of a high elite practice that continued down to the last Chinese emperors—part sport, part pageantry and part rite of rulership. Nevertheless, the Shang royal hunt employed a suite of new technologies recently introduced from the Steppe—the horse and chariot—and bears at least a family resemblance to 2nd millennium B.C.E. royal hunts from across Eurasia. Yet the Shang version of this rite of pacifying violence operationalized not only imported technocultural complexes, but also local notions of animality and divinity. As a key practice of royal authority, along with war and sacrifice, the hunt was part of a larger complex of practices aimed at domesticating the wild, unruly and dangerous powers beyond and within civilization's horizon. At the same time, the royal hunt both acted upon and reproduced Shang notions of civilization and its exterior: the wild and the sacred.

Campbell, Stuart [249] see Healey, Elizabeth

Campbell, Sarah (Western Washington University) and Virginia Butler (Portland State University)

[290] *Modeling Dynamic Social Organization and Resource Use for the Tse-Whit-zen Village Site* Oral history, traditional ecological knowledge, historic records, and ethnographies offer archaeologists working in northwestern North America rich information pertaining to subsistence adaptations and social organization of native peoples in recent times. Misuse of ethnographic analogy projects specific organizational traits back onto ancient time periods, assuming a straight-line trajectory and gradual, incremental change. Prentiss and Chatters have argued for a fundamentally different approach that recognizes that multiple forms of adaptation/residential mobility strategies might exist at the same time, that transitions in time might be abrupt rather than incremental, and that trajectories might include short-lived “experimental” forms and reversals. Acceptance of this model implies that we might find novel configurations in the past, requiring that we build models of social and subsistence organization from the bottom up, from archaeological data. Our research concerning use of animal resources by inhabitants of the Tse-Whit-zen village site on the Strait of Juan de Fuca approaches social organization over the last 2,000 years as dynamic and flexible, and responsive to short and long-term environmental change. We use ethnohistoric information as a source of models for developing alternative hypotheses about how social organization, ownership, and management of resources intersected, rather than projecting a specific structure.

Campetti, Casey [233] see Ford, Ben

Cande, Kathleen

[168] *The Americanization of the Arkansas Ozarks: The Archaeology and History of Davidsonville, Arkansas*

Founded in 1815 when the region was still part of Missouri Territory, Davidsonville, Arkansas served as

the county seat for Lawrence County until 1830. It was the earliest planned community in Arkansas. Spurred on by land grants from the Spanish government, provision of land by the U.S. government to veterans of the War of 1812, and those displaced by the New Madrid earthquakes of 1811-1812, EuroAmerican settlers poured into northeast Arkansas during the early years of the nineteenth century. Archaeological excavations at Davidsonville by the Arkansas Archaeological Survey from 2004 to 2009 reveal significant differences from French settlements in Missouri and Arkansas.

Canham, Kelly [124] see Middleton, William

Canilao, Michael Armand (University of Illinois at Chicago)

[235] *Landscape and Settlement Archaeology Methodology in the Cordillera Region of Luzon, Philippines*

Island Southeast Asia presents some of the most challenging landscapes for archaeological investigations due to the high level of landscape modification from volcanic activity, earthquakes, monsoons, and high rainfall with consequent intensive erosion and downslope deposition of loosely held tropical soils as processes that are clearly exacerbated by human agricultural and building activities. This paper presents a case study for landscape archaeology from the Cordilleras of Luzon Island in the Philippines, where high angle slopes formed through an active plate subduction of the South China Sea plate creates erosional landscape that challenges the Law of Superposition. Given the lack of standing architecture in any prehistoric phase of human occupation in the Philippines, systematic regional survey and careful spatial mapping of durable artifact clusters are key to locating settlements, but it is difficult to develop archaeological settlement maps that reflect actual ancient occupations in their primary human depositional contexts rather than artifacts "creeping" on the surface in an erosional context. The study presented here shows that regional settlement surveys that take advantage of historical data on landslides, floods, and other factors (e.g., Landslide and Flood Susceptibility Maps of the Philippines by the Mines and Geosciences Bureau) make surface archaeology more productive.

Canipe, Courtney (East Carolina University) and Megan Perry (East Carolina University)

[301] *Exploring Quality of Life at Petra through Paleopathology*

The ancient city of Petra, Jordan, capital of the Nabataean kingdom from roughly the 2nd century B.C. to 2nd century A.D., has attracted ongoing archaeological research since the early 1900s. However, much of this work has focused on the site's architecture, leaving many unanswered questions concerning what the quality of life was like for Petra's inhabitants. This poster provides a picture of health and quality of life of individuals buried on Petra's North Ridge ($n = 38$) during the 1st century A.D. The North Ridge tombs are hypothesized to contain the non-elite segment of the population, as opposed to the elites buried in the monumental carved tombs for which Petra is famous. Skeletal analysis included macroscopic observation of pathologies along with assessment of age and sex profiles of the sample. This evidence clearly shows that non-elite individuals at Petra suffered from few conditions that would result in bone pathologies, such as infection and malnutrition, with degenerative disorders, primarily osteoarthritis, the most common pathology observed. Therefore, Petra appears not to present the picture of a dirty, disease-riddling city of antiquity.

Cann, Johnson (University of Leeds) and Colin Renfrew (University of Cambridge)

[249] *The Characterization of Obsidian and Its Application to the Mediterranean Region—and beyond*

We recall the origins of our 1964 paper and its reception at the time and review the application of analytical studies of obsidian characterization over the 50 years since then. We review briefly the procedures by which we chose trace-element analysis, originally by Optical Emission Spectroscopy, as a procedure for what we termed the "characterization" of obsidian, and the numerical procedures which showed Barium and Zirconium as usefully indicative elements for the primary separation of the data. The Mediterranean sources were effectively characterized, and those of Turkey soon shown to be crucial for the understanding of the obsidian trade in the early Near East. Subsequently applied analytical and quantitative procedures are briefly considered.

Cannon, Molly Boeka [10] see Dalpra, Cody

Cannon, Mike (SWCA Environmental Consultants)

[286] *Interaction Effects among Bone Fragmentation and Screen Mesh Size in the Measurement of*

Taxonomic Relative Abundance

In earlier work, I have developed separate mathematical models of the effects of screen size and bone fragmentation on zooarchaeological taxonomic abundance measures, and I have presented experimental data on the relationship between fragmentation and taxonomic abundance. Here, I integrate the two separate models and present experimental data on the interacting effects of fragmentation and screen size on taxonomic relative abundance. Counterintuitively, both the model and the empirical data demonstrate that the use of smaller-mesh screens does not necessarily lead to more accurate measurement of taxonomic relative abundance (e.g., through abundance indices); under certain conditions, larger-mesh screens, which undoubtedly result in greater loss of identifiable specimens, may also result in more accurate relative abundance measurement. Most important, this exercise points to steps that can be taken to determine whether the relative abundance values observed using a given screen mesh size may be greatly in error. This can be determined through the consistent use of nested screens of different sizes.

Cano, Miguel [147] see Pugh, Timothy

Cantarutti, Gabriel (University of Illinois at Chicago, PhD Program)

[121] *Inka Style Materials in a Provincial Mining Setting: Evidence from Los Infieles, North-Central Chile.*

Prehispanic Andean societies relied on mining to obtain highly valued minerals used in the production of prestige goods that were critical for the reproduction of religious and political institutions. Over the past decade, archaeological studies have begun to expand our largely historically-based understanding of Inca mining activities in the southern Andes. In this paper, I examine Inka style materials recovered from sites in Los Infieles, a mining complex located in north-central Chile (Coquimbo Region) centered on the extraction of chrysocolla and opaline silicas for lapidary purposes. These materials include fragments of Inka style pottery from mining facilities documented during a recent archaeological survey and Inka ritual paraphernalia (metal and shell figurines) from a ceremonial platform looted in the late 1950s. Exploring the physical characteristics, distribution and social roles of these materials, I argue that while the ceramic assemblage provides information about the production, functions, and distribution of both local and Inka style vessels at the sites, the ritual cache highlights the political and ideological significance of state religious practices within mining contexts. Both lines of evidence provide insights into the overall organization of the mining operations at Los Infieles and the relationship between the mining community and the Inka state.

Canuto, Marcello [128] see Bill, Cassandra

Canuto, Marcello (M.A.R.I./Tulane University) and Francisco Estrada-Belli (Tulane University)

[279] *Socio-Political Complexity and Early Urbanism in the Lowland Maya Area*

Among the greatest challenges of the study of Formative-period Mesoamerica is the explanation for the causes of socio-political complexity. It is by now a commonly held notion that by the Late Formative period, a handful of coeval regional states existed in Mesoamerica. In the specific case of the southern lowland Maya area, by 200 B.C., its inhabitants were living in large urban centers that functioned as regal capitals from which an ajaw governed a centralized regional state. In general terms, those social and political interactions bespeaking institutionalized power relations both between and within groups developed long before they became archaeologically manifest. Nevertheless, evidence for precocious complexity per se—such as the existence of and justification for “natural lords” dating to periods earlier in time than scholars originally thought—renders the causal processes of that complexity no less nebulous. In fact, evidence of precocity only forces scholarly focus onto even earlier and less understood periods of time. Consequently, to interpret the developments of the Late Formative period in the Maya area, this paper will investigate the processes that led to widespread urbanism and socio-political complexity.

Cap, Bernadette (University of Wisconsin-Madison)

[252] *A Socially Constructed Plaza: Evidence of Marketplace and Ceremonial Activities during the Late Classic Maya Occupation of the Buenavista del Cayo East Plaza*

The plaza was an integral design element of Classic Maya site centers and was significant to society because of the activities conducted within them. There is scant direct documentation in Classic period Maya artwork or texts of what took place in plazas, but in other areas and throughout time, urban plazas have been host to a variety of activities that shape the social, ideological, economic, and political fabric of

society. Recently, researchers have begun to examine Classic period occupation of Maya plazas through empirically-based studies, but have been met with several methodological challenges. In this paper, I present research from the East Plaza of Buenavista del Cayo, Belize, which addresses the issues involved in identifying plaza activities, specifically through the development and application of a multiscalar configurational approach. The result of this intensive investigation is the identification of a Late Classic marketplace and ceremonial activities in different sectors of the East Plaza. Individually, these activities influenced the social, economic, and ideological structure of the Buenavista settlement. Collectively, these findings illustrate the vital role of the public plaza in Maya society.

[252] Chair

Capriata Estrada, Camila (Instituto de Estudios Peruanos) and Enrique López-Hurtado (Instituto de Estudios Peruanos)

[285] *Termination Rituals at Panquima*

The abandonment of settlements and regions, its causes and consequences, are subjects that have been broadly studied by archaeologists. Several approaches can be taken in order to establish what mechanisms were involved in these processes, and how they can be seen through the archaeological record. One of them involves the relationship between termination rituals and site abandonment, seen through specific cases of intentional destruction. Many of these termination events have a strong ritual component and might have been triggered by unexpected social, political or economic contexts. In this paper I will present evidence of selective burning and destruction associated with monumental architecture found during excavations at Panquima, a Late Intermediate Period (900-1400 A.D.) settlement located in the central coast of Perú. I argue that this evidence suggests that termination rituals, associated with a partial abandonment of certain structures, might have occurred at specific areas within the site.

Capriles, Jose (Universidad de Tarapacá), Calogero Santoro (Instituto de Alta Investigación, Universidad de Tarapacá), Daniela Osorio (Instituto de Alta Investigación, Universidad de Tarapacá), Eugenia Gayó (Instituto de Alta Investigación, Universidad de Tarapacá) and Francisco Rothhammer (Instituto de Alta Investigación, Universidad de Tarapacá)

[23] *Late Pleistocene Highland Foraging in the South Central Andes*

In this paper we review current models and evidence regarding the colonization of the south central Andean highlands. Existing models argue that ecological (topography and glaciers) and biological (hypoxia) constraints acted as barriers that prevented human settlement above 3500-2500 m above sea level before the onset of the Holocene (~10,000 cal. B.P.). These models not only disregard the potential variability of human biological and cultural adaptability, but also fail to recognize increasing evidence of highland occupations dated to the late Pleistocene. Our ongoing interdisciplinary research provides insights into the timing and paleoenvironmental context as well as the subsistence, and mobility strategies, technology and the different activities practiced by the earliest highlands foragers in the identified sites of the Bolivian and northern Chilean highlands.

Capriles, José M. [69] see Lombardo, Umberto

Caracuta, Valentina [84] see Kaufman, Daniel

Caraher, William (University of North Dakota), Bret Weber (University of North Dakota) and Richard Rothaus (Trefoil Cultural and Environmental)

[328] *The North Dakota Man Camp Project: The Archaeology of Workforce Housing in the Bakken Oil Patch of North Dakota*

Since 2007 the western part of North Dakota has experienced an economic and population boom associated with the extraction of shale oil from the massive Bakken formation. While this area had experienced both agricultural and oil booms in the past, nothing in the region's history had prepared the communities and infrastructure for the transformation brought about by hydraulic fracking. The North Dakota Man Camp Project documents the material and social conditions of workforce housing in the Bakken. From corporate installations that resemble mobile hotels to RV parks, infilled small towns, and squatting off the grid, workforce housing has presents the material signatures of community building throughout the oil patch. The rapid expansion of short-term housing and populations in the Bakken has outstripped historical and document-based methods for describing this change. This paper presents a preliminary report on how the archaeology of the contemporary past has provided an alternate method for

understanding the assemblages, architecture, and settlement patterns of associated with workforce housing in the Bakken boom.

Caralock, Michael [79] see Drass, Richard

Caramanica, Ari and Michele Koons (Denver Museum of Nature and Science)

[149] *Living on the Edge: Precolumbian Habitation of the Desert Periphery of the Chicama Valley, Peru*

The desert borders and dry ravine washes that surround and often encroach upon the irrigated river valleys of the north coast of Peru played an integral role in precolumbian history. The Chicama Valley Land-Use Survey (CVLS) identified multiple sites and archaeological features in the desert landscapes of Río Seco de Paijan, Playa Mócan, and Culebra on the borders of the irrigated Chicama Valley. Our team discovered that in spite of the now-harsh environment, this landscape was once densely occupied and cultivated almost continuously from the Early Horizon Period (1000–200 B.C.) to the Colonial Period (A.D. 1532–1824). By combining geomorphological, paleobotanical, and archaeological evidence, we have begun to establish a horizontal chronology for these areas. Finally, after placing this evidence in a greater regional archaeological context, we conclude that instead of backward, impoverished, diminished versions of the political, economic, and ritual centers of the inner Valley, these "hinterlands" or desert borderlands were in fact crucial landscapes of production in the pre-Columbian past.

Carbajal, Laura (UTSA-

CAR) [54] *Discussant*

Carballo, Jennifer (Department of Anthropology, Harvard University)

[112] *Social Interaction and Variation in Central Tlaxcala, Mexico: An Analysis of Ceramics from Two Early Village Societies*

Similar motifs appear on pottery throughout Mesoamerica during the Formative period, often depicting symbols associated with Olmec iconography, yet we understand little about how they were used or what they signified. I investigate pan-Mesoamerican pottery motifs during the Middle Formative period, by documenting differences in vessel use and vessel decoration at two small villages near Apizaco, Tlaxcala, dating from 900 to 500 B.C. I examine the designs and distribution of motifs at the sites of Amomoloc and Tetel, and compare them to designs from other sites across Mexico, providing evidence for how Tlaxcala's earliest sedentary communities participated in a network of early Mesoamerican societies exchanging goods, ideas, and motifs, during an important period of increasing sociopolitical complexity before the appearance of the first cities and states in Mexico. Did this shared style function in competitive display and/or signal participation in reciprocal networks of exchange and cooperation? What patterns of variation can we detect in the representation and use of the Middle Formative style? I approach these questions at multiple scales, from the individual motif to the ceramic vessel, community, and regional levels.

Carballo Marina, Flavia [104] see Barrientos, Gustavo

Card, Jeb (Miami University)

[72] *How Much Technology Transfer Occurred in Early Colonial Central America?*

Discovering evidence of technology transfer and cultural change has been key goals of investigations at Ciudad Vieja, El Salvador. The site of the first permanent Spanish settlement in the country has provided important evidence for cultural change and shifting identities, but technological transfer has seemingly eluded us. European technology such as iron working and indigenous technology such as pottery production were practiced at the site. Technological transfer between these two worlds has not been identified beyond stylistic influence in ceramic form and use. The best evidence for technological change within the approximate three decades of occupation is a shift in Mesoamerican pottery production from a diverse set of potting techniques (mirroring the diversity of the resettled population) to a more homogenous site-wide technological style (suggestive of changes in social practices and networks among a generation of potters born at the site). The recent discovery of what may be a locally and oddly produced olive jar may represent experimental adaptation of local materials by a European potter, and not broader evidence for technological transfer.

Cardenas, Cinthya [21] see Liot, Catherine

Cardinal, J. Scott (New York State Museum)

[214] Why Be Normal? The Critical Paradox and Necessary Role of Normativity

Although notional referents of social “norms” and “normative forces” are commonly a priori predicates of the very concept of culture within the social sciences, current conceptualization of normativity is insufficiently realized and inadequate in the form in which it is typically applied in archaeological interpretations. The concept of normativity is broadly utilized in philosophical and sociological literature, but the prevailing definitions and their associated discussions regarding beliefs and justifications are not directly applicable to archaeological theorization. A robustly operationalized formulation of normativity and its related concepts is necessary in order to utilize normative effects in an explicit evaluation of their influences on past behaviors through archaeological correlates. An archaeological formulation of the concept of normativity would require a degree of specificity in definition and ontology that has not been fully developed for the concept within the social sciences. Norms are not simply pervasive social rules or pre-existing mental templates by which the social is enacted. Such constructions require a paradoxical presumption that norms precede social interaction. If normativity is instead conceived as a contingent locus or boundary of agent-group interaction, an effect rather than a cause, then a new set of definitions and operative social mechanisms are readily derived.

Cardona, Augusto [25] see Haydon, Rex

Cardona Rosas, Augusto [11] see Barnard, Hans

Carey, Peter, Geoffrey Smith (University of Nevada, Reno), Judson Finley (Utah State University) and Evan Pellegrini (University of Nevada, Reno)

[148] A First Look at the Early Holocene Assemblage from LSP-1: A Stratified Rockshelter in Oregon’s Warner Valley

Since 2010, the Great Basin Paleoindian Research Unit (GBPRU) at the University of Nevada, Reno has been excavating a modest rockshelter in Oregon’s Warner Valley. Work there has revealed an extensive early Holocene occupation consisting of a well-preserved faunal assemblage dominated by leporids, marine shell beads, Great Basin stemmed and foliate projectile points, abundant ground stone artifacts, and assorted other stone tools including one of the only crescents found in a well-dated context in the Great Basin. We present an overview of our work and focus on the site’s stratigraphy and our efforts to radiocarbon date the deposits, provide brief summaries of the lithic and faunal assemblages and what they reveal about late Paleoindian lifeways in the northern Great Basin, and place our findings within the broader context of current research in the region.

Carey, Heather [248] see Simek, Jan

Carlson, John (Center for Archaeoastronomy, College Park, MD)

[164] Chacmool: Who Was that Enigmatic Recumbent Figure from Epiclassic Mesoamerica? Reposing the Question

The monumental stone sculptural human form known as a “Chacmool” first appeared in Mesoamerica late in the Epiclassic Period (650–900 C.E.), specifically in Toltec Central Mexico (Tula), in Yucatan at Chichen Itza in particular, but spread as far as the Tarascan region of Michoacan and El Salvador. Since such uniquely-posed male sculptures were first imaginatively named “Chaachmol” by Augustus Le Plongeon—inspired by one famous example he excavated at Chichen Itza in 1875—their true function, identity, and region/culture of origin have remained largely subjects of speculation. Although they were still in use at the time of Spanish contact in Aztec Tenochtitlan, no obvious recorded names for these enigmatic sculptures nor the identity of the single male figures represented have ever been recognized in any Mesoamerican language. However, several lines of evidence and argument have convinced most scholars that they were an innovation for a specific type of sacrificial alter—a Cuauhxicalli—associated with quite ancient and pervasive militaristic cult practices of human heart and blood sacrifice. A new interpretation of the form and function of the Chacmool is offered based on a comprehensive re-evaluation of the data along with new archaeological evidence.

Carlson, Justin (University of Kentucky) and George Crothers (University of Kentucky)

[264] Geoarchaeology of a Cave Vestibule in Southeastern Kentucky

In March 2013, a small group of archaeologists and cavers conducted fieldwork in the cave vestibule of an archaeological site in southeastern Kentucky. Goals of the investigation were to assess the integrity of archaeological deposits, identify geomorphological, anthropogenic, and biogenic activity, and determine the antiquity of prehistoric use by Native American populations. A variety of minimally invasive methods were used, including cleaning and recording of an already exposed profile wall, systematic columnar collection of sediment samples for particle size, organic content, and elemental analyses, extraction of in situ sediment samples for micromorphological analyses, and collection of nut charcoal to date a pit feature in the profile wall. The results show that there are still intact deposits within the vestibule, with organic, elemental, and micromorphological analyses suggesting that human activity was more prolific in the upper portion of the profile than the lower portion. Radiocarbon dating of the pit feature shows that humans were using the cave by at least 6000 years ago.

Carlson, Kristen [280] see Bement, Leland

Carlson-Greer, Sean [208] see Chisholm, Linda

Carmody, Stephen [132] see Miller, D. Shane

Carmody, Stephen (University of Tennessee, Knoxville) and Sarah C. Sherwood (University of the South)**[207] Evidence for Upland Origins of Indigenous Plant Domestication on the Southern Cumberland Plateau of Tennessee**

While Eastern North America is among the established centers for indigenous plant domestication, where this process began on the landscape remains elusive. Models exist for both uplands and river valleys. We present data from two sandstone rock shelters representing different landscape positions from the southern Cumberland Plateau in Franklin County, Tennessee. By considering the macrobotanical data and the implications for annual foraging rounds, the availability of wild plant foods, and the initial appearance of both wild plants and domesticates, we suggest cultivation was initiated in upland settings.

Carn, Timothy (Indiana University of Pennsylvania)**[231] Uncovering Native American/Colonial Relations on the Western Frontier during the French and Indian War through a Comparative Study of Material Culture Remains**

The French and Indian War was a tumultuous time for Native American politics. The period witnessed the frequent fragmentation and coalescence of loyalties among different groups seeking to maximize their chances of survival by allying themselves with the strongest colonial force. Aughwick, a trading post on the then-western frontier of Pennsylvania bore witness to these complex Native American/Colonial interactions. As the war intensified, it became a place of shelter for Native American groups. As the conflict moved closer to the site, George Croghan, the owner of the property and captain of the fort, fortified it. No record of Native American involvement in the fortification of the trading post survives. To determine involvement, a comparison of material culture remains of this site to a contemporary fortified Native American village and a strictly British constructed fort was made. This comparison helped determine markers of Native American identity (e.g., modified trade goods and ornamentation). These markers were found to be more abundant at Aughwick than the British constructed fort. This shows with certainty that the Native Americans living at Aughwick helped fortify the trading post. This reinforces the underappreciated and often-overlooked political agency exercised by Native Americans during this conflict.

Carn, Timothy [233] see Ford, Ben

Carneiro, Robert**[288] Discussant****Carpenter, Steve****[14] Grand Parallel: A Consistent Latitude of Caddo and Late Woodland Multimound Centers from Eastern Texas to the Lower Mississippi Valley**

During the Late Woodland sub-period between A.D. 400 to 1200, six major multi-mound centers

distributed from eastern Texas to the Mississippi River were established on a consistent latitude of 31.6 degrees north. Few multi-mound centers were founded south of the latitude during the sub-period. The six sites comprising the pattern include, from west to east: the Caddo sites George C. Davis and Washington Square in eastern Texas; Troyville, the Elkhorn/Frogmore/Churupa three-mound cluster, and Deprato in Louisiana; and finally Emerald Mound in Mississippi. Troyville, a major population center during the Baytown period from A.D. 400 to 700, appears to be the oldest of the sites at such a latitude. After mound-building was discontinued in some areas, there is evidence, at least in the Caddo area, that major population centers continued to be established on the same latitude as the mound centers into late prehistoric or early historic times. The pattern, designated the Grand Parallel, is inferred to represent the macro-scale manifestation of a fundamental east-west organizational principles evident in many aspects of the Late Woodland and Caddo sites and social organization.

Carpenter, Evan (University of North Texas, Department of Geography) and Steve Wolverton (University of North Texas, Department of Geography)

[230] Plastic Litter as Material Culture: The Applied Archaeology of Stream Pollution

Plastic deposition in rivers, lakes, and oceans is a pervasive problem at multiple geographic scales. Much scholarly and public attention has been devoted to plastic deposition in marine contexts, such as beaches and mid-oceanic gyres, which represent the endpoints of a systemic pollution problem. Less is known about inputs of plastics into local hydrological systems, such as streams, where pollution can be prevented and where littering behaviors frequently occur. Behavioral archaeology is an ideal framework for learning about the factors that lead to littering through consideration of trash as material culture (e.g., garbology). A general disconnect between the short use-lives of plastics and their long-term preservation in the environment exists; that is, plastics tend to endure once they leave the cultural context. The environmental/archaeological context of plastics in streams incorporates hydrological and other environmental variables that affect debris once it becomes deposited. We sampled litter from a variety of stream sites to make inferences about the behaviors that induce littering events along Hickory Creek in Denton, Texas. Linking characteristics of pollution to behaviors is a vital component of developing effective cleanup and prevention strategies.

Carpenter, Erika (University of Mississippi)

[260] Examination of Architectural Features on the Carson Mound Group's Mound C

The Carson Mound Group, located in Coahoma County, Mississippi, contains six large mounds arranged on a northwest to southeast oriented prehistoric grid. In the summer of 2012, the removal of a historic house on top of Mound C, a platform mound, allowed for archaeological field work to be conducted. This work revealed a number of large and small wall trenches, the former possibly being palisades. The implications of these architectural features in terms of mound function and site organization will be discussed.

Carpenter, Maureen (LCAR)

[277] Dead Wrong: Investigations Concerning Two Eastern Structures at Las Cuevas, Belize

The surface site at Las Cuevas has been investigated for two seasons, but as yet no sealed deposit, burial, whole vessel, or any other type of datable cultural material has been recovered. The 2013 season was designed to excavate the most promising structures in hope of providing some definitive dates. Relying on previous patterns from the nearby site of Caracol, two eastern buildings were chosen for the high probability of having sealed datable deposits. The first eastern structure excavated was located in the core center, impressively placed directly above the Las Cuevas entrance. It proved to be an amazing example of architecture, with three building phases, well preserved, showing impressive stone work: staircases, floors, terraces, but not one deposit, vessel, cache or bone. The second and much smaller eastern structure was situated on a massive (28 x 24 m) platform. Architecture was immediately encountered and the modest mound produced not only special deposits, but the first burial at Las Cuevas. While patterns from the neighboring site of Caracol can be helpful in predicting excavations, they can also be surprising wrong, especially when focused on a research design question.

Carpenter, John (Centro INAH Sonora) and Guadalupe Sanchez (ERNO-UNAM)

[339] Interaction and Integration on the Northern Aztatlán Frontier in Sinaloa

Utilizing data derived predominantly from investigations at El Ombligo, Mochicahui and Rincón de Buyubampo, we examine the northernmost extension of the Aztatlán archaeological tradition incorporating the Culiacán region along with the evidence of integration and interaction with the

neighboring Huatabampo and Serrana traditions in northern Sinaloa and southern Sonora. We propose that the Culiacán region played an instrumental role in Aztatlán interaction with the Guadiana branch of the Chalchihuites tradition in Durango and suggest that the transmission of objects and ideology beyond the northern Aztatlán frontier was facilitated and enhanced by the existence of a shared Cahitan language continuum that extended along the western slope of the Sierra Madre Occidental from the Río Piaxtla to the international border.

Carr, Philip (University of South Alabama)**[76] Team-Based Learning in an Undergraduate Archaeological Method and Theory Course**

Arguably, active learning has a long place in the undergraduate curriculum of archaeology students because of the importance of field schools. The use of active learning, an instructional approach that emphasizes the importance of learner engagement and that is often contrasted with traditional lectures, is likely much more variable and sporadic, whether in an introduction to archaeology course or an advanced course such as archaeological method and theory. Forms of active learning including discussion and short written exercises are common strategies used by some instructors for decades, and others such as think-pair-share and team-based learning are more recent. Archaeologists can certainly engage students in the classroom with flintknapping or artifact identification activities. The use of active learning and these specific examples begs the question, which activities are appropriate? Here, this question is addressed for an undergraduate archaeological method and theory course with a focus on team-based learning. In order to do this, the first step is to engage in backward design by addressing, "what do we want our students to be able to do upon completing this course?" Here, archaeology textbooks are reviewed to answer this question and to determine which activities aid in meeting course goals and objectives.

Carr, Christopher (Arizona State University) and Christopher Caseldine (Arizona State University)**[183] An Ethnohistorical Foundation for an Archaeology of Prehistoric Woodland and Plains Native American Cosmologies of Death**

Symbolically rich mortuary remains from prehistoric Woodlands and Plains societies in North America offer ripe opportunities for inferring past eschatologies when integrated with analogous Native ethnohistorical information. This research program has been weakened, however, by the lack of systematic characterization and mapping of historic Woodland-Plains eschatological knowledge. A survey of 204 narratives about the journey to an afterlife, drawn from 42 Woodland-Plains tribes, documents a huge suite of motifs ($n = 527$), their commonness, geographic distributions, and co-occurrences. Twelve distinct narratives or narrative segments, areally bounded, are revealed. A few individual motifs were widespread over the region but no comparable narrative was identified.

Carranza, Carmen [336] see Peters, Ann

Carrasco, Michael (Florida State University)**[9] Moderator**

Carrasco, Michael [178] see Englehardt, Joshua

Carrier, Sam (Oberlin College), Susan Kane (Oberlin College) and Hillary Conley (Florida State University)**[180] Studies of Black-Gloss Pottery from Monte Pallano (Italy) IV: Multivariate analysis and interpretation**

This is the last of a series of four papers that report multi-faceted studies of a collection of 200 sherds of black-gloss pottery (a type of fineware that was used for dining and wine consumption from the 5th century B.C.E.-1st century B.C.E.) excavated from the Monte Pallano ridge in the Abruzzo region of eastern Italy. The study region includes two distinct areas: a hilltop settlement and a nearby sanctuary precinct. Some of the ceramics were made locally; others made elsewhere. Here three data sets employing different methodologies—macro morphology, petrography, and X-ray fluorescence—are combined and analyzed as a whole with multivariate statistical techniques. By comparing the fabrics of black-gloss ceramics from two adjacent, but functionally different, sites (hilltop settlement vs. sanctuary precinct) each with different loci of ceramic production (local vs. imported) the study aims to inform our understanding of patterns of trade and cultural exchange among the Samnites, Romans, and other peoples who populated this region of eastern central Italy in antiquity.

Carrier, Sam [180] see Kane, Susan

Carrillo, Charles [202] see McBrinn, Maxine

Carroll, Gina (University of Leiden, Department of Bioarchaeology)

[153] *Investigating Isotopic Inter and Intra-Skeletal Variation in Lesionous and Non-Lesionous Tissues in Pathological Specimens from Nicaragua*

The application of intra-skeletal sampling strategies were used to examine the degree of isotopic variation between lesionous and non-lesionous skeletal tissues from human samples obtained across Nicaragua. ^{15}N , ^{13}C and ^{18}O values in healthy bone and dentin collagen, as well as enamel apatite, were examined to discern the relative contributions of C3 and C4 dietary consumables to individual diet. These results were then compared to the isotopic values obtained from pathologically remodeled bone from within the same specimen, in order to discern the degree of dietary alteration observable during periods of bone remodeling. Samples were then evaluated for inter-group variation (between other diseased individuals, and among completely osteologically healthy individuals from the same sites), in order to evaluate what, if any, dietary differences existed between and among diseased and non-diseased individuals. This work contributes to the isotopic database documenting Nicaraguan subsistence strategies, their changes through time, and the impact disease has on socio-cultural subsistence practices.

Carroll, Elizabeth (Purdue University)

[173] *Experimental Replication of Copper Production at the Gulkana Site, Alaska*

Archaeological evidence and oral history attest to the presence of a native copper working tradition in the Southwestern Subarctic over the past millennia. Investigations have been carried out concerning the distribution of copper and its relationship to prestige of copper and production methods. Ethnographic records and material analysis indicate that hammering, annealing, and folding were used to produce a variety of goods from tickling bells, projectile points, to copper blanks used in trade. To expand on our understanding of copper artifact production and associated site formation processes, I have conducted a series of replication experiments recreating copper blanks and tinkling cones by using methods and materials available in the past. These experiments shed light on the time and resources required to produce copper sheets and associated artifacts. They also provide information on the scrap and debitage, such as scaling, produced as a result of these activities. A comparison of the experimental results with artifacts from the Gulkana Site in Alaska, provides insights into native copper metallurgical innovation here and elsewhere.

Carroll, Jon (Oakland University)

[229] *Discussant*

Carter, Nicholas (Brown University) and Alyce De Carteret (Brown University)

[3] *Tuupaj: Ancient Maya Ear and Nose Ornaments as Artifacts and Signs*

Ornaments worn in the ears and nose were among the semiotically richest articles of ancient Maya dress. Linked to wealth, vitality, and multisensory experiences of beauty, they also articulated with representational conventions in other media and with entrained, bodily habits and dispositions. Such ornaments served as markers of personal rank, ethnic membership, and—in the case of gods and their earthly impersonators—specific identity. This paper explores the meanings and social functions of ear and nose ornaments in ancient Maya societies. Drawing on archaeological and art historical evidence, it traces trends in the representation and material qualities of these artifacts over time.

Carter, Matthew [95] see Galindo, Mary

Carter, Tara

[198] *Fashionably Late: The Transformative Role Social Networks Play in Social Complexity and Secondary State Formation in So-Called Marginal Societies*

Archaeological evidence from the Viking Age indicates a highly connected world that linked the societies

of Europe with North Africa, and the Middle East and yet this evidence has not been applied to the development of secondary state formation in Iceland. Previous models have vacillated between those that emphasize indigenous state development within an anemic environment, and those that emphasize its purely derivative nature in a world of existing monarchical neighbors. The shared weakness of these arguments is a presumed marginality, from an environmental and a social point of view. Using applications from social network theory, this paper argues that Iceland's connection to both a local as well as a global economic network paved the way for social change. In fact, "coming late" onto the scene allowed Icelanders to selectively develop fertile social relationships with multiple societies rather than being locked into trade with a designated partner as was often the case among rural peasant merchants back home in Scandinavia. Iceland, and societies like it, should not therefore be viewed as marginal in any sense as these societies frequently managed a strong social connectedness that fostered exchange and innovation, cultivating an environment fertile for social complexity rather than social stagnation.

Carter, Tristan (McMaster University)

- [249] *From Conservative to Cosmopolitan: Interrogating the Reconfiguration of Near Eastern Obsidian Exchange Networks from the Epi-Paleolithic to Chalcolithic*

It is well established that there were major differences in the use of Anatolia's obsidian sources over time. From the later Paleolithic to early Pre-Pottery Neolithic B we witness the almost exclusive use of four sources, despite the fact that there are numerous obsidian-bearing volcanoes in Anatolia. The "big four" comprise Gollu Dag and Nenezi Dag (southern Cappadocia), plus Bingol and Nemrut Dag (eastern Anatolia). While Cappadocian products were consumed by central Anatolian, Cypriot and Levantine populations, Lake Van region obsidian was employed in south-eastern Anatolia and the eastern wing of the Fertile Crescent. These circulation patterns were reproduced over millennia, a remarkable longevity (or conservatism) of cultural traditions and regional connectivity. In the 1960's Renfrew commented that Chalcolithic obsidian exchange was far more "cosmopolitan," with an increased range of raw materials travelling over longer distances. These changes actually occur during the Late Neolithic with the first appearance of northern Cappadocian obsidian in the Levant, together with the use of other Lake Van sources, and obsidian from north-eastern Anatolia and Armenia. Here we discuss the major reconfiguration of cultural traditions and the fragmentation of deep-time exchange networks in the context of regional socio-political change more generally.

- [287] *Discussant*

Carvalho, Susana (Oxford University, UK)

- [255] *Chimpanzee Technical Behaviors and Their Stone Tool Assemblages: An Archaeological Contribution to Understand the Earliest Tools*

The idea that archaeologists could be missing important archaeological records by having focused solely on studying and analyzing the remains of human culture has recently become compelling. Chimpanzee archaeology seeks referential modelling using interdisciplinary approach, combining tool-use field experiments with natural observations, and studying different communities of chimpanzee tool-users across Africa. By combining archaeological knowledge (technological analysis, actualistic experimentation, surveying "off-sites" and older deposits than the ones known to have tools) with primatological methods (direct observation of behavior, field experimentation, comparison of technological communities/populations) these disciplines work to produce a theoretical framework to help explain better the evolutionary origins of technology. We currently sought to further expand knowledge concerning technology-related behavior, as this is, by far, the most difficult part of archaeological reconstructions. In this paper we review our studies on wild chimpanzee technical behavior and their assemblages: (1) regional variations across assemblages; (2) density and distribution of artifacts at tool sites (with possible implications for predicting the size of archaeological areas and extrapolating possible group sizes); (3) reuse of tool-composites and its implications for triggering unintentional knapping; (4) consequence of multiple transportation events for producing assemblages; (5) quality/availability of raw material as ecological constraints to technological development.

Carvalho, Milena (University of Louisville) and Jonathan Haws (University of Louisville)

- [299] *A Carnivorous Affair: The Comparative Taphonomy of Gruta das Pulgas and Lapa do Picareiro*

This poster presents the results of a comparative taphonomic study of two Pleistocene cave sites in Portugal. The Gruta das Pulgas yielded several hundred bones from small mammals, birds, ungulates and carnivores. The lack of artifacts suggests this was a natural accumulation with inputs from carnivores only. At Lapa do Picareiro, the Early Upper and Middle Paleolithic levels are interspersed with levels that

do not contain artifacts but have preserved bones. The taphonomic study of both sites includes calculation of NISP and MNE for each taxon, as well as the recording of surface modifications, such as tooth scoring, tooth punctures, fractures patterns, cut marks, fracture patterns and skeletal element patterns. The results are then compared to help determine the agents responsible for the formation of the assemblages. The Picareiro assemblage appears to contain inputs from humans, carnivores and raptorial and scavenging birds.

Carver, Charisse (Arizona State University)**[106] Frankish Ethnogenesis and Population History: A Bioarchaeological Perspective**

The Early Middle Ages (A.D. 400-1000) of western continental Europe is a fluid and complex period of post-Roman transitions and emergence of nascent European nation states. Overwhelmingly the domain of medieval historians, archaeologists interested in Frankish ethnogenesis and population history are often confronted with (1) conflicting or biased written accounts; (2) material remains that are inconsistent with contemporary ethnohistoric documents; and (3) difficulties associated with working in regions subject to prolonged centuries of continuous human occupation. Consequently, this presentation will take an explicitly bioarchaeological approach to questions of Frankish population history and ethnogenesis. Specifically, I use model-bound biodistance analyses to estimate gene flow and genetic drift for a variety of early medieval Frankish sites in western Europe, assess how these parameters may have changed over time, and explore how they relate to processes of Frankish ethnogenesis. I argue that a commonly held view of long-term population continuity and/or small-scale elite-driven migration and acculturation processes obscures a more complex mosaic of population movement and settlement that parallel the development and eventual coalescence of Frankish ethnogenesis in the 9th–10th centuries A.D.

Casana, Jesse [13] see Wiewel, Adam

Casana, Jesse (University of Arkansas)**[124] Landscape Phenology, Climate Variability and Agricultural Sustainability in the Northern Fertile Crescent: Insights from Regional-Scale Satellite Remote Sensing**

While evidence of past climate change has long been invoked as a major force in driving both the emergence and collapse of complex societies in the Near East, few paleoenvironmental datasets provide sufficient temporal resolution to adequately assess the timing or severity of hypothesized climate events, while the actual impact of such events on ancient agricultural systems remains largely speculative. This paper presents results of a NASA-funded project that utilizes high-temporal resolution satellite data (AVHRR and MODIS) from the past three decades to reconstruct the spatiotemporal dynamics of seasonal and interannual environmental variability, or landscape phenology, in the northern Fertile Crescent. A high-resolution gridded precipitation dataset for the same time period further enables a nuanced perspective on how the totality of water resources influences cycles of plant growth and overall agricultural potential throughout the region. These data are analyzed against an archaeological site database, including more than 20,000 sites mapped through systematic analysis of 1960s-era CORONA satellite imagery. Analysis of the distribution of sites from various periods alongside evidence of associated relict agricultural fields challenges long-held notions regarding the land use history of the region and reveals new insights into the relationship between settlement sustainability and environmental change.

[55] Discussant**Casar, Isabel (Instituto de Fisica UNAM), Pedro Morales (Instituto de Geologia UNAM) and Edith Cienfuegos (Instituto de Geologia UNAM) and Francisco J. Otero (Instituto de Geologia UNAM)****[63] Stable Isotope Paleodietary Reconstruction of Teopancazco Teotihuacan**

We sampled 39 molars from burials excavated in Teopancazco, Teotihuacan and performed isotopic analysis of 513C and 515N in tooth-dentine and 513C and 518O in enamel-apatite. The data was used to reconstruct the non-protein and protein intake of the diet of the individuals, using the bivariate carbon and the multivariate carbon and nitrogen stable isotope model. However since the models were developed and validated for bone apatite, to use the enamel data obtained we confirmed and calculated the difference between tooth and bone apatite (2.0o) in our population. The local population consumed a uniform whole diet with very C4 signal and differences in diets are related to immigrants from other geographic locations. During the most flourishing period, Xolalpan, there is a significant increase in the C4 signature of the protein and non-protein fraction of the diet. Concerning trophic levels we can clearly see five groups with different average 515NAIR, some of them unusually high. Archaeological evidence

supports the theory that population growth of this neighborhood and maybe of the great city was possible due to intensive maize agriculture that provided a stable and sufficient food supply and a surplus that could be stored in tunnels or fed to animals.

Cascalheira, João [116] see Paixão, Eduardo

Cascalheira, Joao (Universidade do Algarve - Portugal), Eduardo Paixao (Universidade do Algarve, Portugal) and Nuno Bicho (Universidade do Algarve, Portugal)

[116] *On the Border: The Lithic Assemblages from the Trench Area of Cabeço da Amoreira Shell Midden (Central Portugal)*

One of the most remarkable features of the new excavations at Cabeco da Amoreira shellmidden (Muge, Central Portugal) was the recognition of a series of Neolithic and Mesolithic horizons located just outside the mound limits. These, previously unknown, occupations were exposed in various test pits around the midden and, more strikingly, in a 1-x-12 trench where it was possible to confirm that a total of seven archaeological layers were formed during, and thus closely related with, the construction of the shell deposit. Hundreds of lithic materials, some ceramics, and two fire combustion features were recovered from this area. This paper will focus on the results of the techno-typological analysis of the lithic materials that has allowed us to build a diachronic framework for the occupations, detect a functional divergence between the Trench area and the shellmidden, and strengthen the argument of the use of the midden during Neolithic times.

Case, Dana

[285] *Textile Production at Panquilma*

During the 2013 field season, archaeological excavations were undertaken at Panquilma, an archaeological site dating to the Late Intermediate and Early Horizon periods (13th to 15th century) and located in Lurín, in the district of Cieneguilla, just outside of Lima. These excavations uncovered a significant number of textile artifacts, as well as tools related to the manufacture of textiles (such as spindle whorls and needles). Because textiles were an important part of pre-Columbian Andean society, playing a major role in social organization for Andean people, the textile artifacts found at Panquilma are a potentially important source of information about society there. Analysis of the textile artifacts found at Panquilma has been promising. This paper discusses the methods and findings of that analysis, focusing in particular on the contexts in which the artifacts were found, and the quality and abundance of textile-related artifacts in each context. Textile-related artifacts from several units are compared, helping to draw conclusions about which households were producing textiles, and what textile production meant for the status of these households within the social hierarchy at Panquilma.

Caseldine, Christopher [182] see Striker, Sarah

Caseldine, Christopher (Arizona State University)

[182] *Bloody Creeks or Seasonal Residents: An Examination of Social Interaction in the Spur Cross and Skunk Creek Areas*

Over the past several decades, Southwestern archaeologists have examined the role of warfare in contributing to social interaction patterning between the thirteenth and fifteenth centuries. In areas such as the Mesa Verde region, there is strong evidence of overt acts of violence; however, elsewhere in the Southwest, evidence of conspicuous violence is less clear. In central Arizona, archaeologists have suggested that sites located just north of the present-day city of Phoenix were constructed in highly defensible locations beginning around A.D. 1300, in response to increased social tensions. My paper therefore examines the settlement patterning of sites located in the Spur Cross and Skunk Creek areas to determine to what extent inter-site violence affected social relationships in those areas. Recent pottery sourcing work has shown that despite evidence of interaction between sites in those areas and Perry Mesa and the Phoenix Basin, no evidence of interaction between sites in the Spur Cross and Skunk Creek areas has been identified. Utilizing an attribute analysis to compare the architectural and material culture characteristics of the two areas, I will attempt to demonstrate that differences in site use may be the main contributor to the absence of interaction rather than inter-site violence.

[182] *Chair*

Casias, Rhiana, David Hyde (Western State Colorado University) and Torin Power (Western State

Colorado University)

- [137] *The Face of Foundation: Excavations of the Exterior Plaza Platform Wall at Group B of the Medicinal Trail Hinterland Community*

During the 2013 field season, a series of excavations was conducted at Group B of the Medicinal Trail Hinterland Community Archaeological Project (MTHCAP). One of the focus areas for the 2013 season was the exterior plaza platform located to the east of Structure B-1. Prior field season excavations exposed a portion of the north-south orientated wall, as well as an outer corner which redirected a small portion of the wall to the west. An objective of the 2013 excavations was to continue to expose the length of the east-west portion of the platform wall, and to determine its architectural design and integrity. Excavation efforts revealed the continuation of the east-west wall segment, which eventually terminated at an inner corner that redirected the platform wall back to a north-south orientation. The two newly exposed intersecting walls indicate that a possible expansion of the plaza platform may have taken place over multiple construction phases. This hypothesis is based on the comparison of the different construction materials and methods observed at the inner junction of the two platform walls. Other architectural features, such as an upper inset stone alignment and multiple plaster floors, were also observed during the exposure of exterior platform walls.

Caso Barrera, Laura [191] see Aliphat, Mario

Cassedy, Daniel (URS Corporation)

- [172] *Stone Cairn Sites of the Northern Appalachian Plateau*

Recent surveys for a 120-mile pipeline project in New York and Pennsylvania have identified over 70 separate sites containing one or more cairns of purposefully-stacked field stones. Over 250 individual cairns are represented in this sample from Susquehanna County, Pennsylvania and Broome, Delaware, and Schoharie counties in New York. Stone structures such as these have often been attributed to Euro-American land clearing and property marking activities, but the possibility that at least some of them were built by Native Americans is becoming more accepted by archaeologists. To help explore their origin and function, this poster provides information on setting, arrangement, and construction details on the extensive collection of cairns recently documented, and also reviews comparative data from other Northeastern researchers who have documented similar structures in the Adirondacks, the Catskills, and New England.

Cast, Robert (Caddo Nation of Oklahoma) and Trevor Ware (Caddo Nation of Oklahoma)

- [30] *Consultations Past and Future: A Legacy of Consultation between the Caddo Nation of Oklahoma and the Arkansas Archaeological Survey*

The Caddo Nation of Oklahoma, whose homelands spanned the areas of Arkansas, Louisiana, Oklahoma, and Texas, has had a long ongoing relationship with the Arkansas Archaeological Survey (AAS). Because of the presence of the Caddo Indians in southwestern Arkansas as evidenced by archaeological, historical, ethnographic, and oral traditional evidence, together with the amount of archaeological research undertaken within the state over the past 50 years, archaeologists such as Thomas Green understood the importance of consultation on NAGPRA collections held at the AAS and developing research projects of interest to the Caddo people. Dr. Green leaves behind a legacy that promotes and nurtures ongoing communications and relationships between the AAS and all Native American peoples with an interest in the state of Arkansas.

Castaneda, Amanda (Texas State University- San Marcos)

- [199] *Nose to the Ground Stone: Exploring Bedrock Features in the Lower Pecos Canyonlands*

Bedrock features are a common archaeological occurrence in the Lower Pecos Canyonlands. These occur in a wide range of forms, from polished "slicks", cupules, and small grinding facets to large, deep, well-developed mortar holes. Generally, these features are located in rock shelters, but also occur at open air sites; in both settings while they are sometimes isolated or scattered, most occur in clusters sometimes numbering in the hundreds. These clusters clearly represent major work stations where several different feature forms are present, which could represent different processing methods of targeted resources or perhaps multiple steps in processing a single resource. Even though relatively common, bedrock features, and ground stone artifacts as well, have received very little directed research in the Lower Pecos. Through the use of new technologies such as Structure from Motion photogrammetry and residue analysis, bedrock features are being explored for the research potential they offer in understanding the lifeways of Lower Pecos hunter gatherers. This paper will highlight current research

that is developing a typology of bedrock features across the Lower Pecos landscape, examining morphology through photogrammetric techniques, and exploring the potential for extracting residues from mortars in dry rock shelter environments.

Castañeda, Benjamin [104] see Saldaña, Julio

Castanzo, Ronald (University of Baltimore)

[112] The Central Valley of Puebla and the Formative Period Puebla-Tlaxcala Cultural Complex

The work of García Cook and others beginning more than forty years ago has brought to light the precocious growth and development of settlement in a large swath of the Puebla-Tlaxcala Basin, specifically an area encompassing much of the modern State of Tlaxcala and western portion of the Valley of Puebla. Extensive archaeological work in the Tepeaca area of the central Valley of Puebla over the past two decades, just outside areas that had been studied previously, has revealed remarkable similarity in ceramics with the western Puebla-Tlaxcala Basin throughout the Formative Period. At the same time, there is far less cultural affinity with the Tehuacán Valley to the southeast and not much further from Tepeaca than is the supposed "heartland" of the Puebla-Tlaxcala culture region to the northwest. The available evidence suggests that we can safely speak of a cohesive Puebla-Tlaxcalan culture during the Formative Period. The eastern boundary of this complex is not yet known; however, we argue that it must now be pushed beyond the central Valley of Puebla. Focusing more scholarly attention on the identification, characterization, and contextualization of this archaeological culture is an important future endeavor in Puebla-Tlaxcala archaeology.

Castellon Huerta, Blas

[112] Regional Political Strategies during the Classic: A View from Santo Nombre, Puebla

The problem of interregional relations between the southern Puebla region and Teotihuacan in the Early and Middle Classic periods is addressed based on preliminary data and results of archaeological excavations carried out at the site of Santo Nombre, Tlacotepec, Puebla. Through a review of the architecture and artifacts, particularly ceramics and obsidian, the supposed marginal role of regional or provincial centers such as the one examined here, is reevaluated. The assessment is focused on core – periphery relations, and the hypothetical marginality of these receiver nodes that have been proposed as suppliers of strategic resources to the metropolis, through the previously established exchange routes. Likewise, the possibility is considered that this site was part of a more extended regional and political system that together developed their own strategies to locally take advantage of the political and economic expansion of Teotihuacan toward these regions during the Classic period.

Castillo, Mario (California State University, Dominguez Hills) and Janine Gasco (California State University, Dominguez Hills)

[72] Post-Contact Agriculture and Material Culture Change in Soconusco, Chiapas, Mexico

This paper explores the history of agriculture and its impact on the material culture of rural smallholders in the Soconusco region of Chiapas, Mexico, though the analysis of land-use patterns and land-cover change. Following the Spanish invasion, introduction of new materials, technologies, and capital intensive cash cropping modified the agricultural landscape of the region, but archaeological and historical evidence suggests that rural smallholders continued to practice traditional agroforestry to meet their subsistence needs. Moreover, the relative isolation of rural smallholders meant that many new technologies, tools, roads, and other means of communication, were slow to reach them. However, in the late 20th and in the 21st centuries, substantial population growth, urbanization and shifting economic policies based on mechanization, industrial pesticides and monocropping has changed the material culture and reduced the self-sufficiency of rural smallholders. In Soconusco, previous research on rural smallholders focused on land-use patterns to document traditional agroforestry systems and to understand the role of Traditional Ecological Knowledge (TEK) within these systems. To complement these data, we add multi-temporal and multi-spectral land-cover change analysis in direct tension with land-use patterns to assess how recent environmental changes are impacting the agricultural and material practices of rural smallholders in the Soconusco region.

Castillo, Luis Jaime [104] see Saldaña, Julio

Castillo, Janeth [200] see Martínez, Pablo

Castillo Butters, Luis Jaime [59] see Cusicanqui, Solsiré

Castillo Cárdenas, Karime [72] see Newman, Elizabeth

Castillo-Peña, Patricia [337] see Zetina-Gutiérrez, Guadalupe

Catacora, Andrea [334] see Giambastiani, Dayna

Cathers, Airelle (California State University, Sacramento)

[105] *The Nature of Household Burials during the Late Moche Period*

Between approximately A.D. 600 and 800, the Late Moche of the North Coast of Peru saw a number of shifts in religious, social, and political behavior before their ultimate collapse by A.D. 800. This study is concerned with shifts in burial patterns during this period. Before this period, "normative" burial patterns followed a predictable organization of burials in cemeteries and in chamber tombs of huacas. The discovery of the urban center of Galindo revealed the first shift from extramural inhumation to 'bench' burials placed inside residential structures. In this study, I look at the emergence of in-house burials within the context of Middle to Late Moche urban sectors, focusing on the site of Galindo with comparative considerations of residential burials found at Huacas de Moche in the Moche Valley and Pacatnamu in the Jequetepeque Valley. The changes in burial practices at these sites reflect shifts of power and beliefs in the context of the final collapse of the Moche. I focus primarily on the implications of a shift from public to private household-based burial rituals, the concurrent occupation of houses during interments, and how changes in burial practices are manifestations of the religious, social, and political unrest during this time.

Catsambis, Alexis [125] see Neyland, Robert

Caulk, Grady (Corps of Engineers)

[263] *Islands in the Sea of Grass: Investigating the Environmental History of Everglades Tree Islands*

It has been understood that inundation has an adverse effect on archaeological materials. However, archaeological sites in the Everglades system have long been subject to fluctuating water levels. In an attempt to understand the effects of both natural and management caused water level fluctuations the US Army Corps of Engineers, as part of its Everglades Restoration project, is conducting archaeological investigations focusing on understanding the environmental history of Everglades archaeological sites. This poster will provide an overview of the planned investigations.

Cavallini, Carolina [197] see Salgado, Silvia

Cesar, Rachel (UC Berkeley/San

Francisco) [135] *Discussant*

Cecil, Leslie (Stephen F. Austin State University)

[147] *Hallucinogens and Blood: Grater Bowls from Nixtun Ch'ich'*

Archaeologists typically state that grater bowls, molcajetes, were used to process subsistence foods. These vessels are often glossed as chili graters because of the use of the analogy from Aztec, not Maya, codices that show women using molcajetes to grind chilies and beans. In order to test this commonly accepted analogy, I analyzed residues from 14 Postclassic grater bowls excavated from Nixtun Ch'ich'. The vessels were excavated from a ceremonial c-shaped structure (Str. 188), a residence associated with the San Jeronimo mission (Str. ZZ-1), and an oratorio (Str. WW1). The residues from these vessels demonstrate that Postclassic Maya from Nixtun Ch'ich' were not using grater bowls for processing only subsistence foods, but were preparing hallucinogenic concoctions, sometimes with mammal blood (perhaps human blood). Additionally, the presence of tamarind suggests that this practice continued even after the Spanish came to Nixtun Ch'ich'.

Cegielski, Wendy (Arizona State University), Grant Snitker (Arizona State University), Gayle

Timmerman (Arizona State University), C. Michael Barton (Arizona State University) and Bette Otto -Bliesner (National Center for Atmospheric Research)

[13] *Reconstructing Local Paleoclimate Data with Global and Local Variables: A Re-examination of "Downscaling" with Updated Paleoclimate Models*

Climate trends are important in understanding human relationships with their environments. Researchers have long depended on paleoenvironmental proxies, such as ice-cores, marine and lake sediments, and pollen records, to reconstruct broad, low-resolution climate patterns for a particular research area. But these proxies can give ambiguous signals because they can be affected by human activity. During mid-1990s, Reid Bryson developed a method for statistical downscaling of low-resolution, global paleoclimate models to provide modeled weather data tailored to fit the local spatial scales and long temporal sequences of archaeological applications (the latest model allows for 100-year intervals). Despite its utility to archaeological research, Bryson's "Macrophysical Climate Model" approach has been underutilized during the last twenty years. In an effort to refine Bryson's work and make paleoclimate models more accessible to archaeologists at useful spatial and temporal scales, we have incorporated modern, global paleoclimate data from the National Center for Atmospheric Research's Community Climate System Model (CCSM3) into Bryson's downscaling framework. This allows us to combine Bryson's approach with a modern understanding of the dynamics of earth's climate systems. We compare our updated models with proxy data from the GISP2 ice core to evaluate their reliability.

Cerano, Julian [158] see Stahle, David

Cerezo-Román, Jessica (University of Arizona)

[247] *Cremation Funeral Customs among the Classic Period Hohokam of the Tucson Basin* Cremation funerary customs are unraveled to acquire a deeper understanding of intersecting identity differences among Classic Period Hohokam (A.D. 1150-1450/1500) of the Tucson Basin. This is done by analyzing the mortuary treatment of 281 individuals using two primary datasets: (1) biological profile of the skeletal remains and (2) posthumous treatment of the body inferred from the analysis of the remains and archaeological contexts. Preliminary results indicate the existence of social differences in funerals related to age-at-death and sex identity intersections. However, funerary customs also were less elaborate and more "private" than in the preceding Preclassic Period (A.D. 700-1150). These findings suggest that a general decrease in remembrance networks occurred through time. Social trends observed in Classic Period Hohokam mortuary customs in the Tucson Basin parallel broader sociopolitical changes previously proposed for the Classic Period Hohokam, including increased social differentiation and complexity.

Cerling, Thure [186] see Chritz, Kendra

Cervantes, Gabriela (University of Pittsburgh)

[104] *Residential Occupation in the Capital of the Sican State, Peru*

The capital of the Sican state (900–1100 A.D.) located in the middle La Leche valley, North Coast of Peru, has been interpreted to have been a sacred religious precinct with six major multi-level platform mounds, which are believed to symbolize the six elite lineages that competed for the political leadership. While an elite cemetery and a group of attached craft workshops associated with some of these mounds have been documented, residences of the population that supported the capital has not been properly defined. During the summer of 2013, a preliminary reconnaissance of the Sican capital and its surrounding areas to the east and west within the mid-valley was conducted to identify residential areas and record their surface material composition and density so as to gain an insight on the intensity and scale of occupation during the political hegemony of the Sican State. This poster presents results of the preliminary work that complement the existing knowledge and understanding of the elite and ritual activities of the Sicán capital.

Cesta, Jason [341] see Mueller, Raymond

Chacaltana, Sofia (University of Illinois at Chicago)

[121] *Material Culture in Coastal Chullpas from Tacahuay Tambo / Pueblo*

In 2010, during excavations conducted at the coastal site of Tacahuay in the Colesuyo region of Southern

Peru, a team of archaeologists found exceptional funerary contexts. While looking for qolqas (Inca storage constructions), the team unintentionally crossed into two funerary structures known in the Andean region as chullpas (houses of the dead). These structures were buried under deep aeolian deposition and were not recognized on the surface, remaining intact for more than 500 years. Here, I describe the importance of these findings, propose future investigations of chullpas in the Colesuyo and offer a preliminary bioanthropological analysis. I also present analyses of multiple types of Inca material culture found inside these chullpas, and discuss their social history.

[121] Chair

Chacaltana, Sofía [256] see Hernández Escontrías, Pilar

Chacaltana Cortez, Sofia [19] see Piscitelli, Matthew

Chacon, Richard

[288] *Fighting or Feasting? Pathways to Social Inequality in Egalitarian Amazonia and New Guinea*

This research documents two pathways by which individuals acquire elevated positions of prestige in their respective tribal societies. The first route involves participation in warfare as a means for obtaining high social standing among Amazonian Indians. Individuals who exhibit courage in battle are rewarded with prestige by fellow villagers. The second approach involves participation in economic activities for obtaining high social standing among the Western Dani of New Guinea. Successful sponsors of large pig feasts are rewarded with prestige by their fellow villagers. These two pathways are investigated by way of case studies marking the advent of social inequality in disparate egalitarian settings. This research will also apply experimentally tested sociological theory to understand how the presence of incipient social inequality may help foster collective action.

[288] Chair

Chacon, Richard [288] see Willer, David

Chambers-Koenig, Emma (University of Alabama)

[224] *Ritual Deposits and Abandonment Processes at Aguacate Uno, Belize*

Recently there has been a growing interest in the study of site-specific abandonment processes that occurred in the Maya Lowlands during the Late to Terminal Classic periods. These studies recognize the need for the analysis of artifact assemblages to understand the multifaceted processes of abandonment. Excavations at the minor center of Aguacate Uno uncovered four terminal deposits in the two major civic structures. On the northern structure deposits were found overlaying the entrance staircase and within a room on the medial terrace. On the southern structure deposits were found on the summit and within a room attached to the base of the building. Three of these assemblages resemble those associated with abandonment processes found across the Maya Lowlands: termination rituals, structure decommissioning, and occupational trash. The fourth deposit is unlike the other three and may suggest revisitation to the site after it was abandoned. By sampling and comparing contexts and artifacts from the four deposits, a more comprehensive understanding of Aguacate Uno's abandonment timeline and processes can be reached. This study has the potential to influence how archaeologists study abandonment processes, but also explores questions about what happens to a site, as well as its previous inhabitants, after abandonment.

Chan, Evelyn [147] see Pugh, Timothy

Chandee, Sarah (University of California, Los Angeles)

[171] *Imperialism and the Urban Landscape in Ptolemaic Egypt*

The purpose of this research is to examine the ancient urban landscape to evaluate the character and degree of colonialism, or more specifically imperialism, in Ptolemaic Egypt. Through a qualitative study of three settlements, Alexandria, Naukratis, and Thmouis, changes in the urban landscape and the effects of imperialism can be determined. Comparisons can be made between a number of urban features found at each settlement, such as neighborhoods, buildings, roads, fortifications, harbors, palaces, temples, commercial areas, and industrial spaces. From this, patterns can be distinguished in settlement design, cultural divisions, and colonial influence. Theories of colonialism and imperialism aid in understanding

relations of dominance in a colonial setting and distinguish urban features that were constructed as part of a colonial agenda. This research leads into the study of the significance of establishing new colonies where functioning settlements already exist in a colonized land.

Chapdelaine, Claude [157] see Eastaugh, Edward

Charami, Alexandra [332] see Lane, Michael

Charles, Mona (Fort Lewis College)

[334] *Yours or Mine? Bone Gaming Pieces from the American Southwest*

Enigmatic bone artifacts referred to as "gaming pieces" are found throughout the American Southwest although they appear to have their apex during the Basketmaker II period. The pieces are small, thin, and display a variety of shapes, with one side usually incised or scored. Most often they are found as isolated occurrences; however, they have been documented in sets or groups suggesting they functioned in some type of recreational capacity. Bone gaming pieces (dice, disks, or counters) are referenced in Stewart Culin's "Games of the North American Indians" where he suggests a long antiquity for games of chance using similar items while citing ethnographic analogies with the Zuni and Hopi tribes. In this paper I discuss an assemblage of over 150 gaming pieces derived from Basketmaker II and Pueblo I sites near Durango, Colorado, and compare them through time and space to similar artifacts from other sites in the Southwest. I hypothesize that gaming pieces were an early iteration of a communal game similar to Pogs, where individual pieces, and perhaps their creators, could be identified by shapes and etchings.

Charles, Douglas (Wesleyan University)

[340] *Middle Woodland Things and Hopewellian Things*

Middle Woodland period things share several characteristics: (1) they are of local origin; (2) they were generally abandoned (e.g., refuse) or dismantled (e.g., structures); and (3) they were acquired either because of their specific technological properties (e.g., chert and clay) or incidentally (i.e., contained in plants and animals), or they are simply taphonomic byproducts (e.g., post molds). Conversely, many of the things we attribute to the Hopewell phenomenon share different characteristics: (1) they (or the raw materials) were transported considerable distances; (2) they were often intentionally deposited (*sensu* Schiffer 1972, 1987) in grave caches or in a patterned manner; and (3) they were seemingly chosen for visibility or durability, or for symbolic reasons. These differences result not just from the agentic acts of the people, but also from the agency of the things. This paper will explore the agency of things and the extent to which such a perspective enhances our understanding the Middle Woodland period and the nature of Hopewell.

Chase, Arlen [75] see Scarborough, Vernon

Chase, Brad (Albion College)

[124] *Pastoral Land-Use of the Indus Civilization in Gujarat: New Findings from Biogenic Isotopes and Faunal Analyses*

The Indus Civilization (2600-1900 B.C.) in Gujarat, India is characterized by a network of small yet monumentally walled settlements, many of which functioned as centers for the manufacture of highly valued Indus ornaments from locally available raw materials that were traded to distant Indus cities. Investigation of the ways in which the residents of these settlements produced or obtained their daily subsistence needs is fundamental to more complete interpretations of Indus political economy and social dynamics in this important borderland region. As a direct interface between human societies and the physical landscape, archaeological faunal remains have the potential to provide powerful insights into these issues. The bones and teeth of domestic animals preserve a record not only of human production and consumption practices but also the geographic and environmental contexts in which they were raised. Here, faunal analyses are combined with a consideration of variation in biogenic isotopes in the tooth enamel of domestic animals from Indus archaeological sites in the region. Our findings reveal important new insights regarding pastoral land-use in and around these settlements, laying an empirical foundation for novel understandings of South Asia's first urban society.

[124] *Chair*

Chase, Diane (University of Central Florida)

[154] Discussant**Chase, Zachary (The University of Chicago)**

[183] *The Myths of a History: Wak'as, Temporality, and Performative Historicities in Huarochirí, Peru (ca. A.D. 1500-1700)*

The central Andean region of Huarochirí produced a unique Quechua manuscript which has served as an invaluable reference for archaeologists and historians. In this paper, data from the first systematic archaeology carried out in the epicenter of the manuscript's composition will be presented to reveal insights into the operation of mythical narrative, ritual, material culture, and landscape in the performance and construction of new temporalities, collective identities, and socio-political relations during two successive processes of colonization (Inka and Spanish) during the late prehispanic and early colonial periods. Considered together, the archaeological and textual data not only suggest revision of accepted historical reconstructions of Huarochirí's past, but also allow for revelatory ethnohistorical interpretations which require rethinking our notions of temporality and historicity in the Andes. The presentation makes an argument for the temporally and socially generative power of superhuman material entities known as wak'as, and demonstrates how particular culturally and historically nuanced understandings of time can inform the design of archaeological research questions in the late prehispanic and early Spanish colonial Andes.

Chase, Arlen (University of Central Florida)

[337] *Large-Scale Maya Regional Settlement and Inter-Site Analysis: Results from the 2013 West-Central Belize LiDAR Survey*

During April and May 2013, a total of 1050 square kilometers of LiDAR was flown by NCALM for a consortium of archaeologists working in west-central Belize, making this the largest surveyed area within the Maya lowlands. Encompassing the Belize Valley and the Vaca Plateau, west-central Belize is one of the most actively researched parts of the Maya lowlands; archaeological projects have focused on at least 18 different sites within this region. Thus, a large body of archaeological research provides both the temporal and spatial parameters for the wide variety of ancient Maya centers that once occupied this area; importantly, these data can be used to help interpret the collected LiDAR data. The goal of the 2013 LiDAR campaign was to gain information on the distribution of ancient Maya settlement and sites on the landscape and particularly to determine how the landscape was used between known centers. The data that were acquired through the 2013 LiDAR campaign have significance for interpreting both the composition and limits of ancient Maya political units. This paper presents the initial results of these new data and suggests a developmental model for ancient Maya polities.

[337] Chair

Chase, Adrian (Arizona State University), John Weishampel (University of Central Florida) and Diane Chase (University of Central Florida)

[337] *Water Capture and Agricultural Terracing at Caracol, Belize as Revealed through the 2009 LiDAR Campaign*

In April 2009 a LiDAR survey flown by NCALM recorded 200 square kilometers of terrain that comprised the Maya site of Caracol, Belize. The data that were acquired revealed a densely settled site spread throughout this area with residential groups situated within an extremely manipulated landscape. The LiDAR data helped to demonstrate the full extent of the extensive Maya urban settlement that existed in this portion of the Vaca plateau. Settlement was also interspersed with agricultural terraces used both to grow food and to direct the flow of water over the terrain. The ancient Maya controlled soil erosion through the use of carefully constructed terracing that both retained water and managed its gravitational flow through the topography. Constructed reservoirs, usually in close proximity to residential groups, were also widely distributed throughout the landscape. These data show that water management practices at Caracol were shared by the bulk of the site's population and did not fall solely within the purview of the ancient Maya elite—contradicting some archaeological reconstructions for their society that suggest that royal power was directly tied to the control of this important resource.

Chatelain, David (Tulane University)

[52] *Water, Labor, and Control at the Minor Center of La Cariba, Guatemala*

The site of La Cariba is situated in the northwest Petén region of Guatemala, in the periphery of the larger site of La Corona. In what is increasingly being revealed as an area with strong political connections to the Kaanal dynasty during much of the Classic period, the minor center of La Cariba may shed more light

on political organization at the local level. Based on topographic mapping data collected during the 2012 field season, GIS-based analyses are used to construct hydrological models of water management features at the site and to estimate construction volumes of structures in the site core. These lines of evidence can provide insight on the ability of the rural elite to organize labor and begin to answer broader questions of social and political organization in the peripheral areas of Maya polities.

Chatters, James (Applied Paleoscience), Dominique Rissolo (Waitt Institute), Pilar Luna Erreguerena (Instituto Nacional de Antropología e Historia, Mexico) and Alberto Nava Blank (Bay Area Underwater Explorers)

[114] *Establishing the Chronology of an Association between a Human and Pleistocene Megafauna in Hoyo Negro, a Submerged Cave on the Yucatan Peninsula*

Cave Divers mapping the submerged caves of the Yucatan Peninsula over the past 20 years have often discovered the remains of humans and extinct megafauna that entered at a time of lowered sea level. Dating these finds by radiocarbon dating of collagen has proven impossible due to the near-complete loss of bone proteins in the warm tropical waters. It has thus proven essential to innovate alternative approaches. In Hoyo Negro, Quintana Roo, Mexico, remains of a human, gomphotheres, two giant ground sloths, possible Florida cave bears, and sabertooths have been found directly associated by depth and/or position, all in unburied context. Remains of the human and one gomphothere are commingled. To determine absolute and relative ages of these species we turned to a combination of direct dating by radiocarbon analysis of tooth enamel, and indirect dating by uranium/thorium analysis of speleothems and reconstructing postglacial sea-level rise within the cave through the ages of bat guano and calcite raft cones. Analytical work was completed by the University of New Mexico, Pennsylvania State, Northwestern, and McMaster Universities, Stafford Laboratories, and DirectAMS. First applied to the human and gomphothere, this approach has shown that association does not necessarily equal contemporaneity.

Chávez Balderas, Ximena (Proyecto Templo Mayor)

[25] *Images of Death: Symbolism, Use and Reuse of Human Skulls at the Templo Mayor of Tenochtitlan*

From 1948 to 2012, 108 decapitated victims were recovered from the excavations of the Templo Mayor of Tenochtitlan. The biological profile of the individuals is diverse: adult females, males, subadults and children were placed in the offerings. Independent of this diversity, human skulls were buried as severed heads and as god effigies. Severed heads were associated with the consecration of the temples, a widespread practice in Mesoamerica. Reused tzompantli skulls, skulls with basal perforation, and the so-called skull masks were deposited in the offerings as effigies of deities related to the earth and death, particularly of the god of the Underworld, Mictlantecuhtli. Numerous osteological indicators found in these skulls support the idea that most of them were not manufactured ex professo for this purpose. If these individuals were not decapitated for manufacturing these effigies, what was their original function? Four sources of information can give us potential answers to this question: codices, written documents, other archaeological skulls and Aztec sculpture. In this paper I will explore the symbolism and the complex chain of use and reuse of these important components of the cosmograms.

Chávez V., José Juan [112] see Kabata, Shigeru

Chazan, Michael (University of Toronto)

[26] *Levallois without Levallois: Late Lower Paleolithic Flake Industries in the Levant*

Confusion between the typological and technological definition of Levallois is an impediment to understanding the emergence of this method. In the Late Lower Paleolithic of the Levant a low percentage of typologically Levallois flakes are found in industries that do not show evidence of the Levallois method as defined technologically. These industries thus represent a challenge to archaeologists. If looked at typologically these assemblages would suggest the gradual development of Levallois while from a technological perspective such a gradualistic perspective makes little sense. In this paper I will go back to the industry from the site of Holon, which has been dated by OSL and ESR to OIS 7. At this site I suggest that the flake industry is best understood as the product of the trifacial method. The implications of this interpretation for the understanding emergence of the Levallois provide an opportunity to consider the relationship between the late Lower Paleolithic and the Middle Paleolithic in the Levant.

Chazin, Hannah (University of Chicago) and Maureen Marshall (University of Chicago)

- [20] *The Chemistry of Mobility: Preliminary Results, Potentials, and Challenges of Isotope Analysis in the Tsaghkahovit Plain, Armenia*

In the last decade, Eurasian archaeologists have focused on the numerous ways in which people's lives and social landscapes are shaped both by movement and by human-animal relationships in a broad spectrum of pastoralist societies. Isotope analysis has the potential to refine these understandings by tying movement to specific geographical locations, diet regimes, seasonality, and long-term climate change. In the broader field, isotope research has burgeoned in the last ten years, focusing particularly on questions of migration, colonialism, and residential movement within states and empires. In contrast, the use of isotope analyses in Eurasia offers the opportunity to investigate different questions and generate innovative models and new ways of understanding mobility in prehistoric societies, even as it poses specific challenges. The salience of human-animal relations in Eurasian pastoralist societies demands the generation of new approaches to constructing research projects and interpreting isotope data that better integrate data sets. We present preliminary results on from isotope analysis of assemblages from the Bronze Age Tsaghkahovit Plain, Armenia. Bringing together data on human and animal remains, we outline the first steps towards building a comprehensive program of isotope analysis from the ground up and discuss the potentials and challenges for future research.

Cheetham, Paul [283] see Evis, Laura

Chenault, Nicole [137] see Marinkovich, Erik

Chenoweth, John (University of Michigan-Dearborn)

- [188] *Foundation Deposits in the Eighteenth Century Caribbean*

Work on two separate eighteenth-century sites in the rural British Virgin Islands has uncovered unusual deposits at the bases of post-holes in the foundations of plantation houses. The homes are of a similar period, but otherwise have no direct relation. Not likely to be structural and clearly intentional, there is a possibility that these deposits were made with religious and/or magical intentions. This possibility is made more unusual in light of the fact that one of these sites certainly is—and the other may be—associated with a community of the Religious Society of Friends ("Quakers") known in part for their rejection of the "superstitions" of mainstream worship such as sanctified spaces, ritual, and ritual objects.

Cheong, Kong (Santa Fe Institute)

- [179] *The Curious Case of Charlie Chaplin Figurines: Ritual Meaning and Context of Small Anthropomorphic Maya Carvings*

Small anthropomorphic figurines, known as "Charlie Chaplins," have been recovered from ritual cache contexts at various Lowland Maya sites that date to the Late Preclassic and Early Classic periods. The curious name is a label first designated by J. Eric S. Thompson in the 1930s. The occurrence of these Charlie Chaplin figurines is widespread throughout the Maya subarea and may even be a shared, pan-Mesoamerican ritual item. Similar figurines, for example, have been recovered from Teotihuacan, while other figurines, known as camahuiles in the Highlands of Guatemala, penates at Monte Alban, and mezcalia in the Guerrero subarea of Mexico, have been identified. These humanoid carvings often portray features such as eyes, mouth, arms, hands, legs and feet, while others are more abstract, with simple incised lines representing heads, arms and legs. The so-called Charlies of the Maya subarea are often carved from materials such as marine shell, slate, jadeite and even obsidian. This paper will examine this class of Maya artifact, and present information on contexts and possible ritual meanings based on recently excavated Charlie Chaplin figurines from the North Group of Pacbitun (Belize). Similar artifacts from other Maya/Mesoamerican sites will be used in a comparative analysis.

[179] Chair

Cherry, John (Brown University)

- [162] *One Thousand Years of the Royal and Noble Hunt in the Aegean*

This paper uses archaeological data, artistic representations, and literary evidence to trace various forms of symbolically-charged hunting activities in the Aegean over the course of more than 1000 years, from the Late Bronze Age world of Minoan and Mycenaean princes and kings to that of Alexander the Great and his Hellenistic successors. Bronze Age kings and their entourage surrounded themselves with imagery of the hunt and the display of weaponry, grave stelai, wallpaintings, and sealstones focusing

especially on dangerous animals such as wild boars and lions. The latter draws on Near Eastern iconography, symbolically linking royal power and control with the qualities of the lion as an apex predator. Homer too reflects these ideas. In the non-monarchical societies of Crete several centuries later, hunting expeditions seem to have played an important role in rites of passage and enculturation for young elite males. The westward expansion of the Persian Empire, however, introduced to Anatolia and Mediterranean Europe the notion of hunting in designated royal parks (paradeisoi). After Alexander destroyed this empire, he adopted both the practice and the representation of the royal hunt in a wide variety of media (mosaic floors, painted tombs, stone sarcophagi, etc.) as emblematic of supreme power.

Chesson, Meredith (University of Notre Dame)**[145] Slow Urbanism: The Other Urban Revolution in the Early Bronze Age Southern Levant**

Recent reevaluations of traditional models of urbanism in Old and New World contexts have transformed how we approach and understand the earliest urban societies, decoupling the notion of urbanism and cities as requirements for political complexity in typologically-driven studies of ancient states. This paper describes a case study of small-scale urbanism: often characterized as a marginal backwater in the grand narrative of emerging urbanism in the ancient Near East, the southern Levantine peoples who lived in modern day Jordan, Israel, Palestine, southern Syria, and Lebanon developed their own version of urbanism in the Early Bronze Age I-III (EBA, c. 3500-2300 B.C.E.). This brand of urbanism, what I term Slow Urbanism, emerged from localized histories and relationships, lacking a widespread presence of elites, powerful civic and ritual institutions, international exchange networks, prestige goods, writing systems, pronounced sociopolitical complexity, or large cities. Using mortuary evidence from Bab adh-Dhra` (Jordan) and Jericho/Tall as-Sultan (Palestine), I track the tempos along the pathways to a Slow Urban society, examining how EBA people invented small-scale cities in which the very nature of urbanism was necessarily diverse, localized, and lacking in pronounced social and political differentiation.

[145] Discussant**Cheval, Carole (Chercheur Associé ArScAn UMR7041)****[22] Identifying Treatment of Fibers by Analysis of Bone and Wood Tools used in Textile Production: the Neolithic Sword Beater**

Sword beaters, with blades made of bone and wood, were important weaving tools in Neolithic Europe. Following the implementation of an experimental protocol concerning these enigmatic tools, which are rarely recognized archaeologically, I have been able to establish diagnostic criteria for identifying possible sword beaters at prehistoric archaeological sites. These tools are found at several sites dating between 4550 B.P. and 2850 B.P. in southern France and Italy. If our experimental reference work is extended, we may be able to determine which fibers were used for textile production during the Neolithic. Such findings could reveal a virtually unknown practice in prehistoric economy, and they could shed light upon the procurement and use of plant and animal resources by populations living during early stages of plant and animal domestication.

[22] Chair

Chiarulli, Bev [77] see Smeltzer, Marion

Chiarulli, Beverly (Indiana University of Pennsylvania)**[292] Finding Economies of Scale from Household to Regional Patterns of Lithic Distribution in Northern Belize**

Discussions of trade in the Maya lowlands have frequently focused on long distance trade and its contribution to the development of Maya hierarchical organization. Less attention has been paid to the development of intra-regional or intra-site distribution networks. There has been an assumption that both exotic and regionally produced goods were distributed to local markets and networks in that region through the same although undefined processes. In fact, there may be different networks for different goods that may reflect the needs of the consumers as well as those of the producers. Northern Belize is an ideal region for an investigation of the different networks for the distribution of lithic artifacts because of the number of sites that have been investigated. The region contains the only large scale lithic production site in the Maya area and is also connected to long distance trade networks in obsidian. This paper examines the multiple distribution networks in northern Belize through an analysis of stone tools and their manufacturing debris that allow us to trace the movement of raw materials and finished products into and throughout the region and individual communities.

Chicoine, David (Louisiana State University), Hugo Ikehara (University of Pittsburgh), Koichiro Shibata (Kobe City University of Foreign Studies) and Matthew Helmer (University of East Anglia)

[27] *Plazas: Contexts of Performance and Sociopolitical Integration in Coastal Ancash during the Formative Period*

In this paper, we evaluate plaza performances and sociopolitical integration in coastal Ancash during the Formative Period. Recent field research in the region suggests the development of polities and communities of different levels of integration based on settlement patterns and the distribution of ceramic styles. These developments coincide with the abandonment of Chavín and Cupisnique-related religious centers in the region between 800 and 500 B.C.E. We explore the shift in patterns of ritual practices and built ritual settings after the demise of large regional centers in coastal Ancash. The Late Formative marked the emergence of a multitude of community that seems to vary in scale, complexity and modes of social integration. Through a comparison of plaza settings and associated material assemblages, we delineate different nodes of sociopolitical integrations. Results suggest that the demise of Middle Formative regional ceremonial centers and the development of Late Formative settlements marked, at least in some areas of coastal Ancash, a decentralization of ritual practices. Rather than being limited to large-scale gatherings at regional centers, the fragmentation of the ritual landscape—and especially the integration of plaza settings within exclusive residential environments—point toward the appropriation of ritual practices by multiple competing groups.

Chicoine, David [104] see Treloar, James

Chilton, Elizabeth (UMass Amherst), Dianna Doucette (The Public Archaeology Laboratory, Inc.), Katie Kirakosian (University of Massachusetts Amherst), Deena Duranleau (University of Massachusetts Amherst) and David Foster (Harvard University)

[218] *Evaluating the Drivers and Triggers of Ecosystem Dynamics in Pre-Contact New England*

The interpretation that Native American land-use played an increasing role in landscape dynamics through the Holocene is widespread. Newly proposed is the interpretation that major cultural changes in the northeast coincided with significant climatic and vegetation changes. However, there are no robust analyses of regional archaeological and paleoecological data to test either assertion. This paper describes the archaeological component of a larger NSF-funded research project intended to analyze the drivers and responses to ecosystem dynamics in New England. The archaeological effort aims to understand the dialectical relationships between human activity (fire, land clearance, horticulture) and vegetation dynamics. Some of the specific alternative hypotheses examined in this research are: (1) are changes in vegetation the result of cultural or climatic shifts? (2) were people passively responding to environmental change, contributing minimal ecological impact themselves? or (3) do vegetational histories demonstrate the clear influence of human agency? We present preliminary results from the analysis of statewide site archaeological data and more detailed analysis of data from three subregions in Massachusetts.

Chinchilla, Oswaldo (Yale University), Vera Tiesler (Universidad Autónoma de Yucatán, Facultad Ciencias Antropológicas), Oswaldo Gómez (Parque Nacional Tikal, Ministerio de Cultura y Deportes) and T. Douglas Price (University of Wisconsin, Madison, Department of Anthropology)

[303] *Cosmogony and Human Sacrifice at Tikal, Guatemala: Interdisciplinary Approaches to the Primary Cremated Multiple of PP7TT-01*

Mesoamericanist research on human sacrifice and fire ritual bypasses some of the material constraints of archaeology, taphonomy, and osteology by bringing into play the vast ethnohistorical corpus of written texts and artistic representations. In this paper, we apply an integrated approach to the reconstruction and interpretation of a partially cremated primary context at the Lowland Maya city of Tikal, deposited sometime during the 5th century A.D. To this end, we analyze the remains of two males who were put to death, cremated and buried on the spot on the axis of a public E-Group complex with strong solar connotations. Detailed taphonomic reconstruction reveals details about the form of death and combustion of the two bodies, while isotopic studies hint at the individuals' probable geographic origin and residence. These data are relevant considering the event's historic coincidence with a critical period in Tikal's history, marked by intensified cultural and political interaction with the highland Mexican city of Teotihuacan, materialized in this context by the presence of imported green obsidian spear points. When considered jointly with ancient Mesoamerican mythology and ritual, this unique context appears to materialize a sacrificial reenactment of the mythological birth of the sun and the moon.

Chirinos Ogata, Patricia (University of California, Santa Barbara)

[231] Power Relations between Wari and Cajamarca at the Empire Frontier: Preliminary Excavation Results from the Site of Yamobamba, Namora Valley, Peru

When the Wari Empire reached the Cajamarca region in northern Peru during the Middle Horizon (A.D. 700-1000), extensive centers were built, small local settlements were abandoned, and the prestigious Cajamarca pottery began to appear in elite contexts in several Wari sites. Within this context, multiple scenarios of political negotiation most certainly defined the interaction between the powerful local polity and the expansive empire coming from the south. Recent research at Yamobamba, a monumental site in the Namora valley in Cajamarca, revealed a typical Wari architectural layout, with squared patios surrounded by tall, narrow corridors and galleries. However, small platform mounds and checkpoints indicate that formal variation, corresponding to functional differences, was established among the patio-groups. This poster summarizes the finds from the first season of excavations at Yamobamba. While the Wari secular elements are predominant at the site, functional diversity is suggested. In addition, ceramic vessels found at Yamobamba correspond to a local occupation during the Middle Horizon, but no evidence of Wari ceramics has been recovered. Together, the finds suggest that the occupation at Yamobamba must be seen as the outcome of intricate and fluctuating power relations rather than direct control of Wari over Cajamarca.

Chisholm, Linda (University of Minnesota), Kirsten Jenkins (University of Minnesota), Laura Vietti (University of Minnesota, Department of Geography), Katrina Yezzi-Woodley (University of Minnesota) and Sean Carlson-Greer (Mercyhurst University)

[208] Taphonomy of a Cutmark: Post-depositional Changes to Cutmark Morphology in a Simulated Fluvial Environment

Researchers have long relied on careful actualistic studies of bone surface modifications to distinguish cutmarks from non-anthropogenic surface modifications, especially in the context of early hominin behavior. However, few actualistic studies examine how post-depositional processes alter the microscope features used to identify cutmarks from other taphonomic agents. We simulated the erosional processes of a streamside depositional environment by securing stone tool butchered elk bones in a flume at the Saint Anthony Falls Laboratory, MN. Cutmarks were described and examined with a stereomicroscope and an ESEM at regular intervals. Our results show that even if there is no noticeable rounding present on a bone, cutmark morphology can be altered quickly. During our study we observed the following: (1) V-shaped cutmarks became wider, deeper, and asymmetrical; (2) smaller, shallower cutmarks disappeared completely; (3) features such as shoulder effect and flaking were frequently lost. Furthermore our findings suggest that grain size distributions may predict how cutmark morphology and features are altered. These results highlight the importance of the sedimentological context for the interpretation of all zooarchaeological butchery sites and the need for additional studies on the preservation of surface modifications.

Chiu, Scarlett (Academia Sinica, Taiwan), David Killick (University of Arizona) and Christophe Sand (Institute of Archaeology of New Caledonia and the Pacific)

[271] New Discovery for Sourcing New Caledonian Lapita Pottery Based on Petrographic Studies of 10 Lapita Sites

After comparing 118 thin section samples collected from 10 Lapita sites, we have established a more systematic way of describing and sourcing New Caledonian Lapita pottery based on petrographic analysis, and have identified three new possible sources for manufacturing Lapita pots. In this paper, we will describe what type of index minerals that we used to find out the possible source of a given ceramic vessel, and what this refined classification system may enable us to do in the future study of Lapita pottery in this region.

Chivis, Jeff (Michigan State University; Nottawaseppi Huron Band of the Potawatomi: THPO)

[48] The Identification of Archaeological Social Boundaries in West Michigan and Northwest Indiana: An Integrative Approach

This research examines approximately 500 Middle Woodland (ca. 150 B.C.–A.D. 300) pottery samples from west Michigan and northwest Indiana to define the boundaries of different types of communities on multiple spatial scales. It fuses stylistic and morphological analyses with compositional (i.e., ceramic petrography) analyses and employs a bottom-up approach by initially identifying communities on the intraregional spatial scale before examining their participation in regional and interregional interaction networks. The results have provided insight into the complex and dynamic types of cultural interactions operating within the study region and the distinct behavioral patterns unique to each individual community, and have contributed to a more complete understanding of the spread of the Havana-Hopewellian phenomenon outside of the “cores areas” of Illinois and Ohio. In general, this research has

advanced our knowledge regarding identity formation and modification that may accompany the adoption of a foreign belief system.

Chiykowski, Tanya (SUNY Binghamton)**[200] Ceramic Production and Trade at Cerro de Trincheras, Sonora, Mexico**

The late prehistoric period of Northwest Mexico and southwest America was characterized by the long distance movement of people and pots. This paper addresses the introduction of new ceramic production methods to the Altar and Middle Magdalena river valleys in Sonora Mexico. Sand, used to temper domestic ceramic wares, has been collected from the two sub-areas to study the introduction of paddle-and-anvil ceramics to the site of Cerro de Trincheras in the Magdalena Valley. After A.D. 1200, migration of a Hohokam-like population into the Altar valley introduced a new form of ceramic production, paddle-and-anvil, completely replacing earlier production techniques. In the Middle Magdalena the density and size of Trincheras Culture sites increased dramatically. While potters continued to produce ceramics using the traditional coil-and-scrape method, a third of the sherds at Cerro de Trincheras were paddle-and-anvil. A small minority were a hybrid of the two production methods, suggesting contact and diffusion of technological style between the two cultures. Geological sourcing will address whether these ceramics were part of interregional exchange across cultural barriers or the result of mixing of migrant communities at the site of Cerro de Trincheras.

Chodoronek, Michael (University of Nebraska- Lincoln), Matthew Douglass (University of Nebraska- Lincoln) and Sam Lin (University of Pennsylvania)**[13] Photogrammetry Applications in Feature and Site Documentation: Case Studies in Southeastern Alaska and Northwestern Nebraska**

The discovery and documentation of archaeological features represents an important yet challenging aspect of pedestrian survey. The information potential of these sites is great, but little is done at the point of initial discovery in relation to preservation and documentation. Decisions about future work, monitoring and relocation are then made at a later date. Here we report on a pilot study to use low-cost, off-the-shelf photogrammetry for the documentation of rock cairn features in Tongass National Forest and pit hearth features in contexts throughout the Oglala National Grasslands. The ease of use, rapid data acquisition, and cost effectiveness of this technique demonstrate its promise as an important tool for archaeological survey. The fine resolution models created for individual features can supplement in-field measurements and provide a baseline for assessing rates of degradation. The models may also be used as a means of community outreach as a medium for linking archaeological features to modern communities.

Chouest, Matthew (Louisiana State University)**[221] Caves and Class: Excavations at the Lang-Jourdan House in Mandeville, Louisiana**

The Lang-Jourdan House (16ST248) in Mandeville, Louisiana was constructed in the mid-1850s for a wealthy tobacco merchant named Jean-Baptiste Lang who used it as a summer home until his death in 1861. The house had been continuously occupied until it was seriously damaged by Hurricane Katrina in 2005; it has since been relocated and currently being converted into a museum as one of the few remaining examples in Mandeville of an original Anglo-Creole cottage. The most significant feature of the house is its "cave," a semi-subterranean structure that was used as a wine cellar which was excavated in January 2013. There are few extant examples of caves in Lower Louisiana due to the difficulty of maintaining such a structure with the high water table. Lang could clearly afford to have and maintain such an extravagant amenity, and as such, the cave can be linked to elite Creole society and class in antebellum Louisiana.

Chovanec, Zuzana (University at Albany) and Sean Rafferty (University at Albany)**[301] Examining the Prehistoric Use of Aromatic Plants: Procedures, Considerations, and Archaeological Applications**

This poster presents the theoretical bases, methodology, and the research results of two case studies for the identification of aromatic plants in organic residues preserved in archaeological contexts. Gas Chromatography-Mass Spectrometry (GC-MS) was utilized to characterize a series of aromatic plants that are indigenous to the Eastern Mediterranean island of Cyprus, the essential oil profiles of which were later used to identify aromatic products in ceramic vessels that span the Bronze Age on Cyprus. Methodological procedures and case studies are presented. Future directions for aromatic plant research are also addressed.

Christiansen, Therese [172] see Fitton, Hannah

Christie, Jessica (East Carolina University)

[183] Inka Stone Ideology in Peripheral Regions of the Empire

Numerous archaeological projects have investigated Inka administration in the outlying provinces (synthesis by Malpass and Alconini 2010). I add the perspective of stone wak'as and refer to selected case studies of where and how the Inka materialized their presence by manipulating local empowered stone formations. I have argued elsewhere that Pachakuti Inka Yupanki devised a strategy of stone ideology which marked stone wak'as in the heartland as Inka by means of a geometric carving style. Stone ideology and its visual vocabulary were exported along extended zeq'e lines, roads, and into outlying centers as the empire extended. I will focus upon presence or absence of stone ideology in specific regions and what these data might reflect about levels of Inka control. Sites to be discussed are the large carved outcrops at Ingapirca (N) and Samaipata (S), as well as the unmodified boulder at Espiritu Pampa (E). Examples of local wak'a capture by containing bedrock outcrops with Inka-style walls can be registered at Los Paredones on the south coast, Sondor in the Andahuaylas region, and at Watoq'to near Paucartambo. The anomaly is the north coast where specific Inka stone wak'as appear to be absent.

[183] Chair

Christmas, Patricia (Texas State University - San Marcos) and Clark Werneke (Gault School of Archaeological Research)

[334] Recognition of Paleoindian Mobiliary Art: Examples and Experiments from the Gault Site, Bell County, Texas

Incised stones from the Gault Site, with deposits ranging from Pre-Clovis to Late Archaic, have been recognized as some of the earliest provenanced art in the Americas. Recognition of these artifacts, whether in the field or in the lab, can be difficult; in fact, surveys of existing collections from a variety of sites have identified incised stones that were not previously described as mobiliary art. The Gault School of Archaeological Research has developed both field and lab protocols to maximize the potential of saving and identifying these artifacts, and reproductive experiments are refining our ability to recognize and interpret incised stones. Paleoindian mobiliary art may not be as rare as has been assumed.

Christol, Aurélien [245] see Goepfert, Nicolas

Chritz, Kendra (University of Utah), Elisabeth Hildebrand (Stony Brook University) and Thure Cerling (University of Utah)

[186] Isotopic Indicators of Terrestrial Ecosystem Change in the Turkana Basin: Implications for the Holocene Archaeological Record

Cultural and technological changes visible in the archaeological record are often linked to changes in terrestrial environment. Variation in the strength of the eastern African monsoon, forced by orbital geometry, was a major driver of Holocene environmental change. The appearance of herding in the Turkana Basin ca. 4000 14C B.P./4800-4000 cal B.P. may coincide with weakening monsoons and a regional shift towards a more arid climate. However, little is known about the local ecological contexts in which changes in economy, culture, and social organization may have played out. Stable isotope analysis of prehistoric fauna reveals the impact of changing insolation during the Holocene (11.5 Kya - present) on climate, rainfall seasonality and terrestrial ecology within Kenya's Turkana Basin. Tooth enamel from localities spanning the early Holocene "strong monsoon" period to the later Holocene "weak monsoon" period were sampled for stable carbon and oxygen isotopes. Initial results indicate a distinct humid-to-arid climatic change, in accordance with insolation forcing and proxies from other parts of eastern Africa, as well as diet change to an increasing fraction C3-dominant biomass, which may indicate changes in floral composition. Economic changes from early Holocene fishing to middle Holocene herding appear to articulate with distinct changes in local terrestrial ecosystems.

Chuipka, Jason (PaleoWest Archaeology)

[18] Looking Beyond the APE: Landscape Level Research in the San Juan Basin and the Navajo-Gallup Water Supply Project

Most archaeological salvage projects have excavated everything in harm's way to compensate for adverse effects to historic properties. However, there is a need to look beyond the right-of-way or area of

potential effect. The San Juan Basin of northern New Mexico is one of the most archaeologically rich areas in the Southwest and has witnessed many archaeological salvage projects in the past 30 years. Contextualizing finds from preliminary testing and more complete site excavations within a landscape-level interpretive framework is the primary aim of the Navajo-Gallup Water Supply Project research. More specifically, the project is considering what excavations would generate data to add to what we already know about this region. This paper outlines the research themes that structure the investigations and describes strategies being implemented so that this project will make substantial contributions to archaeological studies of the northern Southwest.

[18] Chair

Church, Warren (Columbus State University, GA)

[281] *Prehispanic Travel and Transport Assemblages from Peru's Northeastern Tropical Montane Forest*

"Inter-societal interaction" and "mobility" are growing theoretical concerns in Andean archaeology. While identification of production centers and modes of economic distribution are important at the theoretical level, it behooves us to remember that the tasks of travel and transport were conducted by people who usually carried items for personal use and/or exchange, perhaps in durable containers, as they labored up and down mountain trails. Manachaqui Cave is a small rockshelter with stratified deposits situated beside a prehispanic road connecting the northeastern Andean highlands and known monumental settlements deep in the cloudforest. Although the site's functions clearly changed during its 10,000 year use, a combination of contemporary ethnographic observations, ethnohistorical information, and functional analyses of artifacts (especially ceramics) and organic remains, attests to Manachaqui's function as a trail-side shelter or "wayside station" during various periods. This paper presents evidence for the rock shelter's changing functions, but focuses on the archaeological identification of "travel assemblages," and how their compositions likely responded to technological innovations (i.e., llama caravan transport) and socio-political developments in northern Peru.

Church, Robert (C&C Technologies, Inc.)

[307] *Deep-Water Shipwreck Site Distribution: The Equation of Site Formation*

Deep-water shipwrecks and associated debris often sit on the bottom with relatively little disturbance except for the natural bio-chemical deterioration. The distribution of shipwreck material can often be calculated mathematically as a function of heading, speed, time, and water depth. In 2007, archaeologists with C & C Technologies published a debris distribution model from data collected during a Deep Shipwreck Project in the Gulf of Mexico for the former U.S. Minerals Management Service. The researchers have continued to refine the formula with additional shipwreck information. Using additional standard equations in combination with the distribution model provided a greater understanding of the distribution of material and initial site formation. The information learned was then applied to deep-water sites such as the passenger freighter Robert E. Lee and German U-boat, U-166 (both 1,400 meters below sea level) in the Gulf of Mexico to help draw a clearer picture of the initial site formation process for other deep-water sites and the wrecking events themselves.

Churchill, Steven (Duke University), Christopher Walker (Duke University) and Adam Schwartz (Duke University)

[16] *Large-bodied Carnivores as a Model for Predicting Neandertal Home Range Size*

Knowledge of Neandertal mobility patterns and territory sizes comes mainly from studies of lithic raw material movement across the landscape. We recently used climatic and ecological variables, pack size, and ranging behavior in wolves (*Canis lupus*) as an alternate means to predict Neandertal home range sizes, and concluded: (1) if Neandertals had a heavy dependence on large mammals, then even small social groups would have required large territories; and (2) estimates from the wolf model accord well with estimates from lithic transport, which lends support to the idea that raw material procurement was embedded in Neandertal subsistence mobility. To further refine the model, we examined prey biomass, group size, and home range size in African carnivores (*Panthera leo*, *Crocuta crocuta*, and *Lycaon pictus*) to delineate the effects of competitive interactions between species on home range dynamics. These data show a dramatic effect of social dominance, going from a strong inverse relationship between prey biomass and territory size in lions, to a weak inverse relationship in hyenas, to a positive relationship in wild dogs. These results suggest that competitive dynamics within the Late Pleistocene Eurasian carnivore guild need to be factored into the model to predict Neandertal territory size.

Ciccone, Jason (Van Epps-Hartley Chapter NYSAA) and Juliet Morrow (Arkansas Archaeological Survey)**[211] Paleoindians in the Hudson River Valley: A View from the Cornpile Site**

Located near the well-known West Athens Hill Paleoindian quarry workshop/habitation in the Hudson River Valley, the Cornpile site is a recently discovered, comparatively smaller lithic workshop/habitation. Excavations conducted between 2008 and 2013 yielded a variety of tools and debris that can be classified typologically as Paleoindian. This presentation will focus on the identification of lithic tools and debris using the organization of technology approach. Comparisons between the Cornpile site lithic artifacts with those from other Paleoindian sites in the Northeast will be made in order to place the site within a temporal framework. Implications for the timing and duration of Paleoindian occupation in the Hudson River Valley will be discussed.

Cienfuegos, Edith [63] see Casar, Isabel

Cinquino, Michael [248] see Hayward, Michele

Cioffi-Revilla, Claudio (George Mason University, Center for Social Complexity)**[214] A Formal Theory of Politogenesis: Towards an Agent Simulation of Social Complexity Origins**

Agent-based social simulation models are beginning to make significant contributions to scientific understanding of origins of human social complexity (politogenesis). However, social theory remains unclear about the prerequisites of social complexity origins; about things people must have known before the simplest societies could self-organize. In addition, there is a paucity of formal theories of politogenesis. I present a formal mathematical theory of social complexity focused on the phase of human history preceding its initial emergence in selected world regions ca. 10,000 years ago (early Holocene epoch). The formalism uses probability theory and analysis to derive a set of basic, testable results. The main prediction of the theory supports the rare nature of initial social complexity, consistent with observation. Further geospatial applications of the theory predict expected locations for politogenesis, based on prior, causal, theoretically predicted potentials.

Ciolek-Torello, Richard [294] see Unruh, David

Ciolek-Torello, Richard (Statistical Research, Inc.) and Bradley Vierra**[294] Agricultural Dependence and Sedentism in the Southern Chuska Valley**

Two general models describe the transition to a sedentary, agricultural way of life in the Southwest. One suggests that agriculture and sedentism are closely linked and came quickly following the introduction of agriculture in the Late Archaic period. Following this model, a distinctive pattern of domestic organization developed early and persisted essentially unchanged throughout prehistory, despite substantial changes in architecture and household structure. The second model suggests that agricultural dependence and sedentism came perhaps as much as a thousand years later because people initially used agriculture to maintain a hunting and gathering economy. Proponents of this model argue that agriculture and sedentism function independently and that intensive agricultural production preceded sedentism. This second model emphasizes changes in architecture, storage, material culture, and demography as well as agricultural diversification and the development of agricultural technologies as indicators of changing economies and mobility patterns. In this presentation, we examine these opposing models using architectural and subsistence data from the NM-491 project.

Cipolla, Craig (University of Leicester)**[338] Introduction: Globalizing the Local and Localizing the Global at Mashantucket**

The first half of this paper introduces the session (Indigenous people and foreign things) by outlining the advantages and goals of studying indigenous history and archaeology from the perspective of consumption. The paper begins by setting the historical context for the session and then moves on to consider the major themes and theories that cross-cut the papers that follow. In order to illustrate the key themes and challenges involved in studying indigenous consumption, the second half of the paper draws upon examples from the Mashantucket Pequot Reservation in southeastern Connecticut. We focus specifically on Pequot consumption in the eighteenth century. Through this brief case study we begin to wrestle with the complexities of colonial consumption in Native New England, asking if it is possible to distinguish between economic hardship and the perpetuation of cultural traditions in Mashantucket

households.

[338] Chair

Claassen, Cheryl (Appalachian State University)

[194] Abundance for Thanksgiving and Renewal

Wealth for native people, like modern people, was visible in abundance—of offspring, of generations, of food, of repeated success in endeavors. These states of living and those countable items were gifts from deities or spirits who expected thanksgiving and reciprocity from the individual or family so blessed. Also involved were the concepts of bone soul and stone soul, such that an accumulation of bone, stone, or shell created a renewal context. In this paper I will highlight Archaic eastern North American sites—from Missouri to Ontario--where abundance of items is evident and suggest that these were shrines of thanksgiving. Among these shrines are bone shrines, lithic shrines, and shell feasting loci where thanks were given and renewal was evoked.

Clark, Amy (University of Arizona)

[16] Time and Space in the Middle Paleolithic: Spatial Analysis of Open Air Sites in France

The inability to unravel the many events, of variable duration, that led to the formation of individual archaeological sites greatly hinders our interpretation of these sites for all time periods and cultures. It is a particular challenge, however, for sites produced by the ephemeral and temporally discontinuous use of space that characterizes hunter-gatherer behavioral patterns. Discerning contemporaneity and/or intervals of time between events is often viewed as an intractable theoretical obstacle. Every site is a palimpsest of events of variable durations and separated by seconds to millennia. This presentation will discuss one attempt to unravel this complex, and elusive, aspect of the archaeological record through spatial analysis of open air, Middle Paleolithic sites in France. This study uses lithic refittings and the organization of space to delineate individual events and how they relate to each other, within time and space. These sites were excavated by INRAP, l'institut national de recherches archéologiques préventive, over a large spatial area and include a wide range of site-types, from raw material extraction sites to (potentially) short-term campsites.

[16] Chair

Clark, Lindsey (PaleoWest) and Dean Wilson (New Mexico Office of Archaeological Studies)

[18] Ceramic Variation and Occupation History of Site NM-Q-18-120

Site NM-Q-18-120 is a large multi-component site occupying a small knoll near the northern end of Reach 12A of the Navajo-Gallup Water Supply Project pipeline near Twin Lakes, New Mexico. PaleoWest conducted data recovery at this site prior to pipeline construction in 2012. Investigations defined five components ranging in age from early Pueblo II to unknown historic (A.D. 900-1880). Two Pueblo II period occupations were discovered and represent the most intensive occupation of the site. The later Pueblo II period occupation occurred during the Chaco era (A.D. 1050-1150) and consisted of a large roomblock and associated midden with a diverse artifact assemblage. The occupation history of site 120 will be discussed through the analysis of ceramics and the site will be examined in the context of the broader Chacoan occupation of the area.

Clark, Julia [23] see Kelsoe, Camilla

Clarke, Mary [154] see Garrison, Thomas

Clarke, David (Delaware DOT)

[304] Demographic Disparities between Baby Boomers (When Will I Retire?), Generation X (Why Can't I Get a Promotion?), and Millennials (How Can I Get a Job?) in North American Archaeology

In North American Archaeology, there are three main demographic generations of practitioners. As baby boomers (1946–1964) struggle, or not, with decisions on when to retire there are direct impacts to generation X (1960s–1980s) practitioners as they attempt to promote up through the system. Also, there is the millennial generation (1980s–2000s) attempting to break into the industry via their first jobs after undergraduate and graduate school. It is apparent that there is still a vast disconnect between these three demographic generations when it comes to training, mentoring, and succession planning. I want to

explore this disconnect and discuss some methods that can be employed in Academia and the Cultural Resource Management (CRM) industry to more effectively bridge the gap between the three generations. Training, mentoring, and succession planning must begin in Academia at the undergraduate level and continue through graduate school. The CRM industry must also embrace this concept of continual training, mentoring, and succession planning in everyday business operations doing Section 106 compliance Archaeology in North America.

Clay, Vickie, Craig Young (Far Western) and Robin Michel (NAS Fallon)**[125] Environmental Archaeology in the Western Carson Lake Basin, NAS Fallon, Nevada**

Archaeological test excavations at a complex of sites in the western Carson Lake Basin, Range B-16 at Naval Air Station Fallon, reveal evidence of human use spanning Paleoarchaic to Late Archaic times in the western Great Basin. The open-air sites typically contain one or two components suggesting that each occupation can be correlated with a changing mosaic of mesic environmental conditions. Groundwater-charged springs and distributaries supported lakes with expansive shorelines and islands that provided, at times, attractive resource patches. Resource productivity is indicated by archaeological faunal remains including small game, fish, waterfowl, eggs, and mussels. Artifact assemblages include an elaborate array of ground stone and obsidian artifacts that vary across temporally discrete settings. Peaks of use intensity vary with water availability and wetland productivity across the Holocene.

Clay, R. Berle [263] see Hargrave, Michael

Clayton, Sarah (University of Wisconsin-Madison)**[21] Migration and Multiethnicity in the Epiclassic Basin of Mexico: A Perspective from the Households of Chicoloapan Viejo**

Archaeologists continue to debate the significance of interregional migration in bringing about the changes in material culture, settlement patterns, and political organization that mark the beginning of the Epiclassic Period in central Mexico. Migration is likely to have been an important factor in these changes, but it is more often invoked as an explanation for shifting material culture patterns than explored as a social process with varying outcomes at multiple scales, from regions to communities and households. Ongoing research at Chicoloapan Viejo, a settlement located in the southeastern Basin of Mexico, provides an opportunity to consider how processes of migration shaped local domestic practices, material culture, and community organization. In this paper I compare domestic architecture and material assemblages from Chicoloapan with those of contemporaneous settlements and discuss the implications of regional variation for understanding migration and multiethnicity during the Epiclassic period. Preliminary data from stratigraphically controlled excavations indicate that Chicoloapan's Epiclassic settlement was temporally distinct from earlier occupations. These data also shed light on recent conceptualizations of a transitional, pre-Coyotlatelco, Early Epiclassic phase. Coyotlatelco pottery is stratigraphically associated with wares from the hypothesized early phase, reflecting variation in ceramic traditions across a multiethnic region during the Epiclassic period.

Cleghorn, Naomi (University of Texas Arlington) and Christopher Shelton (University of Texas Arlington)**[109] A New Stone Age Site Near the Knysna Eastern Heads, Western Cape, South Africa**

The Knysna estuary and coastal environment (Western Cape, South Africa) present foragers with an attractive juxtaposition of diverse resources, a fact that has resulted in a rich Late Pleistocene archaeological record. Despite earlier reports of Stone Age sites in this area (Goodwin and Van Riet Lowe, 1929; Deacon, 1979), none have been systematically studied. We present a previously undocumented site – Knysna Eastern Heads Cave 1 or KEH-1, a sea cave east of the headland where the Knysna estuary meets the Indian Ocean. At 23 meters asl, the deposit is above the last Interglacial high sea stand and thus could potentially include deposits older than 125,000 years. We report preliminary age estimates and initial technological observations resulting from the first systematic excavation at KEH-1. A natural erosional face allowed us to investigate two components of the site. The upper deposit is a shell midden (likely LSA); while the deeper deposit (possibly MSA) lacks shell but is rich in archaeological features including sequential hearths, ochre, stone tool debris, and processed faunal remains. The analysis of KEH-1 is part of a larger research program that also includes the study of ESA, MSA, and LSA sites on the Western headlands.

Cleghorn, Naomi [209] see Wilkins, Jayne

Cline, Cathey [247] see Durand Gore, Kathy

Cobb, Allan

- [33] *The Development of a Distinctive Cave Methodology: A Retrospective Appraisal of the Petexbatún Regional Cave Survey*

It is now generally accepted that cave archaeology's basic theoretical and methodological approach developed during the Foundation Period [1980-1997]. My own experience in cave archaeology dates to the Naj Tunich Project in the late 1980s so I have had the opportunity to participate in much of the process. The greatest expansion of methodology occurred during the Petexbatún Regional Cave Survey (PRCS) from 1990-1993 as the project moved away from the investigation of a single cave that was treated as an isolated and independent site. The project's focus on finding relationships between caves and architecture meant that caves had to be related to both each other and to surface features. The size and duration of the project generated an artifact assemblage of unprecedented size but more interestingly moved the project into consideration of material outside the usual definition of an artifact. Discussions of crystals, unmodified stones and speleothems became part of the cave literature as a result of the PRCS. Because of my own role in the discussion of speleothems, I will briefly discuss subsequent research and some unresolved issues.

Cobb, Charles (South Carolina Institute of Archaeology & Anthropology)

- [338] *Feasting and Cosmic Debt*

Debt and consumption are powerful inducements for the circulation of objects and privileges. In pre-modern as well as modern political economies, the manipulation of debt obligations promotes cycles in the disbursement of goods and services. These cycles are continually renewed by diverse patterns of consumption. In pre-Columbian southeastern North America, Mississippian communities (ca AD 1000-1600) frequently relied on feasting as a means of amassing impressive amounts of goods via networks of indebtedness; goods which were then consumed in highly visible venues and performances. Feasting in these contexts was instrumental to the reproduction of social distinctions. A primary driving force for these feasts may have been the need to satisfy what Julie Chu has referred to as "cosmic debt," where goods were offered for consumption to ancestors and deities, thereby expunging spiritual obligations.

Cobean, Robert [120] see Jimenez, Elizabeth

Cobean, Robert (INAH, MEXICO)

- [275] *Surveying and Sampling Ancient Mexican Obsidian Sources: The Case for Total Surveys of Source Systems*

This paper will discuss the achievements of several key programs which have studied major Mexican obsidian sources. After nearly five decades of investigations, some of these sources have not been rigorously defined in terms of the total extension of outcrop systems, possible internal trace element composition variations, and the detailed nature of prehispanic settlements, mines, and workshops associated with specific geological outcrops. The sources to be discussed include: the Sierra de Pachuca (Hidalgo), Ucareo-Zinapécuaro (Michoacan), regions surrounding Pico de Orizaba Volcano (Veracruz-Puebla), and Zaragoza-Oyameles (Puebla).

Coben, Lawrence (UPENN and the Sustainable Preservation Initiative)

- [296] *Archaeology Should Be Applied and Relevant: Out of the Ivory Tower and into the Real World*
- Academic archaeology does not encourage engagement with the "real world"—there is no career benefit, and frequently such engagement is a detriment to career success. Numerous archaeologists do not consider making their work accessible to the public nor do they collaborate with the communities in which they work and of which comprises an important part of their jobs. Many consider cultural heritage preservation to be the responsibility of others. Community engagement, when it occurs, normally consists of a bit of explaining to local people the importance of their cultural heritage in the vague and unfounded hope that site destruction will not occur and that continued research onsite will be permitted. Archaeological social action frequently consists of letter writing and whining, without understanding of the social processes that underlie successful results in the political arena. It is small wonder then that archaeology and anthropology are underfunded and considered irrelevant in many quarters, from politicians to university presidents. In this paper I argue for an applied and relevant archaeology that

engages the public and provides true benefits to local communities and society as a whole.

Cobos, Rafael (Universidad Autónoma de Yucatán)

[252] Plaza Plans at Chichén Itzá, Yucatán, México

According to some Maya scholars, plaza plans can be interpreted as mental maps or cognitive models related to specific social and/or cultural choices. Plaza plans mirror an “architectural grammar”, which was the result of having designed and built a distinctive environment used for social activities. Following this reasoning, data collected at Chichén Itzá is utilized to understand the possible role that plaza plans might have had before and during the apogee of this Maya site.

Cochrane, Ethan E. [242] see Rieth, Timothy

Cocke , Joe [315] see McElhoes, Jennifer

Cockrell, Bryan (UC Berkeley, Anthropology), José Luis Ruvalcaba Sil (Universidad Nacional Autónoma de México) and Edith Ortiz Díaz (Universidad Nacional Autónoma de México)

[293] Remembrance of Things Cast (and/or Hammered): Depositions of Metal Objects at the Cenote Sagrado, Chichén Itzá

Through a binational collaboration among archaeologists, conservators, and physicists at UC Berkeley and the Universidad Nacional Autónoma de México, non-invasive, non-destructive methods were employed to characterize the “technological styles” of metals ($n = 148$), including bells, figurines, and sheet, recovered from the Cenote Sagrado at Chichén Itzá, Mexico. This project represents the first-ever effort to evaluate the Cenote metals from all three US and Mexican museums where they are held and reconciles multiple scholarly perspectives to infer the life histories of individual objects. We propose that these objects were deposited in ritualized events contemporaneous with Chichén’s primary occupation (A.D. 750-1050) and in the centuries thereafter and that they were originally fabricated in such places as West and Central Mexico, Lower Central America, and Colombia. We documented the objects with optical microscopy (visible, ultraviolet, infrared light) and determined bulk compositions with Energy-Dispersive X-Ray Fluorescence spectrometry. The assemblage contains gold-copper alloys and copper-based metals, including alloys with arsenic and/or tin. We performed Rutherford Backscattering Spectroscopy and X- Ray Diffraction on 15 metals to learn about compositional differences between their surfaces and bulks; the golden surfaces of certain bells arose from the alloys employed while those of certain sandals emerged from artificial gilding of copper substrates.

Codding, Brian [282] see O'Connell, James

Codding, Brian (University of Utah)

[284] Risk, Gender and Long-Term Ethnography: Examining the Origins of Australia's Desert Societies

Australia's desert societies are known for a number of characteristics, including the importance of women's foraging labor, land-use practices focused on fire-stick farming, and an estate system of land-tenure. While early work suggested that these societies were static through prehistory, detailed ethnographic work combined with an archaeological record of long-term human-environment interactions provides a window to investigate changes in these patterns over time. Drawing on Michael Jochim's treatments of resource acquisition risk, gender-specific foraging patterns and archaeology as long-term ethnography, I highlight one potential explanation for the emergence of Australia's desert societies.

Codron, Daryl [109] see Bousman, Britt

Coe, Michael [312] see Hale, John

Coe, Marion (Texas A&M University - CSFA)

[324] Materials and Technological Analysis of Perishable Artifacts from Bonneville Estates Rockshelter (26EK3682), Nevada

Archaeologists have questioned whether variations detectable in the archaeological record are evidence of ethnic boundaries or regional environmental adaptations. Perishable artifacts are one class of artifacts

that exhibit regional variations, and rockshelters and dry caves in the Great Basin are unique sources of preserved perishable artifacts. Bonneville Estates Rockshelter (26EK3682) in Elko County, Nevada, has produced perishable artifacts spanning from the Paleoindian to historic periods, and it provides an excellent opportunity to compare multiple occupations on the western edge of the Bonneville Basin. In this current study, an analysis of raw material, technology, and style of perishable artifacts from Bonneville Estates is used to address issues of ethnic and geographic boundaries in the Bonneville Basin during the Late Archaic, and this study can be applied to questions of Late Archaic, Fremont, and Numic identities. This pilot study is part of an ongoing analysis that will incorporate perishable artifacts from throughout the Bonneville Basin.

Coello Rodriguez, Antonio [256] see Smit, Douglas

Cofelice, Jessica

[155] *The Legro Burial Ground Archaeological Excavations and Funerary Hardware Analysis: A Shift in Nineteenth-Century Mortuary Consumer Behavior in Rochester, New Hampshire*

In September 2009, archaeologists from Independent Archaeological Consulting, LLC (IAC) of Portsmouth, New Hampshire completed the disinterment of the Legro family burial ground, encountering the remains of four adults and seven children. The burial ground was once located in a quiet corner of the Legro family farm in Rochester, (Strafford County) New Hampshire. Modern highway construction drastically altered the historic landscape, leaving the burial ground isolated within the Exit 15 off ramp alongside NH Route 16. When proposed highway construction required relocation of the burial ground, the subsequent archaeological excavations resulted in the discovery of a myriad of burial treatments spanning the dynamic period between 1800 and 1865 leading up to the development of the modern funerary industry. Analysis of the Legro funerary hardware assemblage in terms of material culture provided historic archaeologists with a unique case study to demonstrate how an increase in hardware complexity parallels a shift in mortuary consumer behavior. In addition, the shift in material culture coincides with the transition from home based burial practices to a reliance on professionals trained to manage the new American way of death.

Coffey, Grant [289] see Glowacki, Donna

Coffey, Grant (Crow Canyon Archaeological Center) and Kristin Kuckelman (Crow Canyon Archaeological Center)

[333] *Public Architecture of the Goodman Point Community, Southwestern Colorado, A.D. 1000 to 1280*

The Goodman Point area of southwestern Colorado was home to a successful and enduring Ancestral Pueblo community that grew into perhaps the most populous aggregation of farming families in the northern San Juan just before region-wide, permanent depopulation by Pueblo peoples around A.D. 1280. Recent excavations by the Crow Canyon Archaeological Center have produced comparative data for a variety of public structures once part of the Goodman Point Community, including multiple great kivas and bi-wall structures, which were built cooperatively and used by members of this large community during its 200-year occupation of that landscape. These constructions served to integrate the community, order society, and create a unique and unifying social identity for the residents. The architectural and stratigraphic data for these public structures, coupled with their broader spatial and temporal contexts, suggest that the forms, uses, and functions of public structures evolved throughout the history of the community, and that the objectives and mechanisms of integration were adapted to mediate new social environments and challenges. The patterns observed suggest an intensification of integrative strategies as well as the emergence of novel integrative schema in the decades just before final regional emigration.

Coffman, Sam [10] see Adams, Jacob

Cohen, Susan (Montana State University)

[127] *The Uses (and Abuses) of the Beni Hasan Tomb Painting for the Archaeology of Middle Bronze Age Palestine*

One panel of the famous painting found in the tomb of Khnumhotep II at Beni Hasan depicts the arrival of a group of "Asiatics" bringing goods to the nomarch. As one of the only depictions of its kind dating to the Middle Kingdom, and one of the few pieces of evidence that connects Middle Kingdom Egypt with Middle Bronze Age Palestine, this tomb painting has received perhaps more than its fair share of attention, and

has been used to illustrate everything from speculations on patriarchal physiognomy to discussions of Canaanite craftsmanship. In addition, the Beni Hasan painting figures prominently in debates regarding the chronological correlations between these two regions. In short, a great deal has been attributed to this painting, resulting in numerous longue durée analyses based on the interpretation of a specific événement—the painting depicts the isolated event of the arrival of a single group, which is then depicted in one specific mortuary context. This paper will examine the many uses, and occasional abuses, of the Beni Hasan tomb painting as the documentation of a “quotidian event” as well as a crucial datum for broader interpretations and discuss the significance for the archaeology of Middle Bronze Age Palestine.

Cohen, Anna (University of Washington)**[200] Political Authority and Domestic Economy at Angamuco, Mexico**

Throughout their development, new regimes must establish political legitimacy, which involves co-opting existing local institutions and creating new administrative, economic, and ideological systems. An important aspect of this legitimizing process is negotiating with manufacturers and craft producers such as potters. Previous research in imperial contexts has shown that potters may be subject to top-down state directives in terms of raw material selection, material recipes, and labor organization, but that they also retain local knowledge and practices. Ethnohistoric data in western Mexico suggest that the Purépecha (Tarascan) regime controlled technological production including pottery; however, archaeological data from related imperial contexts indicate that agent-mediated craft production occurred throughout broader imperial changes. In this paper, I explore how political changes in the Postclassic (1000-1520 C.E.) Purépecha regime impacted ceramic technology at the ancient city of Angamuco, Michoacán. This examination is supported by artifacts recovered from the ongoing excavation of domestic and public architecture at Angamuco.

Coin, Emily (Bowdoin College)**[292] A Cache Economy: Analysis of a Late Classic Cache at Maax Na, Belize**

During the 2001 field season, excavations in the Ceiba Group, a small elite residential complex at the large site of Maax Na, Belize, uncovered two Late Classic face pot caches. One of these was empty; the other one contained a number of materials that were originally analyzed by Leslie Shaw in the field. These included obsidian, Spondylus, greenstone, and ear flare fragments that originated from different parts of the Maya area. This paper's goal is to use Shaw's analysis as well as information about the vessel form to reconstruct multiple layers of Maya relationships: among residents of Maax Na, among sites in the Three Rivers Region of Belize and Guatemala, and between Maax Na and the coastal sites where many of the cache objects seem to have originated. This multiscalar approach will tie together the various local and non-local levels while placing the cache within the context of the site itself. The presence of non-local goods will be of particular use in shedding light on Maax Na's economy and regional and interregional ties.

Coinman, Nancy and Jake Fox (Radford University)**[71] The MP/UP Transition and Early UP in the Wadi al-Hasa: Paradigmatic Changes in Levantine Prehistory**

Stemming from Geoff Clark's original paleolithic projects, research in the Wadi al-Hasa (Jordan) at paleolithic sites provides new evidence of important technological changes and variations in settlement organization that differ from earlier Levantine interpretive frameworks. The transition from Mousterian technology to the Early Upper Paleolithic Ahmarian at Tor Sadaf rockshelter is presented with an emphasis on in situ technological changes. Survey data for two very large Upper Paleolithic “basecamps” in the Hasa are reinterpreted using excavation data from Ain al-Buhayra (WHS 618, Spring Complex) and Tha'lab al-Buhayra (EHLPP 2), showing intriguing variations on small camp organization and activities.

Cole, Jayne [140] see Crider, Destiny

Cole, Sally (Natural History Museum of Utah; Fort Lewis College), E. Joe Mawk (Department of Chemistry, Texas A&M University), Ann E. Miller (US Customs and Border Protection) and Marvin W. Rowe (Museum of New Mexico & Texas A&M at Qatar)**[156] Chemistry and Society: Investigating Pueblo II-Pueblo III Mural Paint in the Northern San Juan**

We discuss results of chemical analyses of blackened plaster in a Pueblo III kiva at Turkey Pen (42SA3714), southeastern Utah, and white designs on reddish-brown plaster in late Pueblo II–Pueblo III kivas at Lowry Pueblo (5MT1566), southwestern Colorado. Turkey Pen samples were examined with

scanning electron microscope (SEM) microphotographs and by dispersive x-ray (EDX) elemental analyses of plaster surfaces. The findings challenge common and long-standing assumptions of fire-blackened walls by pointing to periodic applications of (black) calcium oxalate in wet slurry. Calcium oxalate (associated in nature with water/moisture) and the color black are consistent with historical Pueblo concepts regarding the significance of water and kivas as the Underworld. Ongoing investigations of painted designs in Kiva B at Lowry Pueblo indicate contemporaneous use of multiple pigment types, design schemes, and ritual layouts. X-ray fluorescence examinations detected high levels of lead and zinc (ppt) that raise interesting questions about mineral sources, exchange networks over time, and the health and social consequences of lead use. Present research is focused on resolving sampling and testing inconsistencies (possibly linked to modern mural conservation), collecting comparative data, and locating sources of galena with high zinc.

Cole, Michelle, Daniel Sandrowicz, Katharine Craig, Kate Adam and Kirk Smith

[230] *Geophysical Investigations of the Walter L. Main Circus Train Accident in Tyrone, Pennsylvania*
During the Memorial Day weekend in 1893, a train carrying the Walter L. Main Circus failed to navigate the slope and curves on the Pennsylvania Railroad down the Allegheny Front. The train derailed near the town of Tyrone, Pennsylvania. Five people lost their lives, and countless horses were killed in the crash. Exotic animals including lions, tigers, zebras, and a gorilla named "Man-Slayer" escaped their cage cars; some preyed on local livestock and were subsequently shot by locals and circus employees. The animals were buried in a mass grave located near the wreck site. Geophysical investigations including ground-penetrating radar, electrical resistivity, and magnetometry were conducted during the fall of 2013 to locate the circus train mass grave. Remote sensing was followed by limited ground-truthing in the form of shovel test pits. This poster is an overview of the results obtained through the above described archaeological investigations.

Collard, Mark (Simon Fraser University)

[193] *Risk, Mobility, or Population Size? Drivers of Technological Richness among Contact-Period Western North American Hunter-Gatherers*

Identifying factors that influence technological change in small-scale societies is important for understanding human evolution. There have been a number of attempts to identify factors that influence the evolution of food-getting technology, but little work has focused on the factors that affect the evolution of other technologies. Here, we focus on variation in technological richness (total number of material items and techniques) among recent hunter-gatherers from western North America and test three hypotheses: (1) technological richness is affected by environmental risk, (2) population size is the primary determinant of technological richness, and (3) technological richness is constrained by residential mobility. We found technological richness to be correlated with a proxy for environmental risk—mean rainfall for the driest month—in the manner predicted by the risk hypothesis. Support for the hypothesis persisted when we controlled for shared history and intergroup contact. We found no evidence that technological richness is affected by population size or residential mobility. These results have important implications for unraveling the complexities of technological evolution.

[193] *Chair*

Collard, Mark [193] see Buchanan, Briggs

Colledge, Sue (Institute of Archaeology, UCL)

[187] *Stability and Change in European Neolithic and Early Bronze Age Agricultural Systems*

After farming was established in Europe in the early Neolithic agricultural systems became increasingly regionalized, with a greater diversity of crops and cultivation practices. We use a data set of 14,000 archaeobotanical records from over 300 Neolithic and early Bronze Age sites in northwest Europe to compare regional patterns in the use of domestic cereal and pulses species and to assess diachronic changes with respect to climate, culture and demography, and in particular to population 'booms and busts'. Whether or not crops were chosen to suit certain environmental conditions or were selected in response to cultural preferences will be discussed.

Collins, Brian [87] see Fairley, Helen

Collins, Lori (University of South Florida) and Travis Doering (University of South Florida)

[178] Imperiled Monument Documentation and 3D Virtualization at the Formative Period Site of Chalcatzingo, Morelos, Mexico

Chalcatzingo, famous for its bas-relief stone sculptures and carvings and extensive Olmec-style monumental art and iconography, has important information to yield about Formative culture. The World Monuments Fund has placed the Central Highland Mexico site on the World's 100 Most Endangered Monuments Watch List. Using best available technologies and analytic approaches for Mesoamerican heritage is an urgent priority due to loss and damage occurring at unprecedented rates. Previous stone monument documentation efforts at Chalcatzingo have included standard photography, drawings, rubbings, and molds. Although these efforts can reveal details, they can also be subjective and destructive, creating and accelerating monument surface deterioration. Coupled with erosion and impacts from acid rain and air pollution, monuments are showing signs of weathering at alarming rates. A collaborative pilot project, including new types of terrestrial laser scanning, photogrammetry, rapid prototyping, and 3D virtualization are being used to document and analyze the site's fragile monumental record, creating new ways to communicate the past to the public and changing the way we teach, learn, and interact with heritage. Results from our pilot efforts demonstrate new potential for iconographic studies and offer innovative means for addressing long-term management, protection, and research analysis.

[178] Chair

Collins, Ryan (Brandeis University)**[252] Hitting Bedrock: Formative Foundations in Yaxuna's E Group Plaza**

E-Groups, emergent in Middle Formative Maya society, are defined in part by the presence of three architectural features, a western radial pyramid, an eastern range structure, and an extensive plaza separating them. Often recognized for their monumentality, E-Groups are interpreted as being among the earliest architectural markers of a cohesive Formative Maya tradition in the Lowlands of Mexico, Guatemala, and Belize. Yet, little research has focused on the plazas of E Groups as they were assumed to be vacant spaces. Recent excavations in 2013 at Yaxuna, Yucatan, Mexico challenges this assumption. The Yaxuna example is recognized as an outlier in relation to the vast majority of E-Groups in the distant Southern Lowlands. Assemblages of architectural walls, platforms, stucco floors, ceramics, and a diversity of lithic tools suggest that the plaza was once a bustling social center implicating vast networks of exchange through the Middle and Late Formative periods, though the extent of the plaza's function remains unclear. The changing understandings of the social and physical landscape of E-Groups could have profound impact on past, present, and future understandings of the ancient Maya and gives us pause to reconsider this important monumental feature in everyday Maya identity, exchange and sustainability.

Collins, Angela and Melody Pope (The University of Iowa Office of the State Archaeology)**[263] Seeing the Forest through the Trees: Interpreting Distributions of Macro and Micro-scale Materials**

Recent excavations at the Palace Site, a North American Middle Archaic habitation, have focused on the recovery and mapping of fine-scale micro and macro materials. While macro artifacts are often the focus of spatial analyses that inform about site structure and activities, microdebris recovered from flotation processing is typically viewed only as a source of data on paleodiet and environment. In our work we have expanded the analysis of microdebris as a compliment to macrodebris in order to provide a more nuanced interpretation of on-site tasks and activities. Our poster will visually present the spatial relationships of micro and macro debris distributions and illustrate the combined potential of both data sources to provide a more detailed account of hunter-gatherer lifeways.

Collins, Michael (Gault School of Archaeological Research)**[318] Evidence for Older-than-Clovis Occupation at the Gault Site, Texas**

Stratigraphically below the Clovis component at Gault, excavations have penetrated valley alluvium some 80 cm thick and reached limestone bedrock in 12 m² of Area 15. Deposits consist of fluvial gravel, overbank silty clay, colluvium, and quartz-rich eolian dust and yielded approximately 13,000 pieces of chert flaking debris and some 60 chipped stone tools. The stratigraphic integrity of this early material is quite secure. Analysis continues, so findings are preliminary. Faunal preservation is very poor, with only teeth of bison, horse, and mammoth recovered. Artifacts of chert include knapping debris, cores, blades, bifaces, stemmed projectile points, and a variety of tools on blades and flakes. Overall the Older-than-Clovis assemblage at Gault shares some traits with Clovis but also exhibits traits decidedly unlike Clovis, notably the small stemmed projectile points, but also the details of biface manufacture and such tools as

a small serrated knife and a beak on a flake. It is not yet clear whether recovered artifacts represent a single, coherent assemblage or if a different interpretation will emerge.

Collins, Joe (University of Texas at El Paso) and Patrick O'Grady (University of Oregon Museum of Natural and Cultural History)

- [324] *Geoarchaeology at Rimrock Draw Rockshelter (35HA3855): A Progress report on Geologic Investigations at a Deeply Stratified Paleoamerican Site at the Northern Great Basin Periphery of Southeastern Oregon*

In the summer of 2013, geoarchaeological investigations were focused on the evaluation of deep excavation blocks and a backhoe trench bisecting a relict stream channel downstream from Rimrock Draw Rockshelter. Excavation is producing Western Stemmed projectile points from deposits approaching a depth of three meters, and artifacts associated with fluted point technology have been surface collected from a terrace north of the stream channel. Over 1,120 sediment samples were collected from 41 auger probes and 21 column samples from within the data recovery units. Sediments are being analyzed at the University of Texas at El Paso for grain size, strontium isotope ratios, mineralogy, and total organic carbon. These data also are complemented by 92 pXRF analyses collected in association. This presentation focuses on 14 sediment samples and pXRF data collected from Column 1 within the West wall of Unit 2. The samples were analyzed for grain size using standard protocols for laser diffraction analysis of sediments. Elemental data were plotted against depth. Preliminary data analysis suggests major environmental shifts at 256 cmbd and 164 cmbd, with AMS dates pending.

Colston, Jessica (California State University Los Angeles), Richard Guttenberg (California State University Los Angeles) and Rene Vellanoweth (California State University Los Angeles)

- [316] *Spatial Distribution of Bone Tools from the Tule Creek Village (CA-SNI-25) on San Nicolas Island, California*

Bone tools on San Nicolas Island are quite rare when compared to the relative abundance of stone and shell artifacts. The Tule Creek Village (CA-SNI-25) is a late period site occupied as early as 2,000 B.C.; however, the site's most intensive occupation was from A.D. 1400 to European contact in the late 1700s. The East Locus has many ceremonial features, including double and triple dog burials, feast pits, and helically aligned hearths which date to the main occupation period. In contrast, Mound B is multicomponent loci, but does not contain any comparable features. Of the more than 4600 artifacts currently catalogued, only 59 (1.3%) artifacts are made from bone. This poster analyzes the bone tool assemblage based on the taxon of material, type of tool, and spatial context. Analysis of the bone tool assemblage will give us a better understanding of the faunal resource utilization at the Tule Creek Village during the Late Holocene.

Coltman, Jeremy [33] see De Anda Alaniz, Guillermo

Coltman, Jeremy (California State University, Los Angeles)

- [37] *Chaos and Cosmos: Ceremonial Circuits and Ethnomedicine in the Art and Ritual of Mesoamerica and the American Southwest*

One of the salient and enduring features of cosmology found among the peoples of Mesoamerica and the American Southwest is the quadripartite representation of the universe with a sacred center, or axis mundi. These mandala-like models are central artistic expressions of indigenous knowledge that can often reflect concepts of disease, curing, balance, purity, and pollution. The body itself becomes a model of the cosmos, which is constantly threatened by antisocial agents of chaos. By invoking a mythic time of creation, the invisible drama of the universe plays out in the patient. This study will offer a comparative analysis of such rituals in Mesoamerica and the American Southwest, with a particular focus on Central Mexican codices, Navajo sandpainting rites, and contemporary Nahua rituals from Veracruz. These spatial concepts are more than just a shared color-directional symbolism, since striking similarities also exist in form and function. While this study is admittedly broad in both time and space, it aims to add to the discussion of interaction between Mesoamerica and the American Southwest.

Coltrain, Joan [317] see Lewis, Michael

Comeau, Laura [29] see Ingram, Scott

Comer, Douglas (Cultural Site Research and Management (CSR&M)), Bryce Davenport (Brandeis

University) and Zachary Lubberts (The Johns Hopkins University)

- [295] *Detection Based Modeling for Wide Area Archaeological Site Inventory and Evaluation: A New Decision Support and Archaeological Landscape Research Tool*

Section 110 of the National Historic Preservation Act of 1966(as amended) requires each Federal agency to establish, "a preservation program for the identification, evaluation, and nomination to the National Register of Historic Places, and protection of historic properties." On ground survey and evaluation in the service of this has proven prohibitively expensive. Because there are no clear timelines for this, no Federal agency has completed survey and evaluation. In the absence of comprehensive survey and evaluation, important sites remain undocumented and unprotected, and there is no sound decision support prior to conducting 106 surveys. Archaeological predictive models (APMs) have, in the half-century since they were devised, proven too unreliable for widespread adoption due to problematic assumptions and inappropriate statistical techniques. We present a site detection protocol based on Bayesian statistical analysis of direct returns from a variety airborne and satellite remote sensors, including those that collect multispectral, hyperspectral Lidar, and synthetic aperture radar data. This direct-detection based model identifies significant site, disturbed site, and insignificant site locations, and thus serves as a de facto Section 110 survey. This paper also serves as a case study in data-matrix approaches to remote sensing rather than more common image enhancement techniques.

Commendador, Amy [242] see Dudgeon, John

Commendador-Dudgeon, Amy [242] see Field, Julie

Compton, Anne (University of Michigan)

- [108] *Trade Dynamics, Political Economies, and Household Variability: An Examination of Daily Life in the Bono Manso Region*

This paper examines how household economies vary and are shaped by integration and interaction with regional political and supralocal exchange networks. Bono Manso, the capital of the Bono polity in Ghana, and its satellite villages were located along trade routes that initially linked them to the Inland Niger Delta and later with Atlantic coastal settlements. Bono Manso dates to the late 12th through 18th centuries AD, spanning both the zenith of the gold trade and the Atlantic Trade era. Since data are scanty, scholars often disagree about Bono Manso's role as the capital of a state, the extent of its centralization, and its economic control over neighboring villages and provinces. By focusing on a hinterland village, I examine how a community interacted with the larger center (Bono Manso) and how that interaction shaped production, consumption, status differentiation, and labor organization from the sub-Saharan to the Atlantic Trade eras. This paper examines: (1) how households and their domestic activities were affected by interaction with the political economy of Bono Manso, (2) how integration shaped household participation in regional and global exchange networks, and (3) the evidence for change and continuity over time.

Comstock, Aaron and Robert Cook (The Ohio State University)

- [340] *Site Location and the Transition to Maize Agriculture: A Middle Ohio Valley Example*

This paper explores the changes in site location preferences which accompanied the shift to an agrarian lifestyle in the Middle Ohio River Valley. Criteria including distance between sites, distance to earthen mounds, distance to rivers, and soil types were documented for both Late Woodland and Fort Ancient sites in Southwest Ohio. These data were incorporated into a multivariate model which suggests that in addition to dramatic shifts in subsistence and settlement patterns, Fort Ancient maize agriculturalists preferred to live further apart yet closer to earthen mounds than their Late Woodland predecessors. These findings are related to issues such as inter-village boundary maintenance and integrative processes associated with social memory, factors which are evident in many early Neolithic communities.

Cong, Jianrong [51] see Lam, WengCheong

Conger, Megan (American Museum of Natural History) and Adam Watson (American Museum of Natural History)

- [113] *Species Diversity, Standardization, and the Spatial Organization of Production at Pueblo Bonito: A Case Study from Chaco Canyon*

The coalescence and transformation of many dispersed farming communities in and around Chaco Canyon, New Mexico during the Bonito phase (850-1140 C.E.) is one of the most widely cited cases of

emergent sociopolitical complexity in precolumbian North America. Since the earliest investigations in Chaco, nearly 4,000 bone artifacts have been recovered from 15 sites throughout the canyon. Manufactured from the remains of at least seventeen different mammal and bird species, these objects range in form from decorative beads, pendants, tubes, and whistles to awls, needles, and scrapers, the latter of which were essential tools in perishable craft industries such as basketry, textiles, and hide-working. Recent analysis of raw material choice in bone tool manufacture revealed an intensification of basketry and hide production at an early stage in the development of Chacoan society. Expanding on that research, this study explores temporal trends and the spatial organization of craft production at the Pueblo Bonito great house. Preliminary results reflect preferential access to rare and exotic species relative to other sites in the canyon and a high degree of standardization in tool manufacture. The identification of several craft production loci has important implications for understanding economic organization and the gendered use of space.

Conkey, Margaret (UC-Berkeley)**[185]** *Discussant***Conlee, Christina (Texas State University)****[27]** *The Dynamics of Public Space in Ancient Nasca*

Public places of congregation varied greatly in their size, elaboration, function and location in Nasca over a period of 1500 years. This study focuses on the dynamic use of public space at the site of La Tiza and compares it with wider developments in the region. The Late Formative (300 B.C.-A.D. 100) was a period of competition and growth when public spaces were found within and between sites. During Early Nasca (A.D. 100-450) as society became more integrated and complex, plazas were no longer located at settlements; instead large gatherings occurred at ceremonial centers (most notably Cahuachi) and the geoglyphs. In Middle Nasca (A.D. 450-550) plazas were once again located within sites as the power of the ceremonial center of Cahuachi declined, and their function likely changed. Middle Horizon (A.D. 650-1000) domestic sites have little evidence for public space, which may be related to a dramatic shift in elite culture and a focus on new mortuary practices. Following a period of abandonment and resettlement, Late Intermediate Period (A.D. 1200-1476) sites had small plazas and hilltop gathering areas. These changing dynamics of public space were related to shifts in various aspects of sociopolitical organization, regional integration, and religious practices.

[150] *Discussant*

Conlee, Christina [146] see Noell, Mary

Conley, Hillary [180] see Kane, Susan

Conley, Hillary (Florida State University)**[180]** *Studies of Black-Gloss Pottery from Monte Pallano (Italy) III: X-ray Fluorescence*

This is the third of a series of four papers that report multi-faceted studies of a collection of 200 sherds of black-gloss pottery (a type of fineware that was used for dining and wine consumption from the 5th century B.C.E.-1st century B.C.E) excavated from the Monte Pallano ridge in the Abruzzo region of eastern Italy. Customarily, pXRF has been used to identify and characterized clay sources for ancient pottery production, but pXRF data for the Abruzzo has not been reported until now. In this paper, the elemental composition of the ceramic fabrics—measured with a Bruker Tracer III SD pXRF—are analyzed to characterize the composition of locally-made black gloss, to distinguish local pottery from imports, and to relate this approach to fabric groupings that were made using traditional ceramological techniques. By comparing the pXRF data of local and imported black-gloss from the two sites and comparing the data to macro-observations of fabrics, this study aims to increase our understanding of patterns of exchange among the Samnites, Romans, and other peoples who populated this region of Italy.

Conlogue, Gerald [270] see Aronsen, Gary

Connan, Jacques [163] see Brown, Kaitlin

Connaughton, Sean P. [50] see Herbert, James

Connell, Samuel (Foothill College)

[228] *Continental Shift: The Search for New Field Sites in Asia and Europe during the Age of the Field School*

The paper argues for the importance of shifting research areas mid-career. (Im)Practical points about this process are made while following the author on a search for new field sites in Southeast Asia and Europe. A decade should be considered sufficient time span to conduct meaningful research at one project location. Arguments are fine-tuned and retooled but redundant without new data streams for comparison. Mindful of field schools as the primary funding source, location decisions are made not only on the basis of research questions but on the practicalities of field work with thirty students. So is it Vietnam or Ireland? Decision forthcoming.

Connolly, Malcolm

[97] *Discussant*

Connolly, Robert (University of Memphis)

[152] *Co-creation as an Essential Means toward Open Authority in Archaeology*

Based in constructivist educational theory and using participatory museum and open authority models, this paper examines products co-created by visitors, volunteers, students, and museum staff at the C.H. Nash Museum at Chucalissa. Two case studies are featured. First, an exhibit on the African American Cultural Heritage of Southwest Memphis based on the excavated materials from a 1920s era farmstead that was co-created with University of Memphis and neighborhood high school students. Second, using curated collections, a set of education products and museum exhibits co-created by avocational archaeologists, and museum studies graduate students. Critical to the co-creation process is incorporating the authoritative voices and decisions of all participants. This paper argues that co-created products are ultimately more robust and relevant to the public than projects that incorporate only the voice of the professional community. As well, co-creative processes in archaeology serve as a vital link to educating the public on opportunities for engagement and the funding needs of cultural heritage institutions. Co-creation forms an essential opportunity for sharing with the public the authority and responsibility for the curation of a community's cultural heritage.

[274] *Discussant*

[152] *Chair*

Connelly, James (Trent University)

[193] *Mobility, Territoriality, and Costly Signals in Middle Woodland South-Central Ontario: Using Network Models and Evolutionary Ecology to Predict the Locations and Characteristics of Central Places in the Archaeological Record*

The Middle Woodland period in south-central Ontario, often unfairly relegated to the periphery of the so-called Hopewell Interaction Sphere, has a significant and well-documented record of sites dating to the second millennium B.P. As well as numerous smaller task-specific locations, the record also includes multiple occurrences of burial mounds, including larger mortuary landscapes with significant earthworks. The setting of many of these sites along major waterways has not escaped attention, with several investigators asserting their role in establishing band or macro-band claims to key resource locations along ancient travel routes. In this paper I formalize and test this hypothesis by first considering the resource landscape and then via a simulation model establish forager mobility through the hydrological network to establish high value locations. Next, with reference to evolutionary ecology, I develop predictions of the circumstances and manners in which social foragers would choose to establish and defend such high value locations. The paper concludes with a test of the predictions against the archaeological record, and shows that there is sufficient concordance to strengthen the hypothesis that Middle Woodland communities were using costly signaling to establish and maintain tenure over high value locations in the regional system.

Conrad, Geoffrey W. [269] see Nold, Kathryn

Constantinescu, Mihai [28] see Welch, Katherine

Contreras, Daniel (Kiel University)

[149] *How Green Was My Valley? Reconciling Regional and Local Paleoenvironmental Signals at PPNA el-Hemmeh, Jordan*

The relationship of environmental change to early human experimentation with plant cultivation remains a critical focus of research into the emergence of food production in Southwest Asia. Regional paleoenvironmental data are vital to investigating this relationship, but such data pose two fundamental questions: to what degree are regional data locally applicable, and are such data of the spatial and chronological resolution suited to anthropological explanation of human behavior? Links between environment and human behavior were likely articulated through very local experiences—i.e., distributions of water and vegetation, availability of animals, and relationships with neighboring communities. At the PPNA site of el-Hemmeh, Jordan, the proximity of the early Neolithic settlement to a paleoenvironmental archive of paludal sediments offers the chance to compare regional and local data. Stratified in-stream wetland deposits dating to the Late Pleistocene/Early Holocene a scant 200 m upstream from the site provide (a) evidence of local landscape morphology and conditions, and (b) a uniquely local paleoenvironmental record. We discuss here ongoing research into these paleoenvironmental proxies, the articulation of these records with regional paleoenvironmental data, and the implications of these findings for understanding the processes and environmental contexts of early experimentation with agriculture in the Southern Levant.

[149] Chair

Conway, Meagan (University of South Carolina)

[259] *Household and Community Scales of Post-Famine Demographic Change in Western Ireland*

While the national demographic ramifications of the Irish potato famine in the late 19th century are well documented, the full spectrum of its social and psychological impacts has yet to be comprehensively studied. Individual family histories reveal the private rational(s) for splitting or relocating families, yet these are not necessarily generalizable to the population level; conversely, population-level studies cannot reveal the complex personal context of migration. Considering these together allows us to more vividly describe how changes in environment and social identity possibly informed individual decision-making. In this paper, we combine historical documentation, excavation, and oral histories to analyze the complex reasoning for migration and the particularities of relocation. We explore the realities of migration and depopulation through comparison at the most minute level—who leaves, who stays, why this occurs, and what it means for both people at home and abroad. By examining this phenomenon on the microscale, we are able to draw broader implications concerning the decision-making processes of both willing and unwilling participants in the Irish diaspora. Reaching into the 20th century with global implications, the migration of millions from Ireland created a rapidly changed environment for its citizens and others, both at home and abroad.

[259] Chair

Conway, Meagan [259] see Couey, Lauren

Conyers, Lawrence (University of Denver)

[116] *Ground-Penetrating Radar Mapping of the Muge Shell Mound, Portugal*

Ground-penetrating radar (GPR) reflection profiles were collected at Muge shell mound in 2012 using 400 and 270 MHz antennas. Energy penetration and reflection with the 270 MHz antennas was at least 4 meters with feature resolution to about 30 cm. The 400 MHz antennas were capable of lesser energy penetration to only about 2.5 meters, but with much better feature resolution. Reflection profiles, topographically corrected, show a distinct reflection from the base shell-early Mesolithic surface, which was the original ground surface on which burials have been excavated. The GPR profiles also display a number of features within the shell midden strata including a hard-packed living surface, or some other constructed layer, along the crest of the mound within the shell deposit. There are also a number of intrusive features that are likely burials. One rectangular feature with a distinct floor and objects on it was discovered on the western side of the mound, which is scheduled for excavation in 2013. This GPR test at Muge shows the utility of the method for defining shell stratigraphy, constructed or modified features within shell deposits and potentially objects or even architecture along the ground surface where the shells were originally deposited.

[295] Discussant

Conyers, Lawrence [157] see Moffat, Ian

Cook, Robert [13] see Krus, Anthony

Cook, Philip (Trent University)

[181] *The Energetics of Mycenaean Defenses: Sociopolitical Implications of Fortification Construction in the Late Helladic Period (ca. 1600-1100 B.C.)*

Fortifications are a well-known feature of Mycenaean Greece, but have been relatively underutilized as a way of exploring the settlement systems and regional political hierarchies that emerged during the Late Helladic period (ca. 1600-1100). In an effort to refine our understanding of Mycenaean political geography, this study adopts an energetic perspective on fortifications, and focuses on the scale of labor invested in their construction. Energetics provides a framework for systematically calculating and comparing the labor costs of construction for various structures (in "person-days"), and uses such costs to infer relative differences in political power among groups and communities through the implied differences in labor control. My research generated labor costs for thirty-six LH fortifications, located across eight regions of the Aegean. These were then analyzed in a regional context, and evaluated against independent settlement surveys to determine how differences in the investment of labor correspond to what is known of the regional hierarchies of power during the LH period. Ultimately, my results intend to measure the strength of the connection between monumental construction, labor mobilization and elite authority on a regional level, as a way to reassess the political landscape from the perspective of labor control.

Cook, Lauren (Department of Anthropology, Texas A&M University)

[264] *Geoarchaeological Analyses of Redeposited Artifacts from McFaddin Beach, Texas*

For over 50 years projectile points have been found and collected along McFaddin Beach in Jefferson County, Texas. These artifacts range in age from the Late Pleistocene to the mid to late Holocene. While most of the points have been picked up by collectors, these individuals have recorded provenience data for a large number of the artifacts. This study uses GIS and statistical analyses to recognize spatial patterning of projectile point distribution, Clovis points in particular. These analyses will in turn enable the creation of GIS and sedimentological models using artifact weight and shape, longshore drift, ocean currents, and other factors to identify the most likely offshore locations from which the artifacts originate. The results of this research will allow archaeologists to target these areas for future excavation and better understand the Clovis presence on the Texas continental shelf.

Cook, Robert (Ohio State University) and David Anderson (University of Tennessee)

[288] *Development of Complex Societies in Eastern North America*

Evidence for social complexity in Eastern North America appears soon after initial founding populations. Periodic aggregation associated with ceremony, feasting, and increasing evidence for monumentality characterizes the regional archaeological record. These, and other activities such as warfare, were to some extent population dependent. Over time, status became more ascribed and populations increasingly tethered to ancestral places marked with monuments, many with accumulated ancestors. Population movement and interactions are common throughout, tied to environmental changes, warfare, social needs, and the spread of ideologies. Warfare becomes more institutionalized over time in a system of dual organization within both small and large communities.

Coons, Aaron, Kisha Supernant (University of Alberta) and Katie Tychkowsky (University of Alberta)

[79] *A Comparison of Mapping Techniques at Chimney Coulee, a Fur Trade Era Métis Settlement*

The methods and technologies with which archaeologists map sites have changed significantly over the last few decades, shifting from a compass and chain to total stations and RTK (real time kinematic) positioning systems. In conjunction with the 2013 field season of the Métis Archaeology Project, the authors created a modern digital surface model (DSM) of the site of Chimney Coulee, a fur trade era hibernant Métis settlement near Eastend, Saskatchewan. Métis occupation of the site was concentrated between the destruction of Issac Cowie's trading post and the later construction of a satellite North-West Mounted Police post. The site was first surveyed and mapped in the late 1980s, but the resulting site maps were limited in scope. This poster will examine the various mapping techniques which have been employed at Chimney Coulee in order to assess the accuracy and efficiency of "traditional" versus

"modern" archaeological surveying methodologies, demonstrating that new techniques allow us to analyze the internal settlement pattern of the site in new ways.

Coons, Aaron [231] see Supernant, Kisha

Cooper, Jago (British Museum)

[75] *Small Island States for Future Earth*

The populations of small island states constitute some of the most vulnerable communities in the world to the impacts of Global Change. Long-term studies of human-climate-environment relationships in different island theaters around the world provide important information with which to plan modern day capacity building and mitigation. Recent projects by members of GHEA and IHOPES provide the perfect opportunity to cross-regionally compare the thematic lessons that can be learned from these studies of long-term human ecodynamics. In this paper, I will discuss and outline some key messages from these projects that can be distilled in a meaningful way for the Future Earth community. Furthermore, I will outline how multi-faceted programs for communication are required to more effectively disseminate these core messages to international decision makers, government departments, non-governmental organizations, and the wider public.

[75] *Chair*

Cooper, Leslie [232] see Bates, Lynsey

Cooper, Jason (AMEC E&I), Maysoon Al-Nahar (University of Jordan) and Deborah Olszewski (University of Pennsylvania)

[236] *Lithics, Mobility, and Persistent Places*

Lithic assemblage analyses are frequently used to suggest relative mobility of prehistoric hunter-gatherer-forager groups. In this paper we examine several of these measures, including blank-to-core and tool-to-core ratios, richness, and cortex ratio, as well as features of the tool assemblages and their raw materials from several Early Epipaleolithic sites in the Wadi al-Hasa region of Jordan. These include the rockshelters at KPS-75 and Yutil al-Hasa, as well as the open-air site at Tor at-Tareeq. Our discussion examines how we as archaeologists conceptualize terms such as mobility and distance, and we investigate the investment that prehistoric groups had in locale, suggesting that such occupational use is similar to persistent places in later prehistory.

Copes, Lynn [16] see Wallace, Ian

Corbett, Skye [87] see Fairley, Helen

Cordell, Ann [11] see Wallis, Neill

Cordero, Robin (Office of Contract Archaeology, Univ. of New Mexico)

[247] *Age-Rank Status of Eastern Pueblo Agriculturalists: A Case Study in Mortuary Treatment from the Albuquerque Basin*

The establishment of an age-rank status social structure amongst various pueblos of the Rio Grande region has been well-documented in the ethnographic literature. However, the antiquity of this social structure and how age-rank status manifested in the mortuary treatment of individuals has not been as thoroughly addressed for the Albuquerque Basin and Lower Jemez River Valley. This research presents data from the Rio Grande Developmental (A.D. 600-1200) and Classic (A.D. 1300-1600). During the Developmental Period, there appears to have been a distinct difference in the types of grave accompaniments interred with individuals under 10 years of age, as well as where these individuals were interred. During the Classic Period, individuals under 10 years of age were almost entirely absent from formal cemetery settings, and appeared predominantly in backfilled rooms and middens. These patterns suggest that an age-rank status social structure was established by the Developmental Period and, although populations transitioned from hamlets to substantial 100+ room pueblos during the Classic Period, this social system remained intact and continued to be represented in the mortuary practices of the Eastern Pueblos.

Cordova, Carlos

- [17] *Bridging Disciplines in a Global Context: Environment and Society in Karl Butzer's Academic Journey*

The study of societal stability and environmental change requires more than just training in geoarchaeological techniques. It requires the ability to bridge the gap between the natural sciences and anthropology. Throughout the decades of his academic life, Professor Karl Butzer has encouraged his students and colleagues to go beyond their expertise and bring the human and culture-related aspects to geoarchaeological research. Trained as a physical geographer, Karl has managed to bridge the gaps between the physical and human branches of geography, and between the geosciences and anthropology. Karl's academic view has not only focused on theory, but also on methodological approaches to environmental change in a diversity of landscapes, time scales and cultures, ranging from the deep Paleolithic past to recent historic events. Geographically, Karl's work encompasses research in practically all continents. One important aspect made by Karl is that experience on one part of the world, may help answer questions in another. Why studying Medieval Spain can help understand Colonial Mexico? Why understanding the effects of European pastoralism in Mexico can help understand the effects of European pastoralism in Australia? These are questions of a global nature much needed in geoarchaeology.

- [149] *Discussant*

- [17] *Chair*

Cordova, Carlos E. [223] see Ames, Christopher

Cordova, Guillermo (Guillermo Cordova)

- [253] *Archaeology of the Region of Chalchihuites, Zacatecas, México*

In the vast territory between the actual American Southwest and Central America, there are geological formations of different ages where many kinds of rocks and minerals are found. This outcomes that in prehispanic times, the indigenous cultures developed intense mining activities taking advantage of the different types of raw materials. In the region of Chalchihuites these minerals and rocks, including a wide range of blue and green stones, were highly exploited and used. In this paper, we show some results of our research of these social groups whose material culture reveals a deep commitment for mining these types of stone and a deep appreciation for the objects elaborated from them, both from local and foreign origin.

Corl, Kristin [42] see Patterson, Winona

Corl, Kristin (New Mexico State University), Angel Pena (New Mexico State University) and Todd Scarbrough (New Mexico State University)

- [43] *Ritual or War? Burning in the Jornada Mogollon*

What is the significance of room burning within El Paso phase (A.D. 1300-1450) Mogollon pueblos of southwestern New Mexico? Are these events the results of violence, ritual abandonment of rooms, accidental fires or other processes? This poster explores these questions through a case study of Cottonwood Spring Pueblo (LA 175), one of the largest villages in the region. We have identified at least two temporally distinct burning events at the site. This pueblo also straddles a cultural boundary between the Jornada and Mimbres branches of the Mogollon and possesses relatively high frequencies of Salado polychrome ceramics. To contextualize Cottonwood's burning we will compare it to other pueblos in the region considering their sizes, locations, ceramic assemblages, dates of occupation and numbers of burning episodes.

Cornelison, Jered (Michigan State University, Department of Anthropology), Wendy Lackey-Cornelison (Western Michigan University, School of Medicine) and Lynne Goldstein (Michigan State University, Department of Anthropology)

- [64] *Emblematic Identities of the Effigy Mound Manifestation: Symbolic Patterns and Variability in the Late Woodland, Southern Wisconsin*

This presentation reports on results of a study of identity among Effigy Mound peoples in southern Wisconsin during the Late Woodland period. Specifically, investigations of mound form, mound features, biological status, and biological distance are employed to elucidate corporate identity of Effigy Mound societies. Results of this research suggest at least two distinct corporate identities: 1) an overarching identity incorporating similar ritual paraphernalia in the mortuary program across southern Wisconsin and

2) a localized corporate kin-based identity. Local identity was marked by a combination of differential burial dispositions, internal structuring of mound features, exclusion of age classes, and epigenetic structuring among mound groups. There were patterns for the inclusion of geometric and effigy mound forms and certain mound features (including burials) among mound groups and three physiographic regions. Although there was likely an overarching ritual system uniting Effigy Mound peoples, ritual practitioners may have been intentionally interpreting and reinterpreting ritual customs locally; thereby asserting group identity.

Coronado, Anabella (University of Texas at Austin) and Adriana Linares (University of Texas at Austin)

[312] Archaeology among Histories of Terror in the Maya Ixil Region of Guatemala

Located in the northern part of the Department of El Quiché, the Ixil highland communities of Santa María Nebaj, San Juan Cotzal, and San Gaspar Chajul narrate a long history of resistance. The most recent has been the story of surviving a devastating army campaign against the Ixil indigenous population during the Guatemalan Civil War of the 1980s. Traditional archaeological work was mainly carried out in the Nebaj area and in the Valley of Acul in the 1970-1990s. This presentation addresses the possibilities for conducting a new activist archaeological research in the region, one that links the distant and recent pasts and that is based on recent collaborative agreements with local people, indigenous authorities, academic activists, and members of the Universidad Ixil. San Antonio Titzach is only one of the many archaeological/sacred sites that present the practitioners of archaeology with the opportunity to integrate local narratives, ancient histories, and a community-based project in a collective search for autonomy and legitimization of the Ixil cultural heritage.

Corrales-Ulloa, Francisco (Museo Nacional de Costa Rica) and Adrián Badilla-Cambronero (National Museum of Costa Rica)

[197] The Development of Hierarchical Societies in the Diquís Delta, Southeastern Costa Rica

Archaeological research in the Diquís Delta of southeastern Costa Rica has provided information on the emergence of hierarchy through the study of spatial distribution of settlements and different cultural assemblages during the Aguas Buenas (300 B.C–A.D.800) and Chiriquí (A.D. 800-1500) periods. The increase in the site's size, the presence of sites with mounds surrounded by cobblestone retaining walls, paved areas and accretional stratigraphy, and in some cases with stone spheres, reflects change that can be associated with rank, power and prestige. Possible functions and symbolism associated with hierarchy of stone sphere sets is also explored, taking into account the context in which they have been recorded.

Correa Ascencio, Marisol [63] see Robertson, Ian

Cortegoso, Valeria [287] see Giesso, Martin

Cortes-Rincon, Marisol (Humboldt State University), Sarah Boudreaux (University of Texas at San Antonio), Kyle Ports (Texas Tech University), Nicole Chenault (Humboldt State University) and Adam Forbis (Humboldt State University)

[292] Household Economy and Exchange among the Classic Period Maya: Recent Findings from the Dos Hombres to Gran Cacao Hinterlands

This paper draws on multi-scalar archaeological findings to advance a preliminary perspective of the economy of Classic era (A.D. 200-800) from the Dos Hombres to Gran Cacao Archaeology Project located in northwestern Belize. The fieldwork is directed toward large questions of structure and demography, patterns of growth, subsistence and political economy, administration, and social organization. A primary goal of the project is to understand the impact of larger sites, such as La Milpa, Maax Na, and Dos Hombres had on smaller settlements in the Three Rivers region, and in turn to investigate the role that inhabitants and the surrounding hinterlands played in the regional economy. The participation of such sites in the greater regional economy went beyond consumption to coordinating the movement of raw materials and imported finished products to other areas. This paper will present results of a diverse array of field methods and analyses that have generated new data useful for a complex, multi-dimensional view of the project area—by revising estimates of the settlement size and regional context, identifying craft production areas, inter-household interdependence, wealth and social identity, and reconstructing the production and consumption economies of domestic, administrative, and ritual features.

Cortes-Rincon, Marisol [322] see Haggard, Alyssa

Costa, Philippe (University Paris 1 and CEMCA), Eric Gelliot (University of Paris 1, Panthéon-Sorbonne, France), Simon Mercier (University of Paris 1, Panthéon-Sorbonne, France) and Sébastien Perrot-Minnot (University of Paris 1, Panthéon-Sorbonne, France)

[191] *Cultural Dynamics through Rock Art in Eastern Salvador*

The East of El Salvador is an area which extends east of the Rio Lempa, in the departments of La Unión, Morazan, Usulutan and San Miguel. In its 7728 km², it has an extremely rich and diversified archaeological heritage. It comprises about 40 rock art sites, which account for almost half of all known sites of this nature nowadays in El Salvador. Archaeological researches that took place in the East have been closely linked to the study of rock art; the first published site in the country was the Cave of Corinto, in Morazan. In 2011, after several investigations initiated in 2004 and carried out in the West and the Center of El Salvador, the Salvadoran/French Archaeological Mission was oriented up to the East of the country. There, those researches revealed concentrations of rock art sites around the shores and the surroundings of the Rio Lempa, in its course to the south, in the northern mountains, and on the slopes of the volcano Conchagua. This legacy of a great variety, including petroglyphs and pictograms. The study of its iconography highlights Mesoamerican and Intermediate Area's influences, confirming that the East of El Salvador was the scene of active cultural exchanges.

Costin, Cathy (California State University, Northridge)

[19] *Discussant*

Costion, Kirk (Oglala Lakota College)

[15] *Modeling the Prehistory of Regional Interactions in the Moquegua Valley, Southern Peru*

The model of cross-cultural interaction that is the focus of this symposium was developed specifically to help model the cultural interactions taking place in the Moquegua Valley of Southern Peru during the culturally dynamic Middle Horizon. In this paper we highlight the flexibility of our model by using it to illustrate how regional interactions changed throughout the prehistoric sequence of this region. The Moquegua drainage is the easiest route from the highlands of the southern Titicaca altiplano to the Pacific Ocean; in addition the middle Moquegua Valley is ideal for large-scale maize agriculture. As a result, regional interactions have been an integral element in this region's cultural evolution. Starting with the Archaic Period and continuing through the Late Intermediate Period we graphically explore the nature of the regional interactions that took place in each time period and how these interactions shaped the cultural landscape of the Moquegua Valley over time.

[15] *Chair*

Costion, Kirk [15] see Green, Ulrike

Cothren, Jackson (CAST, University of Arkansas) and Jesse Casana (University of Arkansas)

[36] *The CORONA Atlas Project: Orthorectification of Declassified Satellite Imagery and Regional-Scale Archaeological Prospection*

Declassified, Cold War-era satellite images known as CORONA, the codename for the United States' first intelligence satellite program, offer high-resolution, global stereo imagery dating from 1960-1972. Because CORONA preserves a picture of the landscape prior to much recent development, these images constitute a powerful resource for identification and mapping of archaeological sites and ancient cultural features such as roads, canals and field systems. However, unprocessed CORONA images contain extreme spatial distortions caused by a cross-path panoramic scanning system, and the absence of detailed orientation and camera information makes correction of these errors challenging. This paper presents results of a multi-year effort to develop new, efficient orthorectification methods for KH-4A and KH-4B CORONA imagery, as well as of our distributions system for the imagery through a freely-accessible, online database. The currently available imagery covering the Middle East has begun to transform the ability of researchers to explore the archaeological landscape at regional scales, beyond survey boundaries and across national borders. Our ongoing efforts now aim to make CORONA available in other areas of the globe, including China, South and Central Asia, Eastern Europe, and the African Sahel.

Couey, Lauren (University of Denver), Ian Kuijt (University of Notre Dame), Meagan Conway (University of South Carolina), Katie Shakour (University of Virginia) and Casey McNeill (Zachary and Associates, Inc.)

[259] *Boarding Houses and Wage Earning Sisters: The Archaeological Visibility of the Halloran Sisters, Clinton, MA*

The Irish Famines of the 1880s that were largely experienced in the far west resulted in a later rural and coastal immigration. This movement of individuals and families into new communities often established new systems of chain migration and pathways to America. In some cases immigration into small towns, such as Clinton, MA, primarily involved wage earning females and males who lived together in Irish run boarding houses, moving from year to year. How did the family, or some sub-section of the family, change through the Irish Famine, through pulses of immigration, and the relocation of people to America? Historical documentation provides us with a means of tracking relative residential mobility, but it is unclear how or if this might be manifested in archaeological data. Drawing upon the case study of the Halloran sisters in Clinton, MA, between 1900 to 1910, we explore residential patterns that highlight remarkably high levels of residential mobility, co-residency organized around family lines, and paradoxically, the almost total archaeological visibility of the reorganization of the family as a wage earning unit.

Coulson, Sheila [58] see Nash, David

Coutu, Nicholas [12] see Krigbaum, John

Couture, Nicole [25] see Blom, Deborah

Couture, Nicole (McGill University) and Deborah Blom (University of Vermont)

[203] *Relational Ties: Residential Burials at Tiwanaku*

The apparent absence of large, spatially segregated cemeteries associated with Tiwanaku's urban core is one of the clearer, though puzzling, features of its archaeological record. This situation stands in direct contrast to other Tiwanaku Period sites in both the highlands and lowlands where distinct cemeteries have been found. Drawing on recent investigations in the Mollo Kontu sector at the site, we argue that mortuary rituals in the urban core are characterized by the practice of residential burials. Here, the dead were kept nearby as part of everyday life, within families and communities. In addition, the Mollo Kontu area is notable for the high representation of children's burials. We find that in death children received attention similar to adults; they were remembered and venerated. While mortuary practices have been recognized as important opportunities for the display of wealth and status in many Andean societies, such differences do not appear to have been strongly emphasized in Tiwanaku burials in the urban core. Our data suggest that instead greater value was placed on privacy, intimacy, sentiment and social relations.

Covey, Ronald (Dartmouth College) and Kylie Quave (Beloit College)

[121] *Inka State Canons in Local Communities in the Imperial Heartland (Cusco, Peru)*

Data from the Inka imperial heartland are valuable for discussing the distribution of Inka material culture in provincial contexts. The Cusco region of highland Peru was home to the Inka capital, and archaeological data from local sites offer evidence of the development of state aesthetic canons, as well as how distribution patterns reflect continuity and change in local communities and settlement systems. The scope and intensity of Inka material culture distributions in the capital region permit robust comparisons with provincial sites, allowing a deeper consideration of Inka imperial administrative strategies. This paper will discuss the material manifestation of Inka state canons in the Cusco region, and how regional patterning can be used to develop problem-based excavation programs. We then present aspects of our excavation work at three sites with Inka occupations: Pukara Pantillijlla, Ak'awillay, and Cheqoq. These sites represent only a subset of the ecological and social variation in the Cusco region from the time of early Inka expansion to the European invasion, but they illustrate some of the different local manifestations of state canons at communities whose fortunes waxed and waned under Inka rule.

Cowie, Sarah (University of Nevada, Reno) and Lisa Machado (University of Nevada, Reno)

[168] *Bodily Discipline and Healthcare in a Mining Boomtown: Archaeology of St. Mary's Hospital in Virginia City, Nevada.*

St. Mary's Hospital in Virginia City, Nevada, was operated from 1876 to 1897 by the Daughters of Charity

of St. Vincent de Paul, a Catholic organization founded in France. Built environment and archaeological excavations at the hospital site reveal the organization's efforts to bring modern healthcare practices to the miners and settlers of this western boomtown. Drawing upon theoretical frameworks from Marx, Foucault and Bourdieu, the authors observe that patients and staff at the hospital also experienced bodily discipline, particularly through landscaping, architecture, and items related to healthcare. Bodily discipline reinforced ideologies and daily practices of reform, purity and service, which leveraged healthcare practices. Such practices and ideals were also in keeping with western notions of progress.

Cox, Kim and Carolyn Boyd (SHUMLA)

[199] *Breaking the Color Code in Pecos River Style Rock Art: Why It Is so Important*

The polychrome rock art of the Pecos River style contains four basic colors: red, black, yellow and white. The same four colors are part of an Archaic Mesoamerican core iconographic system that assigns these specific colors to the cardinal directions. Because of this, they have also adopted implied meanings that have persisted in belief system from some ill-defined Archaic time often up until historical times. The Pecos River style rock art fits squarely into that Mesoamerican iconographic continuum, having many of both the simple and complex meanings that have persisted in Mesoamerican cultures for millennia. In our study of the rock art, we have recognized that nothing in the art panels is random. This basic rule applies to the colors. Understanding their meanings gives invaluable insight into understanding the panels.

Coyle, Philip (Western Carolina University)

[339] *Politics of the Plaza: Conceptual Metaphors of Legitimacy among the Náyari and other Central Uto-Aztec peoples*

The indigenous groups of the Sierra Madre mountains of west Mexico are the probable living descendants of the archaeologically and ethnohistorically known Azatlán civilizations, and the ceremonialism of these contemporary people provides insights for the interpretation of those earlier civilizations. Specifically, the patio-based ceremonialism of the Náyari (Cora) and other Central Uto-Aztec peoples is a basic conceptual metaphor that may be used to help understand earlier plaza-based ceremonialism. The east-west and axis mundi orientation of these plazas--such as underlies Central Uto- Aztec deer-hunting ceremonialism-- is closely tied to synecdochical and hierarchical tropes that can be used by political authorities to legitimate their positions within a Flower World religious ideology. In the Náyari language these tropes are signaled by the directional term námiche. Given Mathiowetz' recent arguments concerning the importance of Paquimé in extending this politically potent cosmology into the American Southwest, it seems likely that such symbolic tropes might also be aspects of the conceptual metaphors that he discusses.

Crabtree, Pam (New York University)

[162] *Discussant*

Crabtree, Stefani [208] see Harris, Kathryn

Crabtree, Stefani (Washington State University), Tim Kohler (Washington State University) and Kyle Bocinsky (Washington State University)

[289] *The Development of Social Groups, Leadership and Inequality in the Central Mesa Verde*

In this paper we explore how population growth and resource depletion in the Central Mesa Verde landscape between AD 600 and AD 1280 set the stage for territorial conflict, and how lineage and clan membership likely affected the structure of coalitions. We take a three-pronged approach in which we combine models for the evolution of leadership, models for the formation of coalitions and alliances, and models for conflict and warfare. In these models individuals eschew autonomy and join groups when outside pressures for resources are sufficiently great that being a member of a group would be beneficial for individual survival and resource acquisition. Individuals in groups, and groups in coalitions, contribute to a "public good" via defense of corporate resources; defection may be punished. These are layered onto an agent-based modeling framework within the Village Ecodynamics Project. We are able to compare output from the simulation to the archaeological record to understand how the structure of corporate kin group leadership could lead to the development of more hierarchical structures and how conflict, or the threat of conflict, could influence the size of and leadership in groups.

Craig, Douglas (Northland Research) and Brent Kober (Northland Research)

[43] Multi-Household Social Units, Property Rights, and Wealth in Hohokam Society

Recent discussions of Hohokam sociopolitical organization have focused on household-level and community-level social units. Far less attention has been paid to the social units that operated at an intermediate level between the household and the community. In the case of the Hohokam, these intermediate social units are generally expressed in the form of multi-household residential groups that have been variously called village segments, habitation areas, or residential districts. We examine the role of these intermediate social units in Hohokam society, particularly their role in acquiring and transmitting property. Their role in promoting and suppressing social inequality is also discussed.

Craig, Nathan [146] see Brown Vega, Margaret

Craig, Lorena (University of Montana)**[175] A Diachronic Perspective on Variation in Lithic Procurement at Housepit 54, Bridge River Site, British Columbia**

The Bridge River settlement in the Middle Fraser River Canyon of British Columbia had an economic base emphasizing procurement of salmon, deer, geophytes, and berries. Changes in the environment after ca. 1300 cal. B.P. appear to have affected subsistence returns as salmon numbers likely declined and search costs for ungulates increased. Current excavations by Dr. Anna Prentiss at Bridge River (EeRI4) Housepit 54 focus on an estimated 15 occupation floors dating in the range of 1000 to 1500 cal. B.P. This allows for a unique study of inter-generational adaptations. This poster presents a study of variability over time in lithic raw material use by Housepit 54 residents. Investigation of artifacts recovered from each floor compared to faunal data will increase understanding of the relationship between use of lithic sources and shifts in subsistence practices.

Craig, David (Memorial University of Newfoundland)**[325] GoPro or Go Home: GIS Modelling and Experiential Ground Survey of Past Travel Routes in Saglek Bay, Labrador**

This paper discusses the results of an archaeological survey of the cultural landscape at North Arm in Saglek Bay, Labrador. The aim of the project is to combine two methodological approaches, GIS and experiential field walking, to gather data on Inuit trail use. Trails are important features of human occupation of the landscape and play an essential role in travel, migration, kinship relations and in a group's relationship with their environment. Trails serve everyday purposes but also have an ideological element which bears on the way people thought about and constructed the landscape. The importance of movement is reflected in Inuit material culture with technologies such as the kayak and komatik (sled) used to facilitate travel. This study utilizes the View-Shed and Least Cost Path (LCP) functions of GIS in order to predict inter-visibility and movement between and within archaeological sites. These predictions are informed by a ground survey focusing on gathering experiential landscape data captured using a head-mounted wide angle visual recording device (GoPro) and spatial data using a GPS device. This methodology was used to explore potential routes and trails in the past, focusing as much on spaces between features as the features themselves.

Crandall, John [64] see Hammond, Krystal

Crandall, John (University of Nevada, Las Vegas)**[126] Inscribed, Embedded and Embodied: Envisioning a Bioarchaeology of Inequality, Vulnerability and Pain**

A hallmark of modern bioarchaeology is its commitment to a holistic theoretical approach. The biocultural synthesis has indelibly shaped bioarchaeological research and has challenged scholars to reconsider the upstream causes of health disparities, and to situate mortality and morbidity data within broader social and political contexts. Integrating archaeological, ethnographic and biological data, bioarchaeologists have documented disparities in survival and functional quality of life by examining the ways that ancient bodies are literally and figuratively pained. Using the lens of agency and embodiment affords theorizing about the body, power and culture. Case studies from the Greater Southwest are provided that demonstrate the ways that ritualized acts of child sacrifice and female captivity are inscribed on the body and written on the bones. Embodiment theory provides a way of linking culturally sanctioned violence and long term morbidity with broader patterns of social integration (and in some cases, fragmentation). This overview sets the stage for the studies in this session and illustrates the ways a social bioarchaeology of inequality can link empirical data derived from skeletal remains with the larger cultural

processes that institutionalize and normalize suffering and inequality.

[126] Chair

Cranford, David (UNC-CH)

[10] *Analyzing 18th-Century Catawba Pottery and a Lead Glazed Sherd Using Portable X-Ray Fluorescence (pXRF)*

Recent research has demonstrated that Catawba ceramic practices changed abruptly and dramatically after 1759 following a devastating epidemic. Pottery from historically documented Catawba towns indicate potters adopted new techniques and styles as they adjusted to new economic and social conditions, including copying European vessel forms, experimenting with new ceramic paste recipes, and utilizing new decorative motifs. The discovery of a lead-glazed sherd on what otherwise appears to be a Catawba pale-colored paste suggests Catawba potters may have also experimented with wholly new ceramic technologies. This poster presents the results of a compositional study of Catawba and non-Catawba pale-bodied colonowares from South Carolina and Virginia to determine if this glazed sherd is of Catawba manufacture using pXRF and multivariate statistical techniques.

Crawford, Dawn (Southern Methodist University) and Brigitte Kovacevich (Southern Methodist University)

[253] *Revisiting Experimental Jade Polishing: Replication and Investigation on Ancient Maya Techniques*

Old and New World ethnographic and ethnohistoric accounts of jade polishing techniques document the use of leather, wood, bamboo, emery, slate, and other stones as polishing tools. Archaeological evidence from Maya sites indicates that limestone likely functioned as polishers in jade production. In 2013 the authors presented a poster documenting results from initial experimental replication of jade polishing with limestone, slate, hematite, and leather. We concluded that all four materials produced some marked changes on the surface of jade beads. This paper aims to discuss the original results of this experiment, and new data from polishing using previously tested materials and additional ethnographically documented materials.

Crawford, George (Blackwater Draw National Historic Landmark)

[267] *The Clovis Site: Synthesizing a Legacy*

Over eighty years of research has occurred at the Clovis site. Due to some unfortunate circumstances, there has not been a possibility of an over-arching, synthetic look at the assemblage in its entirety until recently. This had led to some wildly inaccurate information and assumptions about Blackwater Locality 1. In the last five years, an analysis of all available materials collected at Blackwater have been examined and analyzed. This poster is not an attempt to answer all the possible questions there may be concerning Paleoindians at Clovis, but to give a glimpse at the current and future research at a remarkable site.

Creamer, Winifred [10] see Komes, Lindsey

Creamer, Winifred (Northern Illinois University) and Jonathan Haas (Field Museum)

[245] *Changing Complexity in the Norte Chico, 3000-1800 B.C.E.*

Monumental construction flourished in the Norte Chico region of Peru starting around 3000 B.C.E., based on flourishing cultivation inland, fishing on the coast and active regional exchange of plant and marine products. The monuments and associated buildings and activities reflected the emergence of two interconnected bases of power: economic and ideological. Economic power grew from irrigation-based agriculture and provided a means for Norte Chico leaders to gain the compliance of the Norte Chico population. This economic base was supported and reinforced by a standardized religious ceremonial context focused on large and small scale public architecture. The positive and negative incentives of access to (or denial of) irrigation water and agricultural products proved an effective way to recruit and direct a significant labor force. Rather than serving to self-aggrandize or glorify individual rulers, however, labor was focused almost exclusively on the construction of large-scale religious architecture. Physical coercive power manifested in some kind of military was absent. The full state triad of economic, ideological, and physical power did not emerge until the subsequent Initial Period.

Creel, Darrell [32] see Reynolds, Richard

Creel, Darrell (University of Texas at Austin)**[66] *Changing Social Contexts of Mimbres Ceramic Production and Distribution***

In early Mimbres-area research, pottery was the primary impetus for excavations in terms of acquiring museum collections and temporal control. In a major improvement in method and theory, the Mimbres Foundation focused on finer chronological control and analysis of pottery designs. More recently, compositional analysis of thousands of samples, including some 1000 whole Mimbres vessels permits a more refined assessment of design relative to both production locale and location of last use. Hypotheses regarding such issues as emphasis on depiction certain classes of animal by potters in specific villages can now be tested with greater confidence. During the Classic Period, in general, there was substantial and broad similarity in the designs on the painted pottery, regardless of production locale. Possible explanations for the patterns are explored.

Creese, John (University of Cambridge)**[338] *Indigenous "Economies of Affect" in the Northeast Woodlands***

This paper considers the sources of demand for European-manufactured goods among the Native American societies of the Northeast Woodlands in the early seventeenth century. I propose that among the Wendat-Tionnantate and Attiwandaron societies of southern Ontario, objects perceived to be potent – including many obtained from European sources – fed into local 'economies of affect'. These systems involved characteristic cycles of ritual exchange focused on the accumulation and enchainment of bodies and belongings. Their social efficacy depended on 'emotion-work' accomplished by the iterative bundling and fragmentation of highly affective, inalienable objects. Exchange with Europeans, however, required that alienable objects obtained in trade be materially transformed into inalienable ones appropriate to the demands of this 'economy of affect'. Certain media, such as wampum and glass beads, were particularly suited to accomplishing this transformation, and were therefore crucial 'switchers' that linked local and global economies in the early seventeenth-century Northeast.

Crema, Enrico [187] see Edinborough, Kevan

Crema, Enrico (UCL, Institute of Archaeology)**[187] *Simulating Isolation by Distance in Space and Time***

This paper explores the robustness of phylogenetic methods for detecting variations in branching and blending signals in the archaeological record. Both processes can generate a spatial structure whereby cultural similarity between different sites decays with increasing spatial distance. By generating a series of artificial records through the controlled and parameterized environment of an agent-based simulation, I will: a) illustrate the weaknesses and the strengths of different analytical techniques (distogram, Mantel test, Retention Index, and Delta Score); b) determine whether they are capable of assessing how spatial isolation determine cultural diversity; c) and establish whether they can detect variations in the nature of horizontal transmission over time. Results suggest that variables other than the spatial range of interaction (e.g., the frequency of fission events, population dynamics, and rates of cultural innovation) have different effects on the output of some phylogenetic analyses. The cultural descent and interaction of ceramic tradition in Neolithic Europe is then evaluated taking in consideration the results of the simulation exercise.

Crews, Christopher (Texas A&M University)**[7] *Cultural Changes in the Piedre Lumbre Valley, NM during the Developmental-Coalition Transition***

The excavation of Bull Canyon II revealed a change in cultural occupation and land use in the Piedra Lumbre Valley. Around 1000 BP, a technological shift is evident through thermal features, lithic raw material, and ground stone technology. The purpose of this paper is to show that the early occupants of the site of Bull Canyon II were highly mobile hunter-gatherers focused on formal hearth features, wild plant foods, and resharpening of obsidian tools, while the later inhabitants were logistical groups utilizing the area for wild resources such as pine nuts and other wild plants and animals. This is evidenced by a shift from formalized, slab-lined, bowl-shaped hearths to informal open burns without any support. Furthermore, the use of obsidian is higher earlier and wanes, while the use of Pedernal Chert (the nearest source of lithic material) increases.

Crider, Destiny (Luther College), Ben Moore (Luther College) and Jayne Cole (Luther College)**[140] *Experimentation in Ceramic Decorative Technology: The Central Mexican Multi-Prong Brush***

The Central Mexican pottery type known commonly as Mazapan Wavy Line is a red painted pottery notable in the northern area of the Basin of Mexico and Tula at the earliest part of the Early Postclassic period (ca. 900 AD). Stylistic and compositional variability of this diagnostic pottery suggests that production occurred at multiple locations across the region. However, the specific technologies and techniques for producing the distinctive multiple-line motifs are not well understood. In this interdisciplinary collaboration, we present our initial efforts in exploring the technological challenges in replicating this unique decorative tradition. Consideration of natural materials readily available in Central Mexico formed the framework for developing brush prototypes for experimentation. Each successive step of investigation provided understanding of the unique attributes required of bristle type and length, interaction with clay and paint, and the challenges in maintaining separate and clearly defined lines within the resulting designs. The difficulties in reproducing exactly the stylistic attributes observed in the archaeological sample of Mazapan Wavy Line pottery suggests the importance of training and learning communities in the production of this pottery type. We present our successes and failures in experimentation and suggestions for further inquiry.

Crider, Destiny [143] see Meza-Peña, Abigail

Cripps, Paul [36] see Wright, Holly

Crisci, Gino M. [249] see De Francesco, Anna Maria

Crist, Walter (Arizona State University)

[5] *Games of Thrones: Board Games and Social Complexity in Bronze Age Cyprus*

Board games have been recognized in archaeological contexts since the beginning of the discipline. Despite this, the study of the societal role of board games has not progressed along with the discipline. This research attempts to couch the archaeology of board games within a theoretically informed milieu, in order to demonstrate that games function as social lubricants which affect societal processes. Cyprus is used as a case study, as over 400 game boards have been found on the island, making it a uniquely rich environment to examine this artifact class. Representing the games senet and mehen, of ultimate Egyptian origin, these game boards first appear on the island during the Late Chalcolithic (ca. 2700 B.C.E.), and soon became fully indigenized. Preliminary research suggests that game boards are concentrated in areas where feasting occurred, suggesting a linkage between games and feasting. Using Correspondence Analysis, all of the contexts in which game boards have been found will be analyzed, and patterns in the associated activities will be compared through time and space. This will demonstrate regional patterns in gaming, as well as change in gaming activities as social complexity increases through the Late Bronze Age (1650-1050 B.C.).

[5] Chair

Cristiani, Emanuela [278] see Boric, Dusan

Critchley, Zachary (Franklin & Marshall College)

[285] *Architectural and Spatial Organization: Social Control at Panquilma*

This paper is based on findings from the 2013 field season at the site of Panquilma. An Ychsma site in the Lurin valley on Peru's central coast, Panquilma was complex and multicomponent, with three sectors. The first was the public sector, which included the ramped pyramids that were the centers of activity around the site. Excavations performed this season uncovered large amounts of interesting data from the public sector, including burials, offerings and earlier construction phases. This work will analyze the role of access patterns within the pyramids of sector one at Panquilma. Based on studies in other areas such as the North Coast, as well as the previous seasons of excavations at the site, this research will examine, if proved, the relationship between the organization and restriction of access, spatial distribution of rooms and social control.

Croes, Dale [160] see Williams, Mark

Cromb  , Philippe (Ghent University, Department of Archaeology) and Erick Robinson (Ghent University, Department of Archaeology)

[201] Climate Change Archaeology in the Southern North Sea Basin

The North Sea basin witnessed enormous climate and environmental changes during the Pleistocene-Holocene transition caused by glacial meltwater outbursts and sea level rise. Multi-proxy paleoenvironmental and archaeological evidence indicates a remarkable variability of responses of ecosystems and human societies to climate change in this region. This evidence forces us to move beyond deterministic approaches to climate-ecosystem-human interaction toward a greater understanding of the variable impacts of climate change on ecosystems and hunter-gatherer societies across different spatial scales. In this presentation we focus on three abrupt climate change events between 13,300 and 8,200 years ago. We present evidence for the impact of paleolake drought on Late Glacial Federmesser social organization during the GI-1b event and the development of new Mesolithic sociocultural networks between the 9.3 and 8.2 events. The North Sea basin currently faces some of the same threats caused by climate change, particularly sea level rise. This presentation sets up a climate change archaeology framework for the region that focuses on the variable resilience and vulnerability of ecosystems and human societies to climate change throughout the Holocene period.

Cromb  , Philippe [246] see Robinson, Erick

Cronin, Joseph (University of Chicago), Augusto Cardona Rosas (Centro de Investigaciones Arqueol  gicas de Arequipa), Mark Golitko (Field Museum of Natural History), Patrick Ryan Williams (Field Museum of Natural History) and Maria Cecilia Lozada (University of Chicago)**[38] Obsidian and Wari Expansion: A View from the Vitor Valley of Southern Peru**

For the past five years, one of the primary goals of the Vitor Archaeological Project has been defining the nature of the Wari presence in the Vitor valley of southern Peru. Here we present the results of geochemical sourcing undertaken on obsidian recovered from the Milllo site complex using portable x-ray fluorescence (pXRF) technology. Using this new source data in tandem with a regional contextualization of Milllo's obsidian assemblage, we argue that the intrusive Wari presence in Vitor is more complicated than previously thought. Earlier interpretations of the Milllo sites cast them as installations of state infrastructure established to interact with mobile, non-Wari populations. Both our source data and point forms, however, show great consistency with other Wari colonial enclaves and nearby Wari-influenced groups, suggesting that no exchange of obsidian took place in Vitor between the Wari population and groups culturally outside of the Wari sphere. It remains likely, however, that the Milllo complex was constructed to serve some transportation-related purposes. Considering the similarity of our assemblage to those found at Wari sites in Moquegua, we argue that the Wari installations in the Vitor valley were intended to consolidate caravan routes between this far-flung colony and the Wari heartland.

Crook, Wilson, Michael Collins (The Gault School of Archaeological Research), Clark Wernecke (The Gault School of Archaeological Research), Robert Lassen (The Gault School of Archaeological Research) and Sergio Ayala (The Gault School of Archaeological Research)**[318] Synopsis of the Prehistoric Occupations at the Gault Site (41BL323), Bell County, Texas**

Every known interval in the prehistoric record of Central Texas is represented at the Gault site (41BL323), from Older-than-Clovis through Paleoindian, Archaic, and Late Prehistoric. Years of systematic looting at the site has disrupted the integrity of much of the Holocene deposits (Archaic to Late Prehistoric) over a large part of the site, however the deeper horizons, notably Clovis and below, remain undisturbed. As such, the site represents a record of virtual continual occupation over the past 14,000+ years. Thus the unique, prolific environment of Gault continued to meet human needs in spite of wide swings in climate. Moreover, the locality supported a variety of different hunter-gatherers/foragers with neither specialized big game hunting nor adoption of horticulture indicated. In large measure, this record is attributable to abundant chert of high quality, reliable springs, and a diverse biota. Plant and animal communities long adapted to the highly variable climate of the region meant that no matter the conditions, an adequate subset of the biota produced sufficient subsistence resources.

Crook, Wilson [318] see Williams, Tom

Cross, Pamela (University of Bradford, Archaeological Sciences)**[53] Life and Death of a Horse from Roman London: Skeletal Analysis with a Consideration of Pathology Patterning and Activity-related Skeletal Markers**

Much of zooarchaeology deals with large assemblages of bone fragments, which has led to the use of sampling methods and an emphasis on statistically-based analysis. However, it has long been

recognized that this method may miss significant data, particularly when partial or whole skeletons are part of the assemblage. Applying human-burial analytical methods, creating osteo-biographies, of animal burials can inform us about important aspects of the animal, its environment and its relationship with human society. This type of analysis is particularly important when investigating horse depositions which typically make up very small percentages of faunal assemblages. This presentation investigates the burial of a single horse from Roman London. The individual is reconstructed using osteological and anatomical/artistic methods coupled with a historical perspective. Particular attention will be paid to evidence and evaluation of pathology and its possible relationship with activities in the living animal such as riding, driving or use as a pack horse.

Cross, Ian [122] see Blake, Elizabeth

Cross, John (Bowdoin College)

[292] *Actions and Strategies: The View from a Lithic Workshop at Kichpanha, Belize*

Recent research on market economies among the ancient Maya provides an analytical point of entry for archaeologists to explore human actions at local and regional scales. While long-term trends in artifact form and technology, settlement size, or architecture may be identified over broad geographic areas, ultimately the archaeological record is created by people living their lives within a specific historical and social context. Markets (or alternative ways in which households might gain access to goods) occupy the intersection of action and strategy at the levels of the individual, household, community, and region. Excavations at a Late Preclassic lithic workshop at Kichpanha in northern Belize show evidence not only for the production of chert tools, but also for their maintenance and replacement. Inter- and intra-site comparisons between workshop lithic assemblages and with those from residential contexts suggest differences among households that may be linked to tool production either by specialists or by non-specialists and to the possible presence of markets. Access to finished tools or to the skills of a specialist is neither universal nor automatic across a settlement or a region, but is constantly being negotiated by human actors who are responding to their circumstances and to perceived opportunities.

Crothers, George (University of Kentucky)

[74] *The Cave Research Foundation Archaeological Project and the Eastern Agricultural Complex*

In 1963, Patty Jo Watson began systematically recording archaeological remains in the extensive, dry passages of Salts Cave, Mammoth Cave National Park, Kentucky. This was an official project of the recently organized Cave Research Foundation, a multidisciplinary group of cave explorers and scientists interested in caves and karst environments. With the expertise and logistical support of CRF, Watson--a specialist in Near Eastern prehistory--initiated an interdisciplinary scientific research project in Salts Cave. A central focus of the CRF Archaeological Project for Watson and collaborator Richard A. Yarnell was the relationship between indigenous squashes and gourds—abundantly present and beautifully preserved in the dry passages of Salts Cave—to their presumed Mesoamerican antecedents. The CRF Archaeological Project refocused interest on the Eastern Agricultural Complex, and helped establish Eastern North America as one of the few world regions where an independent, indigenous, prehistoric agricultural system was created.

Crothers, George [264] see Carlson, Justin

Crow, Michael [169] see Moreno, Meredith

Crown, Patricia (University of New Mexico)

[243] *Power, Production, and Practice within Communities of Potters in the American Southwest*

Among populations in the American Southwest, children participated in the division of labor as household members. They had everyday access to potters within a community of practice. The paths to full participation in pottery practice are documented in historical records and autobiographies, and these paths are largely, but not entirely, reflected in the prehispanic vessels. Archaeological assemblages reveal that participation in communities of southwestern potters varied over time and across space. Variation in the sequences of mastery reveals important differences in access to resources needed for learning that suggest changes in relations of power within communities of practice, particularly among potters producing polychrome ceramics after A.D. 1250. Shifts in the organization of production, use of

pottery in ritual activities, and the importance of pottery in signaling political alliances may have contributed to differential control over materials and knowledge. Understanding how and why potters might have restricted participation in communities of practice provides insight into power relations and secrecy in the late prehispanic Southwest.

Crumley, Carole**[75] Continental Europe**

The Roman Empire is one of history's great successes, as well as a spectacular failure. There are many parallels with societies today. Key elements are: reliance on a handful of vulnerable staples and on unstable or diminishing resources, climate change that affects resources and the ability to respond to problems, sustainability undermined by increased social complexity and the cost of solving problems, diminishing state income (trade and taxation), increasing expenditures (wars, rebellions), and failure to invest in infrastructure and its maintenance. Multiple shocks and system-wide impacts beyond initial sources of instability can render great societies vulnerable.

[124] Discussant

Cruz, Isabel [206] see Belardi, Juan

Cruzado, Elizabeth [105] see Núñez Aparcana, Bryan

Cruzado Carranza, Elizabeth Katherine (PIARA, Proyecto de Invest. Arq. Reg. Ancash (Peru)) and Rebecca Bria (Vanderbilt University)**[152] Making the Past Relevant: Finding Solutions to the Challenges of Heritage Preservation in Rural Communities in Peru**

In the impoverished traditional Quechua communities of rural Ancash, Peru, the planning and implementing of heritage preservation projects faces a variety of obstacles that require creative solutions. With little government oversight to enforce protection laws, the monumental archaeological sites of Hualcayan and Pariamarca in the Cordillera Blanca mountain range are poorly preserved. The challenge of conflicting interests among villagers-such as the need to increase agricultural yields-combined with a loss of connection to the ancient past, has led the US and Peruvian collaborators of the Proyecto de Investigaci6n Arqueol6gico Regional Ancash (PIARA) to engage local communities and municipalities in developing a multi-faceted approach to promote and protect their cultural heritage. The engagement includes: 1) education-focused heritage enrichment projects with local school children and their teachers, 2) the design of local museums that will double as community centers, and 3) the integration of these heritage centers into an already present adventure tourism circuit, where visitors can explore the area's natural, cultural, and archaeological resources in addition to trekking into the famous Parque Nacional Huascarán. The latter project will connect the two sites as tourism destinations with homestays in local villages rather than a simple pass through on a Cordillera trek.

Cruz-Morales, Christian (Eastern New Mexico University)**[12] Correlation of Death Rate and Periodontal Disease in the Prehistoric Human Remains of Pueblo Bonito**

Periodontal disease is an oral infection caused by 500 different bacteria that invade the mouth. The development of this disease depends on several factors such as inheritance, environment, diet, and dental care. Recently, scientists have proposed a correlation between cardiovascular and periodontal diseases as a cause of serious health problems in modern humans. This premise has provoked a debate among health experts who are not completely convinced of such correlation. This study focuses on the severity of periodontal disease in dental remains of the Ancestral Puebloans who inhabited Pueblo Bonito in Chaco Canyon, New Mexico, from A.D. 850-1140. The harsh climatic conditions of Chaco Canyon and the high consumption of maize by the Ancestral Puebloans would have favored the factors that cause periodontal disease. This research study tests the correlation of the severity of periodontal disease and the age at death of the prehistoric people of Pueblo Bonito. The findings of this study also provide a perspective on the human past concerning periodontal disease and its correlations with other health problems in modern humans.

Cucina, Andrea (Universidad Autonoma de Yucatan) and Vera Tiesler (Universidad Autonoma de Yucatan)

[21] Population Dynamics during the Classic and Postclassic Period Maya in the Northern Maya Lowlands: The Analysis of Dental Morphological Traits

This study focuses on population variability and morphological affinities among the Classic and Postclassic period Maya (A.D. 250-1521) of the Yucatán peninsula. To this end, the dental morphological traits of eighteen dental collections from the Northern Maya Lowlands was scored, following the ASUDAS standard. Intra-site variability was calculated using seventy-nine dichotomized traits, while patterns of morphological affinities were calculated using thirty-six variables. Cluster Analyses -UPGMA and Ward grouping methods- Principal Components and Maximum Likelihood were also elaborated and tested with bootstrap. Our regional survey indicates general homogeneity among site populations, materializing long-standing population movement and exchange across the Yucatecan territories. Unsurprisingly, intra-site variability reveals higher biological variation among the urban populations under study and among coastal dwellers, which we presume to have been involved in trading. Morphological affinities, in turn, show a pattern of similarity among sites involved in the inland corridor that connects the Northern Petén to the Northern Maya Lowlands during the Classic. On the contrary, the Postclassic site populations, although not entirely separated from their Classic descendants (revealing to some extent biological continuity through time), do not seem to follow geographical patterns but instead distribute more randomly than the earlier dental series.

Cuenca-Solana, David [71] see Gonzalez-Morales, Manuel

Cullen, Sara**[265] The Segesser Hide Paintings: Explorations in Ethnohistory and Archaeology**

Since the Museum of New Mexico acquired the Segesser Hide Paintings in 1989, they have generated considerable interest among scholars from anthropology, history, and art. The depictions are rare glimpses of Europeans and Native Americans engaged in battle on the Great Plains of North America, wordless narratives of the dynamics of militaristic interactions which influenced alliances and empire in the colonial period. Deciphering the events depicted on the hide paintings has traditionally incorporated scholarship in the fields of ethnohistory as well as art history. Archaeological evidence of colonial military expeditions across the Great Plains may provide an alternative avenue of interpretation.

Culleton, Brendan (The Pennsylvania State University) and Douglas Kennett (The Pennsylvania State University)**[13] Developments in Radiocarbon and Stable Isotope Preparation of Archaeological Materials at the Penn State Human Paleoecology and Isotope Geochemistry Lab**

The Human Paleoecology and Isotope Geochemistry Lab at Penn State was established in 2012 with the dual purpose of providing research and educational opportunities in archaeological sciences for faculty and students in the Department of Anthropology. The lab articulates with the Keck Carbon Cycles AMS Facility for high-precision ^{14}C dating of organics, carbonates and bone, and integrates sample quality control through EA and IRMS at the PSU Light Isotope Lab for elemental and stable isotope analysis. Sample processing protocols for archaeological materials are continuously developed and refined, including small-sample preparation (e.g., single seeds, and leaves for AMS), alpha-cellulose extraction for wood, ultrafiltration and modified XAD-purification for bone samples, and Fourier-Transform Infrared Spectroscopy for QA on cremated bones. AMS and stable isotope projects currently span the last 20,000 years in the Americas, Europe, and the Near East.

Culleton, Brendan [103] see Tung, Tiffiny

Cunha, Eugénia [116] see Umbelino, Cláudia

Cunnar, Christiane (Human Relations Area Files)**[115] Children's Activities and the Context of Learning of Skills: Using HRAF's Ethnographic Database to Inform on Spatial Recognition of Learning Activities in the Archaeological Record**
eHRAF World Cultures, an online database produced by Human Relations Area Files, contains a plethora of ethnographic descriptions including references to children's activities and transmission of knowledge. This study employs the eHRAF World Cultures database and the subjects from the Outline of Cultural Materials (OCM) including "games," "transmission of skills," "ceramic technology" and "settlement patterns." A sample of ethnographies was examined for information related to children's activities. In particular, the study focused on the spatial, social and environmental context of learning behavior as well

as the morphology of children's learning devices or "toys." The compiled dataset includes information on the age and gender of the children, type of activities, morphology and types of learning materials as well as data concerning environmental, spatial, social and material context. This paper addresses how these ethnographic examples might assist archaeologists in recognizing patterns of material culture and spatial context of children's activities and social behavior in the archaeological record.

Cunnar, Geoffrey (WCRM)

- [115] *Applying Gumbrecht's Concept of Latency to Understanding our Non-understanding of the Archaeological Signature of the Child's "World" at Prehistoric Camp Sites in the Great Basin*

The archaeological record in the Great Basin is rich and spans the Protohistoric to the late Pleistocene. In contrast to European studies in the last 25 years, there is a pronounced lack of attention to the archaeological record of children in North America. We have only begun to address questions concerning socialization and nurturing of children, especially as they pertain to learning behavior. In this paper, I incorporate Gumbrecht's concept of latency to frame the discussion of seeing the unseen or the latent presence in regards to the interpretation of prehistoric children. Traditionally the focus has been on the identification of projectile point types and adult activity areas while often relegating much of the assemblage to indecipherable palimpsests. While we might recognize that children were present and that their material signature is a component of the archaeological record, the latent nature of the phenomenon coupled with a predominately surface record can be frustrating and may lead to ignoring the presence of children. I will use examples from the Great Basin to argue that evidence for the careful nurturing and teaching of children can be teased out of the archaeological record, if we incorporate looking for appropriate technological and spatial signatures.

- [115] Chair

Cunningham, Jeremy (The University of Lethbridge)

- [118] *The Ritual Mode of Production in the Casas Grandes Regional System*

In this paper, I explore whether Paquimé's emergence as a regional center at around A.D. 1350 reflects the development of what Speilmann (2002) has described as a "Ritual Mode of Production" in the Casas Grandes Region. Drawing analogues from the heterogeneity of modern capitalism and recent finding of the Chihuahua Archaeology Project, I hypothesize that this mode was inconsistently developed across the wider Chihuahua culture area depending on local productive opportunities. To illustrate my case, I discuss the results of recent work on southeastern edge of the Casas Grandes Regional System by the Santa Clara Archaeology Project. Surveys, GPR assessments and test excavations show that settlements are continuously occupied during the Viejo and Medio Periods and lead to the emergence of a ballcourt and regional settlement cluster.

Cunningham-Smith, Petra (University of Florida) and Elizabeth Graham (Institute of Archaeology, UCL)

- [113] *Trade Winds: Animal Use and Exchange at the Ancient Maya Sites of Marco Gonzalez and San Pedro, Belize*

Faunal remains from coastal sites can provide unique insights into the economic and socio-political relationships between island and mainland polities and between mainland polities themselves. A preliminary examination of remains recovered from the Maya sites of Marco Gonzalez and San Pedro on Ambergris Caye, Belize, reveals that marine resources provided a range of products from foods to tools to jewelry and tomb or burial furniture. At Marco Gonzalez in the Late to Terminal Classic period, and San Pedro in the later Postclassic, the discovery of rich assemblages of imported ceramics and other artifacts indicate that the caye and its settlements served as important trading ports, with strong ties to Lamanai and other mainland sites from Honduras to the Gulf Coast. Archaeological excavations at both sites have revealed heavy exploitation of marine resources, including mollusks, fish, marine turtles and marine mammals, whose various products were a valued trading commodity locally and on the mainland. The possible use of non-local species and unusual element distributions provide information on daily practices that linked the island with mainland sites. These patterns are compared to other coastal/island assemblages in the Maya region where such trade interactions have been hypothesized but not fully explored.

Cureton, Travis (University of Mississippi, Oxford)**[2] Cohonina Forts and Line-of-sight Networks**

Cohonina forts have been the focus of a long, if less than intense, debate in northern Arizona archaeology since the 1940s. The debate centers on the functional nature of these topographically elevated, thick-walled, masonry structures. Some consider them defensive, while others regard them as socially integrative signaling stations linking dispersed social groups. If these were integrative structures that functioned as nodes in a communication network linking Cohonina communities via lines-of-sight, they could provide important insight into the structure of Cohonina social organization at both the intra- and inter-community levels. I report the results of new survey around the Pittsberg Fort north of Williams, Arizona and a subsequent GIS-based viewshed analysis. The data from this project suggest the Pittsberg Fort was ideally positioned to maintain lines-of-sight with a series of other Cohonina integrative facilities in the surrounding landscape. Using these data, I discuss ways to integrate settlement systems analyses into a landscape archaeology perspective capable of developing tests that rigorously demonstrate intentionality and meaning in line-of-sight networks on the part of prehistoric agents. I then discuss the implications that Cohonina communication networks have on our understanding of social organization and regional interaction in the Southwest.

Curry, Ben (University of Arizona)**[119] The Life and Times of Lorazan Asisara: An Analysis of Mission Demographics in Comparison to the Testimony of a Santa Cruz Indian**

Lorazan Asisara was one of a handful of Native Californians to give an account of the California Franciscan Mission system. As such his words, like those of the few other Native Californians to testify, are given a great deal of weight. This paper compares a number of Asisara's statements to demographic data derived from California Mission records to better understand how reflective Asisara's statements are to the broader conditions of Native Californian mission life. In doing so, Asisara's statements are taken as being truthful, but also needing contextualization based on his specific position within Mission Santa Cruz. In light of this, Asisara's position within this mission's hierarchy is examined to better understand his views on Native Californian mission life; including relations between Franciscan friars and Native Californians, the attitudes of both towards each other, and Asisara's recounting of pre-colonial Native California lifeways. Besides these considerations, the key foci of this paper are Asisara's recounting of violence and punishment repertoires, missionary recruitment practices, the internal and external social networks of Mission Santa Cruz Native Californians, mission social hierarchies, and events during the closing days of Mission Santa Cruz.

Curtis, Jason [158] see Brenner, Mark

Cusicanqui, Solsiré and Luis Jaime Castillo Butters (Pontificia Universidad Católica del Perú)**[59] Behind Walls: Cerro Chepén and San Ildefonso, Two Fortified Settlements in the Jequetepeque Valley**

Cerro Chepen and San Ildefonso are two fortified prehispanic settlements that illustrate the antagonistic relations between the small political formations that coexisted in the Jequetepeque valley during Late Mochica. Since 2009, the San Jose de Moro Archaeological Program has focused on the study of these sites in an attempt to establish their complex occupational histories, which include the Middle and Late Moche, Moche V, Transitional, Wari, Nievera, Cajamarca and Lambayeque presence and their relations with other sites in the Jequetepeque Valley, particularly San Jose de Moro and Huaca Colorada. In tandem, these sites describe the complex process that led to the abandonment of practices associated with the Mochica society, the incremental endemic war between the Jequetepeque Mochicas and the appearance of the Transitional period that entails the transit and origin of the Lambayeque society. In this line, this study has combined a series of multidisciplinary strands that include topographical maps, 3D architectonic reconstructions, 3D modeling through photogrammetry and the systematic study of artifacts and botanical remains.

Cuthrell, Rob Q. [170] see Murch, Loren

Cutright, Robyn (Centre College)**[59] Continuity and Change in Late Intermediate Period Households on the North Coast of Peru**
After the collapse of Moche society around A.D. 800, household life continued in coastal valleys of

northern Peru, and in many ways remained much the same as it had been in previous centuries. As it had been under the Moche, daily life in the Late Intermediate Period (A.D. 900-1450) was likely intensely local, based on the rhythms of irrigation agriculture, extended family and community dynamics, and local ritual cycles. Late Intermediate Period households, however, were confronted with new sociopolitical configurations and economic institutions at valley-wide and regional levels. In the Lambayeque/La Leche Valleys, households weathered the relatively rapid coalescence and collapse of the Middle Sicán state at Batán Grande, while households throughout the north coast were faced with conquest and control at the hands of the expansive Chimú empire. This paper summarizes what we know about continuity and change in Late Intermediate Period households and draws on my own research in the Jequetepeque Valley to explore how post-Moche household life responded to new demands and opportunities at a regional scale.

[285] *Discussant*

Cutts, Russell (University of Georgia) and Sarah Hlubik (Rutgers University)

[209] *Pyro-Lithics: Experiments from Koobi Fora 2013*

Identifying fire in paleo-archaeological studies is contentious. Compared to lithic artifacts or faunal remains, remains of fire, especially from Plio- and Pleistocene periods, may be difficult to identify as fires are ephemeral and the physical traces may degrade over time or become essentially non-existent. To aid in better understanding archaeological remains of fire, research from the 2013 field season at Koobi Fora systematically tested lithic changes via direct thermal alteration. Experiments were undertaken to record effects of fire on materials found in the archaeological record as well as the sedimentary contexts in which we find sites, to be used as a reference collection for comparison to the archaeological record.

Cyphers, Ann [254] see Hirth, Kenneth

Cyr, Howard [117] see Brock, Daniel

Cyr, Howard (University of Tennessee)

[117] *The Role of Geoarchaeology in an Interdisciplinary Examination of Tree Island Sites, South Florida Water Management District and Everglades National Park, Florida*

The inclusion of Section 106 compliance in the NEPA review process has increased the need for cultural resource managers to develop mitigation programs that incorporate disciplines outside conventional CRM. Oftentimes, however, these multidisciplinary investigations are conducted independent of one another and at separate phases of the mitigation process. Not only does this lead to a redundancy in field time and sample collection, but also to a research environment where interrelated data are examined in a vacuum. This has the adverse effect of making multidisciplinary approaches cost-prohibitive while limiting the interpretive power that makes collective research so invaluable. Highlighting the importance of an integrated research strategy to the development of a cost-effective multidisciplinary cultural resource survey, this paper presents the results of a combined geoarchaeological, archaeological, and ecological investigation of tree island sites in the Florida Everglades. The project goals focused on assessing the effect future water-level fluctuations associated with wildlife habitat rehabilitation would have on cultural resources. This required an understanding of past fluctuations only accessible through geomorphic, paleoenvironmental, and paleohydrological analyses not traditionally included in heritage resources survey. The success of the study stems from multidisciplinary data collection coupled with interdisciplinary analysis aimed at data integration and interpretation.

[117] *Chair*

Czaplicki, Jon (Bureau of Reclamation)

[239] *The Flood Control Act of 1944 and the Growth of American Archaeology*

The Flood Control Act of 1944 authorized one of the largest civil works programs ever undertaken in the United States: the Smithsonian Institution's River Basin Surveys (RBS) and the National Park Service's Interagency Archaeological Salvage Program (IASP). The programs began in 1945 and continued until 1969 and, collectively, had profound effects—methodological, theoretical, and historical—on American archaeology. They piqued the public's interest in heritage preservation, were a major factor that led to the passage of the National Historic Preservation Act of 1966, and helped stimulate the "New Archaeology" of the late 1960s and 1970s. The session will examine some of the important impacts of these two programs on the development of American archaeology as well little known topics such as

role of women, the development of historical archaeology, and the use of forensics anthropology and heavy equipment. Although the impacts of these programs are still being felt 50 years after they were established, many archaeologists today who are beginning their careers (and had RBS/IASP alumni as instructors) are not aware of or do not appreciate the impact the RBS and IASP had and still have on the discipline.

[101] *Discussant*

Daggett, Adrienne (Michigan State University)

[58] *The View from Bluff's Edge: South Sowa, Botswana in the Early Iron Age*

By the 9th century A.D., a well-established sphere of interaction existed throughout Early Iron Age southern Africa which connected multiple areas of resource production to the broader Indian Ocean trade network. Within southern Africa at this time, several locales acted as places of production and economic importance, with the Shashe-Limpopo Valley as an emergent center of regional power. Still, much remains to be learned about the dynamics of the interaction as a whole, and especially about the role of lesser nodes within it. The South Sowa area of northeastern Botswana was a part of this sphere, but has not usually been considered a particularly productive area within it. This area is thought of as a cultural periphery to the Early Iron Age. However, recent research at some of the many sites in the South Sowa area shows that it participated in this network more than previously believed. This paper highlights finds from Thaba di Masego, a site excavated in 2012. The data collected provide a systematic look at economic and social behavior in the South Sowa Early Iron Age, and offer a perspective by which to complement the current models on interaction and trade.

Dahlstedt, Allisen (Arizona State University), Sarah Baitzel (UC San Diego) and Paul Goldstein (UC San Diego)

[203] *As Diverse in Life as in Death? A Bioarchaeological Approach to Social Identities at the Tiwanaku Omo M10 site, Moquegua, Peru*

Understanding the construction of multifaceted social identities is critical to our interpretation of community interactions and state expansion during the Middle Horizon. Here we address how individuals living within peripheral Tiwanaku (A.D. 500-1000) sites, one of the earliest expansive states in the South Central Andes, incorporated and performed diverse ethnic, occupational, and other social distinctions throughout life. Human remains retain records of individuals' life experiences and repetitive practices that complement social distinctions represented in mortuary contexts, which often reflect the communal identities and memories of the living. Bioarchaeological approaches integrating comprehensive mortuary analyses are therefore uniquely suited to reconstruct individuals' behaviors throughout life that may differentially align with social distinctions marked in death. Recent excavations and ongoing analyses of over 200 burials from the Omo M10 site, a Tiwanaku colony in Moquegua, Peru, reveal potentially diverse groups sharing mortuary spaces and practices under the auspices of the expansive Tiwanaku state. This paper examines skeletal indicators of individuals' experiences in life, including cranial modification techniques and skeletal pathology, and encourages the application of ongoing isotopic paleomobility and paleodiet research to address the potential social diversity of Tiwanaku migrants in Moquegua.

Dahlstedt, Allisen [203] see Baitzel, Sarah

Dalan, Rinita [263] see Hargrave, Michael

Dale, Emily (University of Nevada-Reno)

[176] *An Overview of Chinese Woodchopping Camps near Aurora, Nevada*

In 2013, the University of Nevada-Reno, in conjunction with the U.S. Forest Service's Passport in Time program, conducted a series of surveys of late 1800s Chinese woodchopping camps in western Nevada. This paper will explore the preliminary results of those surveys with particular attention paid to the architectural and artifactual elements of the camps. It will also discuss the spatial and temporal differences between rural woodchopping communities found on Table Mountain with the urban Chinese communities in the nearby mining boomtown of Aurora.

Dalenberg, Kathryn

[139] *The Cross-Cultural Analysis of Precolumbian Central American Ceramic Figurines*

The creation of figurines in ancient societies denotes not only artistic trends, but also how people

constructed ideas about identity, beauty, gender roles, status, and power. To explore how these ideas differed in the Precolumbian cultures of Central America, I analyzed more than 100 complete figurines in the collections of the National Museum of the American Indian, Smithsonian Institution. For example, figurines sitting in a seat from the Greater Nicoya culture are believed to be representations of elite; however, Greater Chiriquí figurines, which are also typically seated but not in a seat, seem to be representations of quotidian society. Attributes including gender, clothing, hairstyle, jewelry, body adornment, and posture were examined across six archaeologically defined cultural regions that include present day Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica and Panama. The role of these figurines in constructing cultural identity, reinforcing gender roles, etc... over time and space is evaluated using supporting archaeological evidence, historic documents and ethnographic research.

D'Alpoim Guedes, Jade (Washington State University) and Ethan Butler (Harvard University)**[23] Ecological Niche Modeling and the Spread of Agriculture to the Tibetan Plateau**

Moving agriculture into the highlands of the Tibetan plateau was a challenging process. A crop cultivars phenology determines the ecological niche this species is able to occupy. Short growing seasons, cold winters and spring frost mean that the Tibetan plateau presented considerable challenges to the movement of domesticates into this region as many of the species involved were able only to occupy a limited niche. Using new developments from the field of ecological niche modeling, this paper outlines the constraints associated with practicing a range of different crops on the Tibetan plateau and in the foothills of the Himalayas. This data is interpreted in the light of new archaeobotanical evidence from the Plateau itself and the western Sichuan highlands.

Dalpra, Cody, Carol Delher (Utah State University), Molly Boeka Cannon (Utah State University) and Bonnie Pitblado (University of Oklahoma)**[10] Petrographic Analysis for Quartzite Sourcing in the Gunnison Basin, Colorado**

Recently, Pitblado et al. (2013) published a preliminary geochemical (LA-ICP-MS) sourcing protocol for Upper Gunnison Basin quartzite deposits. They noted that petrographic analysis, conceived from the beginning as a prospective means of fine-tuning geochemical results, was ongoing. This poster reports the results of the petrographic analysis on 61 samples (approximately 15% of the geochemically sourced specimens). As hypothesized, the petrographic data are broadly consistent with those derived from geochemical testing, but also reveal characteristics that discriminate among Gunnison Basin quartzite sources with even higher resolution than geochemistry alone. The petrographic results separate the quartzite sources identified into consistent discrete groupings, demonstrated by multivariate analyses including principal component and discriminant analysis. Establishing a robust methodology for sourcing quartzite is important for Gunnison Basin archaeologists who typically encounter lithic assemblages overwhelmingly dominated by quartzite. Applying this to a very diverse environment as in the Rocky Mountains, allows for a view on prehistoric life that has never been examined in this type of detail before. Ultimately, this will enable archaeologists to reconstruct prehistoric hunter-gather land-use patterns in the Gunnison Basin and serve as a model for other archaeologists around the world who encounter artifacts and features made of this ubiquitous rock type.

D'Altroy, Terence (Columbia University)**[205] Discussant****Damp, Nicholas (University of Colorado at Boulder)****[344] Zuni Chacoan Communities: The Archaeology of Village of the Great Kivas**

Perched at the base of a prominent cliff above the Nutria River is the Village of the Great Kivas great house. Beginning in the mid-eleventh century, numerous small sites were constructed around the great house, establishing the Village of the Great Kivas community, which is a cluster of residential sites distributed along the fertile floodplain of the Nutria River. Although the area was not used prior to the A.D. 900s, by the mid-eleventh century, this location became the center of an expansive Chacoan community. This paper is about outlying Chacoan communities in the Zuni region. It begins at Village of the Great Kivas before exploring other great house communities in the Zuni region and beyond. Recognizing how Zuni great house communities are different or similar to other Chacoan communities has implications for understanding the relationships that existed between Chaco Canyon and its regional system. I focus on four characteristics of Chacoan communities and contend that these factors, in part, directed Chacoan community development in the region. The similarities and differences between these themes begin to illustrate how Zuni great house communities participated in the Chaco world and how local developments

and histories influenced community construction during the Chaco era.

D'Andrea, William (Lamont-Doherty Earth Observatory of Columbia University) and Max

Friesen [201] Climate Change and Culture History in the Eastern North American Arctic

With its limited biological productivity, marked seasonality in resource availability, and notable human dependence on weather-related phenomena such as sea ice cover, the eastern North American Arctic seems an ideal place to examine past interactions between humans and climate. Indeed, since the 1960s climate change has served as a central framework for the interpretation of prehistoric cultural developments in the region. However, significant challenges remain for this endeavor, including the large size and variable geography of the eastern Arctic, and the sparse and uneven nature of observational data from archaeological and paleoenvironmental fieldwork. Here, we provide an up-to-date synthesis incorporating the latest chronological information for the major pan-eastern-Arctic prehistoric events and processes of the last 5,000 years, including the initial peopling by early Paleo-Eskimos, the origin of the Dorset, the Thule Inuit migration, and post-Thule population movements. We compare this chronology to the growing number of regional climate reconstructions spanning the same time period to assess the degree to which major events in Arctic prehistory were directly impacted by changing climates, as opposed to other factors such as intersocietal interaction and cultural or social processes "internal" to past societies.

D'Andrea, A. Catherine [4] see Nixon-Darcus, Laurie

Dane, Laura [278] see Gustavsen, Jenifer

Daneels, Annick (IIA-UNAM Mexico)

[204] Stone Sculpture in the Lower Cotaxtla Basin: Small Is Significant

The paper will present data on a dozen stone sculptures from the Lower Cotaxtla basin, ranging from plain stelae to complete yokes and figurative statuettes dating from the Preclassic to the Classic Period (800 B.C.-A.D. 1000), most of them unpublished. The relative paucity and modesty of the corpus in this region is contrasted with the much more impressive record of the neighboring Mixtequilla region. I will consider factors as the early inception of looting and local cultural dynamics to evaluate the importance of stone sculpture as part of sociopolitical discourse in early state-level society.

Daniels, James (ASM Affiliates) and Geoffrey Braswell (University of California San Diego)

[138] Sourcing Obsidian from the Southern Belize Sites of Lubaantun and Nim Li Punit Using pXRF

Portable X-ray fluorescence spectrometry (pXRF) was used to analyze 203 obsidian artifacts from the Mayan site of Lubaantun and 612 obsidian artifacts from nearby Nim Li Punit, both located in the South Toledo District of Belize. The elemental spectrum of each assayed artifact was visually compared to the spectra of artifacts with known geological provenience to determine the provenience of the unknown samples. The raw elemental data for each artifact were then calibrated and quantified into parts per million for statistical analyses including group classification using Mahalanobis distances to verify geological provenience. The results demonstrate that the majority of obsidian artifacts from both Lubaantun and Nim Li Punit were manufactured from material from the sources of El Chayal and Ixtepeque. Other less represented sources include Ucareo, Zacualtipan, Otumba, and Pachuca. While each site procured obsidian from the same sources, the spatiotemporal patterns in the distribution of the different sources of obsidian at these sites suggest different obsidian procurement strategies between the two sites. The qualitative assessment of the elemental spectra reveal that the quantification and statistical analysis of data obtained from extremely thin obsidian artifacts can lead to unreliable source assignment.

Daniels, Brian (University of Pennsylvania), Sasha Renninger (University of Pennsylvania) and Richard Leventhal (University of Pennsylvania)

[273] Evaluating the Impact of Archaeological Context on the Antiquities Market: A Case Study

A key question in the debates about antiquities sales is whether objects found prior to 1970 carry a price premium when sold in the art market. Such antiquities are often seen as being more "legitimate" and therefore more valuable, since they entered the market prior to the date of the 1970 UNESCO Convention—the international agreement that is often seen as the ethical benchmark in halting the illicit trade. Although much press attention has been given to the seemingly inflated prices of antiquities with a pre-1970 provenance, scholars like Neil Brodie and Donna Yates have argued recently that there is no

firm evidence to support these claims among high-end sales. Within this paper, we analyze 3,360 Pre-Columbian objects listed for auction at Sotheby's and Christie's between 2000 and 2010. First, we offer a methodology and preliminary findings related to the impact of archaeological context on final sale price across this particular segment of the art market. Second, we find that there is a price differential between the pre- and post-1970 objects within the lower end of the art market.

Darby, Connie [43] see Aragon, Leslie

Darley, Zaida (University of South Florida) and E. Christian Wells (University of South Florida)

[77] *The Price of Paradise: Tourism's Impact on Archaeological Resources in Placencia, Belize*
Since the devastation of Hurricane Iris in 2001, the once sleepy coastal fishing village of Placencia, Belize has reestablished itself as a major tourist destination, complete with resorts, hotels, shops, restaurants, and the like. Many challenges to the cultural and natural environment have accompanied this rapid growth, threatening to erode the very infrastructure that makes tourism possible in the community. One of the greatest threats to emerge is to historical and prehistoric archaeological sites that dot the peninsula and coastline of the surrounding lagoon, which include ancient Maya salt and shell processing sites as well as campsites associated with the arrival of seventeenth-century English Puritans. This study uses GIS with time-sequenced overlays of tourism growth over the past decade to model impacts to these archaeological sites. Based on the analysis, recommendations for urban planning and heritage management are offered.

Darling, J. Andrew [46] see Burger, Rachel

Daron, Steve [77] see Slaughter, Mark

Darras, Véronique (CNRS - University Paris 1 Panthéon-Sorbonne) and Jacques Pelegrin (CNRS-University Paris Ouest Nanterre La Défense)

[254] *Family Making of Prismatic Blades. The Pecked and Ground Platform Preparation at the Beginning of Manufacture Process: A Good Indicator of a Household Organization of Production with Division of Labor*

Obsidian cores with a pecked and ground platform for the production of prismatic pressure blades spread widely during the Postclassic Period in central and western Mesoamerica. This technological innovation could simplify the removal of blades and thus reduce pressure production errors. It also coincides with a "banalisation" of the prismatic blade as an ubiquitous artifact. In the Tarascan area, pecked and ground platform preparation occurs very early in the "chaîne opératoire", before the shaping of the polyhedral core. We suggest that this practice could indicate a division of labor within the family structure.

Darvill, Tim [283] see Evis, Laura

Darwent, Christyann [320] see Brown, Sarah

Daughtrey, Cannon (Statistical Research Inc.), Jesse A. M. Ballenger (SRI) and Rita A. Sulkosky (SRI)

[210] *The Lukeolith: A Newly Described Ground Stone Implement from the Luke Air Force Base Solar-Power-Array Archaeological Data Recovery Project*

The Middle and Late Archaic technologies of the Sonoran Desert are known from sites that occur either on the upper bajadas or in the floodplains. Recent excavations at Luke Air Force Base in the Phoenix Basin of Arizona resulted in the first robust collections from the lower bajada, an expansive landscape characterized by a narrow range of wild plant foods, limited game animals, and little water. Despite these constraints, Archaic period foragers invested heavily in the procurement, transport, and manufacture of formal ground stone technologies. Typical manos, metates, pestles, and mortars are accompanied by a distinctive tool category that does not articulate with other ground stone implements at the site. This poster describes the morphology and wear patterns that define the so-called "lukeolith," formally shaped implements that do not have a functional analog in the Southwest. Preliminary microanalysis suggests these implements may have been used to work soft or pliable materials and alternative explanations are offered citing cross-geographical and cultural comparative examples. Additionally, we present the results

of a geospatial analysis situating the lukeolith within an intrasite context which highlights their spatial and functional relationships with traditional ground stone artifact types.

Daughtrey, Cannon S. [210] see Natoli, Amelia

Davalos, Dolores [47] see Martinez, Marco

Dávalos Navarro, Dolores and Marco Antonio Martínez Galicia

[144] Today's Understanding of Casas Grandes' Architectural Variety

Recent investigations in the Casas Grandes area have led us to a new perspective regarding its architectural variety. In the past, the Paquime construction type was accepted as a norm for other types of pueblo construction inside the region. Now we can find other types outside Paquime; among its closest neighbors. The first one is comprised by Paquime's thick-walled architecture described by Di Peso, the second one is a thin-walled construction type found in several sites inside the core area, like site 231; and the simplest architecture, a third type characterized by really thin walls. The former being found inside plazas, needs minimal construction. Using visual, descriptive and statistical comparisons to divide recently excavated Casas Grandes sites by their architectural differences, we will try to demonstrate the relationship between the three architectural types first described. Also, current chronological data and associated materials help us to point out chronological similarities and the short or long term use of such construction types. As a result, we expect to find out that the region of Casas Grandes had a significant population growth in where the addition of temporal edifications in the sites involved was used in a time period.

Davenport, James (University of New Mexico)

[19] Literal Providers of Food and Drink: Examining Inka Imperial Control through Pottery

The site of Pachacamac on the central coast of Peru was an important ritual and pilgrimage center long before the site came under Inka control. While most of the Inka presence on the central coast was minimal compared to elsewhere in the empire, Pachacamac experienced a strong Inka presence that included the construction of new prominent administrative and ritual centers. While the Inka often used local artisans to reproduce imperial-style material culture in many places they conquered, new characterization data using neutron activation analysis of Inka ceramics from ritual contexts at Pachacamac suggests the importation of serving vessels, such as plates, bowls, and keros. The importation of finely-made ceramic serving vessels in distinctive imperial styles to Pachacamac for use in ritual and feast contexts draws a strong intentional connection between the ceremonies that these vessels are used for and the Inka sponsorship and promulgation of these events.

Davenport, Anna (University of Winchester)

[283] Can the Forensic Archaeologist Ever Be Truly Independent?

There has been a recent explosion of research into cognitive bias within forensic investigations mainly due to the proposed changes in UK legislation. This paper provides an overview of a range of biasing factors that may influence search, location and interpretation of the clandestine depositions within the forensic record. This paper considers the complex nature of decision making and responses to intelligence at the major crime scene. In the UK it is usual for the forensic archaeologist to work closely with a range of experts and as such the archaeologist is used to adapting their forensic strategy in light changing intelligence. This paper briefly examines the relationship with dog handlers within the search and location of clandestine depositions and the relationships with other experts in light of maintaining the independence of the forensic expert. It draws upon cases where contextual information has influenced the interpretations reached by the forensic archaeologist and concludes by examining the impact these potentially biasing factors may have in a courtroom setting in the UK.

Davenport, Bryce [295] see Comer, Douglas

Daver, Guillaume [255] see Lewis, Jason

Davey, Amanda [82] see Scott, Douglas

Davies, Sarah [158] see Metcalfe, Sarah

Davis, Leslie (Paleo-Mountain Archaeology Research)

[114] *Geoarchaeological Evidence for a Pre-Clovis Mammoth Locality near Lindsay, Montana*

Stratigraphic context, radiocarbon dates, and site-formational studies indicate that a nearly complete skeleton of a Columbian mammoth recovered in an upland north of the Yellowstone River, in eastern Montana, is associated with pre-Clovis human activity. Stratigraphically, the mammoth remains were embedded in silts and below a buried soil A horizon. The buried A horizon can be correlated with a regional paleosol dated to the Pleistocene-Holocene transition. Radiocarbon measurements indicate the mammoth is older than 12,000 radiocarbon years before present (RCYBP) and possibly closer to 12,300-500 RCYBP, thus indicating it dates to before Clovis. Site-formational evidence includes bone damage, spatial arrangement, and cobble-sized rocks in the upland silt and associated with the skeleton. Bone damage includes cutmarks on rib and calcaneous bones. Human activity is suggested by green bone damage of a humerus, possibly to enable marrow extraction. Stacking and rearrangement of other skeletal parts also suggest human activity. Eight quartzite fragments underlie or lie beside parts of the skeleton. Geoarchaeological evidence, including the stratigraphic context, radiocarbon age, marks on bones, green bone damage, stacking, and patterned quartzite rock distribution, suggests pre-Clovis human involvement with the Lindsay mammoth.

[24] *Discussant*

Davis, Loren (Oregon State University)

[24] *Research Progress at the Cooper's Ferry Site, Idaho*

Excavations conducted by Keystone archaeological research fund supported archaeologists At the Cooper's very sites of Western Idaho since 2009 have largely progressed through the upper half of the stratigraphic record in a large block excavation termed Area A. In 2012, additional deeper excavation units were opened in an effort to explore the stratigraphic record on the site's eastern half where previous archaeological excavations were conducted in the 1960s and 1970s (designated Area B). To date, excavations in Area A have revealed cultural components dating between about 8452 to 9140 radiocarbon years before present. Excavations in Area B since 2012 have accessed deeper aeolian loess and alluvial deposits containing intact archaeological components that include several pit features and a larger feature that may represent a semi-subterranean house foundation. All of these features have produced early Western Stemmed Tradition projectile point variants. Forthcoming radiocarbon dates will clarify the age of these earlier Area B cultural components.

[24] *Chair*

Davis, Alison R. [25] see Mannheim, Bruce

Davis, Mary (UW-Madison)

[35] *Stone Blades in the Neighborhoods of Harappa, Pakistan*

Stone tools are often overlooked in the archaeology of complex societies with metallurgical technologies; however there are many different aspects of information that can be gleaned from these datasets. This paper examines lithics of the site of Harappa, Pakistan (3200-1900 B.C.E.), which was a sprawling and dense urban center and is the type-site of the Bronze Age Indus or Harappan Civilization.

Despite the relatively widespread availability of metal tools, stone tools at Harappa are the second largest material class after ceramics. Prismatic blade tools were used in a diverse variety of crafting and domestic activities and in many different social and economic contexts. A functionally aimed typology and an overview of the lithic industry will be provided and the role stone tools played in the economy will be highlighted. The intra-site spatial relationships and distributions of these tools from excavated contexts in the city provide social and political insights into the variable nature of administrative and social subdivisions.

[35] *Chair*

Davis, Katharine (Ursinus College)

[38] *House for the Living, Home for the Dead: Mortuary Activity in the Muru Ut Pata Area, Tiwanaku*

In the latter part of the Middle Horizon (A.D. 800-1000), previously unoccupied areas around the

megalithic ceremonial core of Tiwanaku came under settlement. Whether as a result of a reorganization of space within the core, displacing previous residential activity and forcing new construction further away from the monuments, or as a result of the influx of new residents drawn to the site of Tiwanaku from the surrounding areas by the variety of social, economic, and ritual interactional opportunities, these newly settled areas became the loci of quotidian activity. Within this dense center of population, families constructed their physical shelters as they built their interdependent social networks; and into the foundations and floors and patio spaces of their built environment they incorporated their dead. Residential groups authenticated their claims to these new spaces by integrating their deceased members into their living spaces. This paper will examine burial practices as social statements by the living by focusing on the construction of the burial feature itself (burial goods, body positioning, tomb style, and location within the residential structure) and also examine burials in terms of the individual bodies there contained (sex, age, presence of caries, and cranial vault modification).

Davis, Christopher

- [90] *Pleistocene Amazonian Archaeoastronomy as a Potential Source for South American Ethnoastronomy Traditions*

Several rock paintings aligned to the sky themes they depict survive as evidence of an archaeoastronomy tradition that developed in the mountains of Monte Alegre on the Amazon River in Pará, Brazil. My excavations unearthed artifacts, pigment, and a painted stone in stratigraphic layers that were radiocarbon dated to 13,000 cal yr B.P., an age consistent with Dr. Anna Roosevelt's previous research at Caverna da Pedra Pintada nearly half a kilometer away. I incorporate gigapan robotic photography, correlation D-stretch image analysis, and astronomy software to reconstruct the ancient skies in relation to the art, revealing that the mountains provided the elevation for Paleoindian artists to orient sunset positions and other sky phenomena to the horizon and paint them at the spot of observation, resulting in a record of the annual solar cycle on sandstone. This allowed for seasonal rain and animal variations to be associated with periodic celestial sightings. A grid-like tally image might reflect the culmination of this knowledge into one of the earliest potential calendars in the Americas, hinting toward this region as a possible source for later South American ethnoastronomy traditions, and perhaps explaining why rainforest animals (monkeys, anacondas, and jaguars) appear in astronomy-related Andean iconography.

Davis, Aaron (California State University, Northridge)

- [174] *Practical and Symbolic Functions of Chacoan Roadways in the Sand Canyon/Goodman Point Region*

Modern culture has a strong tendency to suggest that roads are strictly for movement, for getting people from point A, to point B, but this is a limited perspective. Roads serve not only as "structures" of movement but also as constructed landscapes, landmarks symbolizing different meanings to those who travel and experience them. These symbolic functions, however, are created and maintained through the practical functions of these roads themselves. For the purpose of this research, practical function and symbolic function are terms used to differentiate intended uses of roads from the meanings they represent. Practical functions can include facilitation of movement, political expansion, trade, and other economic activity, and religious ceremonies. Symbolic functions include the role of roads as tangible evidence of ideas, relationships, connectivity and even cosmological meanings which are established through their use. This study is set in the Sand Canyon/Goodman Point region of Southwest Colorado, where three Chacoan era pueblos - Casa Negra, Goodman Point, and Shields Pueblo - are interconnected by numerous roads and trails. Further evaluation and GIS analysis allow the various practical and symbolic characteristics of this network to be better understood.

- [174] *Chair*

Davis, Jera (University of Alabama)

- [252] *Into the Great Wide Open: Plazas and Polity in the Mississippian South*

Identity, memory, and plazas were inextricably intertwined in the Early Mississippian societies of the ancient American South. Contrary to earlier portrayals of Mississippian plazas as unaltered, empty space delineated by earthen mounds, they are now understood as layered constructions encapsulating much about site histories. Because their massive scale and central placement necessitated the destruction or burial of pre-existing community plans, including many of the public contexts where differences in identity and status were first engaged, Mississippian plazas provided a monumental tabula rasa where interest groups could embrace or reject conventional practices within a novel frame of reference. This paper uses landscape-scale geophysical data from Moundville, one of the largest Mississippian centers, to explore the plaza's fundamental role in the site-wide reorganization of space and architecture that coincided with

polity formation.

Davis, Terressa and Simon Mackenzie (University of Glasgow)

[273] Temple Looting in Cambodia: Mapping the Networks

Empirical studies of the international market in looted antiquities have tended to focus on the source end, through interviews with looters, or the market end, through interviews with dealers, collectors and museums. Trafficking, in the sense of the movement of illicit artifacts across borders from source to market, has until now been an empirical black hole. Here we present the first empirical study of a statue trafficking network, using data gathered through oral history interview methods in an ethnographic criminology fieldwork project in Cambodia and Thailand. The data begin to answer many of the pressing but unresolved questions in academic studies of antiquities trafficking, such as whether organized crime is involved (yes), whether the traffic in looted objects overlaps with the insertion of fakes into the market (yes), and how many stages (surprisingly few) there are in this type of trafficking network between looting at source and the placing of objects for public sale in internationally respected venues.

Dawson, Helen (Freie Universität, Berlin)

[181] Sense of Place and Identity in the Prehistoric Central Mediterranean Islands

This paper will focus on the relations between place and identity in the context of Sicily's minor islands during the Neolithic and Bronze Age. Natural features contribute to an island's distinctiveness or "sense of place". Insularity may result in cultural isolation; nonetheless, over time, prehistoric island communities established extensive networks of interaction, developing distinct identities and constructing meaningful topographies. Thus, from a theoretical and practical perspective, islands and their multiple geographical and cultural dimensions offer excellent case studies for analyzing place-making and identities, through combined quantitative and qualitative spatial analysis. GIS and phenomenological/experiential fieldwork, traditionally separate methodologies, provide suitably complementary means for investigating the setting, location, and orientation of domestic, funerary, ritual, and monumental sites within the islands. These features are likely to reflect the islanders' perceptions of their island worlds, their relations to the mainland, and to the sea. Comparisons between the islands can shed light on issues of insularity, space-related identity, liminality, physical vs. symbolic boundaries, place-making and connectivity. Ultimately, these questions can lead to a deeper understanding of complex cultural dynamics in the prehistoric Mediterranean.

Day, Peter (University of Sheffield), Eleftheria Kardamaki (University of Heidelberg), Aikaterini Demakopoulou, Joseph Maran (University of Heidelberg) and Alkestis Papadimitriou (Greek Ministry of Culture)

[5] Transport Jars and Commodity Exchange in the Mycenaean World: Tiryns and Midea

Transport Stirrup Jars are important as they moved as amphorae in large quantities between the 'Minoan' and 'Mycenaean' worlds and because they sometimes feature inscriptions in Linear B, reflecting elite control of production and consumption in Knossos and Chania in Crete, as well as in a variety of mainland 'palaces.' This makes the vessels key to our understanding of palatial Bronze Age economies, their modes of control, their collapse and successors. Recent analyses published from "Minoan" Kommos on the southern coast of Crete have shown that in addition to TSJs, Canaanite Jars from the Levantine coast were transported to Crete. This evidence of large scale commodity exchange has encouraged us to look to the Mycenaean world and specifically at the fortified citadels of Tiryns and Midea. There we have analyzed by thin section petrography a large number of TSJs and a range of Canaanite Jars, which are known to have transported commodities such as resins and oils. Unusually, these vessels are found in LHIIIB2 contexts, in destruction deposits at the twilight of the Mycenaean Palaces. They reflect an intense, unexpected interaction between the Mycenaean world, what is thought of as a 'post-palatial' Crete, and the wider Eastern Mediterranean.

Day, Peter M. [332] see Gilstrap, William

De Anda Alaniz, Guillermo (Universidad Nacional Autonoma De Mexico) and Jeremy Coltman (California State University Los Angeles)

[33] Black Hole Places: Cenotes Symbolism in Maya Landscape

The program of Yucatecan cenote investigation directed by the senior author has documented extensive modifications of these subterranean environments by the ancient Maya. These discoveries have

revealed as no previous investigations, the tremendous ritual significance of cenotes in the ritual life of the ancient Maya of northern Yucatan. The popularity of the term “cenote” has grown throughout the twentieth century and unfortunately obscures the relationship of this work to the larger issue of the use of subterranean spaces by the ancient Maya. Cenotes appear to carry the same meaning as caves in Maya iconography where both generally represent cavities within the earth. Indeed, the name Chichen Itza refers to the Sacred Cenote at the site but the name uses the term ch'e'en which generally refers to a cave rather than as dzonot, from which the term cenote is derived. One depiction of the cenote/cave in ancient Maya iconography is the skeletal centipede maw. The analysis of the ancient iconographic motif in light of recent investigations allows us to gain a better appreciation of the ancient significance of these geological features for the ancient Maya.

De Carteret, Alyce**[227] *The Red Shift: Insights into Polity Style from the Classic Maya Site of El Zoz, Guatemala***

Recent research has indicated that some Classic Maya polities (e.g., Piedras Negras) became associated with particular styles of ceramic vessels. This paper will investigate the phenomenon of polity-wide pottery, here termed “polity style,” in the Maya lowlands during the Classic period (ca. 250 – 900 CE). Building upon existing anthropological models of elite consumption as well as ethnoarchaeological observations on vessel design replacement, this investigation will provide a model for the sociopolitical circumstances under which new aesthetics are adopted and why certain styles may be chosen over others. As its case study, this paper will present ceramic evidence from the site of El Zoz, located just to the west of Tikal in the department of Petén, Guatemala. Over the course of the Early Classic period (ca. 250 – 600 CE), the site exhibited a marked shift toward the production and consumption of red ceramics, indicating—as this paper will suggest—an attempt by some El Zoz elites to evoke mytho-historic ties to their landscape in a period of political vulnerability.

[3] Discussant**[3] Chair**

De Carteret, Alyce [3] see Carter, Nicholas

De Francesco, Anna Maria (University of Calabria, Department of Biology, Ecology, and Earth Sciences), Marco Bocci (University of Calabria, Department of Biology, Ecology, and Earth Sciences) and Gino M. Crisci (University of Calabria, Department of Biology, Ecology, and Earth Sciences)**[249] *Archaeological Obsidian Provenance of Several Italian Neolithic Sites Using a Non-Destructive XRF Method***

The provenance of 1.400 archaeological obsidian fragments was determined using the non-destructive XRF (X-ray Fluorescence) analytical method, based on the secondary X-ray intensity (Crisci et al., 1994). To test this methodology, a comparison with the classical XRF method on powders (major elements and selected trace elements concentration as Nb, Y, Zr, Rb and Sr), was preliminarily carried out on several obsidian samples representative of all the geological outcrops of Mediterranean Area, e.g. Lipari, Pantelleria, Sardinia, Palmarola, Hungary and the Greek islands of Melos and Giali (De Francesco et al. 2008). The provenance of the entire archaeological obsidians is determined by comparing their composition with that of the quarry obsidians in the whole Mediterranean area. Just five chemical elements (the intensity ratios of Nb, Y, Zr, Rb and Sr) are sufficient to characterize the different places of origin because they are particularly indicative of the genetic processes which produced obsidian. With the non-destructive XRF methodology has been analyzed about 1.400 archaeological obsidian fragments, coming numerous Italian Neolithic sites of the Tuscan archipelago, Tuscany, Abruzzo, Lazio, Campania and Marche region and also from Corsica island. The provenance of the 96% of the archaeological obsidians was successful and indubitably determined.

De Gruchy, Michelle (Durham University)**[257] *Using Routes as a Source of Information to Better Understand a Culture***

The ability to quantitatively compare constructed route models against preserved route ways opens up routes as a source of information about past societies. Modelling individual variables and quantifying their similarity against preserved routeways measures the relative importance of that variable in route choice decisions, especially in cases like the hollow ways of Northern Mesopotamia where the routes are the result of numerous journeys compacting and eroding the ground beneath, and are not formal planned and paved roads. After introducing the methodology, an overview of results of this analysis from Northern

Mesopotamia will be presented, which highlight the significance of considering cultural, in addition to physical, variables in understanding route choice.

de Guevara, Sara Ladrón [62] see Sauza, Maximiliano

De La Cova, Carlina (University of South Carolina)

[126] Controlled Lives, Impoverished Deaths: The Biological Stresses of Institutionalization

Anthropologists have used cadaver samples, such as the Cobb, Hamann-Todd, and Terry collections, for nearly a century to answer questions regarding biological differences and generate forensic techniques to aid in human identification. Few have asked who the individuals that comprise these collections were. My research, focused on answering this question, has used extensive historical documentation to reveal that many individuals in the Terry Collection were of low socioeconomic status and were institutionalized in city and state mental hospitals or long-term care infirmaries. This presentation examines patterns of trauma in a sample of African Americans and Euro-Americans ($n = 621$) from the Terry Collection to determine if there are differences in fracture prevalence and injury location amongst individuals that were institutionalized versus those that were not. Results indicated that significant differences were present in regard to race, sex, and fractured bones, with institutionalized Euro-American females having higher rates of arm and hip fractures. These findings will be discussed within a historical framework to demonstrate how cultural disease ideologies, structural violence, and disability within Missouri's state-run early to-mid- 20th-century mental institutions does become embodied in skeletal patterns of injury and treatment at death.

De La Garza, Mary [77] see Doershuk, John

De La Peña, Paloma

[255] Bipolar Knapping in Howiesons Poort: The Case of Grey Sand (Sibudu Cave, KwaZulu-Natal, South Africa)

This paper analyzes the quartz knapping methods in Howiesons Poort and demonstrate how bipolar knapping was a recurring strategy which constituted a microlithism and recycling solution. Therefore, in this communication, I define my concept of microlithic technology, I present the technological results documented in Grey Sand for bipolar knapping (and its distinction from freehand knapping) and, finally, I outline the implications of this technological choice

de la Torre, Ignacio [255] see Byrne, Fergus

De Leeuwe, Roosje (Netherlands Forensic Institute)

[283] A Case Study from The Netherlands and an Update on European Trends and Perspectives in Forensic Archaeology

Forensic archaeology, as a forensic science, seems to be increasing and becoming established across Europe. Although the definition of forensic archaeology differs across European countries, it is usually defined as 'the application of archaeological principles, techniques and methodologies in a legal context'. A comparison of forensic archaeological practice across the world (Forensic archaeology - a global perspective; Groen, Marquez-Grant and Janaway (eds.), in prep.) summarizes the similarities and differences in the ways forensic archaeology is being perceived and practiced. An additional development is the establishment of a 'Forensic Archaeology Project Group' within the European Network of Forensic Science Institutes (ENFSI). The central aim: to introduce the forensic archaeological principles, techniques and methodologies to police crime scenes across Europe. To elaborate on methods used by forensic archaeologists in The Netherlands, a case study involving a recent clandestine burial is presented. The investigation consisted of the systematic excavation, documentation and recovery of the burial. Documentation was carried out with a Total Station, combined in GIS with 3D-scanner images and photogrammetry. The results provided a better understanding of the activities surrounding the time of burial and were used as evidence during the subsequent trial to convict the suspect.

De Leon, Jason [328] see Stewart, Haeden

De León, Jason [230] see Forringer-Beal, Anna

De León , Jason [230] see Hall, Katherine

De Lucia, Kristin (University of Illinois Urbana-Champaign)

- [110] *The Vernacular Architecture of Pre-Aztec Mexico: Household Organization and Social Construction in Early Postclassic Xaltocan, Mexico*

During the Early Postclassic (A.D. 900-1250) period, Xaltocan, Mexico, was a newly founded and rapidly growing community with an economy based on the exploitation of lake resources. Due to excellent preservation and stratified archaeological deposits, it is possible to observe uses of and renovations of household space over several generations. The study of the construction, use, and organization of vernacular architecture in Xaltocan throughout this period of rapid development lends insight into the reproduction of social identities and the changing nature of household and gender relations through time. I argue that in Early Postclassic Xaltocan, houses were seen as living entities where ordinary people and structures were mutually constituted as part of contextually situated social practices.

De Nigris, Mariana [206] see Belardi, Juan

De Smet, Timothy, Suzanne L. Eckert (Texas A&M University), Deborah L. Huntley (Archaeology Southwest), Kathryn J. Putsavage (University of Colorado) and Daniel R. Welch (Texas A&M University)

- [43] *Geophysical and Archaeological Investigations of Depressions at Goat Springs Pueblo, New Mexico (LA285)*

Six pit depressions were previously recorded at Goat Springs Pueblo, New Mexico (LA285), a multi-component site spanning the Rio Grande glaze ware period (AD 1300-1680). These depressions had been variously interpreted as pit-houses, borrow pits, and/or kivas. In 2011 and 2012 electromagnetic induction surveys were conducted over the three largest depressions in order to determine whether the pits were natural or cultural in origin. A circular low conductivity anomaly was observed in one of the depressions, which we interpreted as a walled kiva. In order to test this a trench was excavated across the western side of the anomaly by the 2013 Texas A&M University Field School. The ground-truthing in this depression definitively showed it to be a masonry walled kiva. Combined, the geophysical and geoarchaeological data from this kiva provides information on how the kiva was constructed, how it was oriented, and the damage done by a 1960 archaeology project. Architectural and ceramic evidence recovered from the kiva provide chronological information that associates it with the occupation of the southern room block.

de Smet, Timothy [169] see Everett, Mark

De Vega, Hortensia (CINAH-MORELOS) and Emiliano Melgar (Museo Del Templo Mayor-INAH)

- [123] *Oxtankah: A Seafaring Town*

The prehispanic Mayan site of Oxtankah is located in the west coast of the Bay of Chetumal, 11 km northward from the border of Mexico with Belize. The chronology of occupation of this settlement began from the Late Preclassic (300-150 B.C.) and finished in the Terminal Classic (A.D. 800-900). In this paper, we will present the history and development of the Maya in this region, the architectural compounds and structures of Oxtankah, and the funerary practices employed by the inhabitants of this settlement. Also, we will show some offerings and garments inside tombs that were related with the representation or personification of certain gods, like Chak-xib-Chaahk, or the emulation of animals, like the xihua, the highly appreciated silver fish found at the site.

De Vore, Steven and Lewis Somers (Geoscan Research USA)

- [157] *RetroSpecion on ProSpecion: English and American Views from across the Pond*

1893 - Pitt Rivers "thumped" the ground and an early English form of geophysical survey was first recognized. Following World War II, archaeologists in England capitalized on the technologies from the war to develop instruments and techniques for the identification of buried archaeological resources. From surplus equipment and hand-made instruments, the application of geophysical techniques to archaeological prospection progressed slowly at first, but gained increasing acceptance with the development of newer instruments capable of increased rates of data sampling, storage and processing, along with the advent of solid-state electronics and computers. While European archaeologists took the lead in the early developments and continued such developments to the present, American archaeologists were slower in acceptance. Although the investigations were often successful, their

potential was not fully appreciated until the National Park Service began offering a workshop on the techniques in the 1990s to the archaeological community. Our paper offers an informal look back at the these times, instruments, methods, personalities and a few personal anecdotes.

Deal, Michael (Memorial University of Newfoundland)**[261] Research on Ceramic Vessel Function in the Maritime Provinces of Canada (1984-2014)**

Ceramic vessels are a hallmark of the Woodland Period in the far Northeast. Archaeologists in the region have used ceramics primarily as a tool for the relative dating of archaeological contexts. However, there have been a number of attempts over the last three decades to develop techniques for the identification of vessel function. These studies have focused on formal comparisons and the analysis of both adhering and absorbed residues. This paper begins with a flashback to the early residue studies of the late-1980s, involving gas chromatography/mass spectrometry (GS/MS) and stable isotope (SI) analyses, and concludes with the preliminary results of an ongoing project combining paleoethnobotany, phytolith and starch research, and residue analyses.

Dean, Emily (Southern Utah University) and Brigit Eastep (Southern Utah University)**[328] Looking for Traces of "Leave No Trace": Archaeological Investigations of the "Leave No Trace" Land Ethic in the Western United States**

We present the results of an archaeological study examining the impact of the "Leave No Trace" land ethic on public lands in the western United States. "Leave No Trace" emerged in the U.S.A. in the 1970s. By 1990 the United States Forest Service and the National Outdoor Training Program had created a national educational program promoting the principal tenets of "Leave No Trace," which include disposing of waste properly, leaving what you find (including archaeological remains), and minimizing campfire impacts. Today, this system of ethics is widespread throughout the United States. It is taught in scouting troops, outdoor recreation classes, posted on trailhead signs, and printed in federal publications and brochures. In 2013 we conducted surveys on federal lands in Utah and Nevada, focusing on backpacking routes and campsites that could be characterized as pre- or post-implementation of "Leave No Trace." Although there is an extensive literature on the value of "Leave No Trace," there have been few studies that collect on-the-ground data to assess its efficacy. Our approach, combining the fields of archaeology and outdoor recreation and education, concretely demonstrates the impact of "Leave No Trace" on the conservation and preservation of public lands.

DeBlasis, Paulo (Museu de Arqueologia-USP), Andreas Kneip (University of Tocantins/Brazil) and Deisi Farias (UNISUL/Brazil)**[129] Old Traditions and New Kids on the Block: Enduring Patterns of Funerary Architecture in the Southern Brazilian Shores**

Located in a context that, from both a geographical and a historical perspective, situates it in between the long-lived sambaqui (shellmound) and the latecoming Southern Je cultures from the southern Brazilian coast, Galheta IV is a funerary site bearing characteristics from both cultures, thus highlighting the fluidity of the contact between them. If, on the one hand, it bears peculiar elements related to the Je, it also is harmoniously inserted in a landscape long dominated by the presence of the sambaquis.

DeBoer, Warren (Queens College CUNY)**[281] Pots for Tots II: The Ceramic Art of Shipibo and Mimbres Children**

Given renewed interest in the mechanisms of cultural transmission, it is surprising that so little information is available concerning the acquisition of culturally-specific art styles in non-Western, non-school settings. This is particularly so in the case of geometric design styles, as opposed to more commonly studied representational art. This paper compares designs painted on eleventh to twelfth century Mimbres pottery that Patricia Crown has attributed to child artists with children's ceramic art of the contemporary Shipibo of the Peruvian Amazon. The maturational mastery of angle, layout, composition, symmetry, and other design features as well as the various teaching aids provided by adult artists are outlined and compared. Although conforming to selected aspects of the universal developmental stages proposed by Piaget and others, the aesthetic gestalt approach of Kellogg, or the problem-solving perspective favored by Goodnow, the Shipibo and Mimbres cases appear to better illustrate the seamless entanglement of ontogenetic predisposition and cultural environment and, in this sense, contribute to the ongoing dissolution of nature-nurture polarities.

Dedrick, Maia (University of North Carolina at Chapel Hill) and Patricia McAnany (University of

North Carolina at Chapel Hill)**[31] *The Distributed Household: A Study of Plant and Mollusk Data from K'axob, Belize***

One impressive aspect of Norman Hammond's work at Cuello was his commitment to archaeobotanical investigation. The flotation program at Cuello was extensive and among the first of its kind in the Maya area. From this study, we gained an immensely improved inventory of plants available to residents of Cuello based on carbonized seeds. Plant and faunal remains were integrated to examine economic and environmental changes through time. This paper builds on research at Cuello through the examination of plant and mollusk data from Formative- through Classic-period K'axob. We examine two structures at K'axob that have been considered the remains of adjacent households. In the study of ancient Maya sites, scholars often use disparities between alleged dwellings to argue for intrasite hierarchy. We examine the relationship between a larger and smaller structure, using plant and mollusk data to analyze changes in the organization of activity areas through time. The results counter what might be expected based on prevailing ideas of intrasite hierarchy using platform size and configuration. We suggest instead that, by the Classic period, households were distributed across more than one structure. Finally, we explore the implications of the data for changes in cuisine and social interaction through time.

Dedrick, Maia [57] see McAnany, Patricia

deFrance, Susan [53] see Wylde, Michael

DeGayner, Jacob [79] see Huckell, Bruce

Deiana, Rita [157] see Strapazzon, Guglielmo

Deibel, Corinne [19] see Deibel, Michael

**Deibel, Michael (Earlham College), William Whitehead (University of Wisconsin- Fond du Lac),
Corinne Deibel (Earlham College) and Emily Stovel (Ripon College)****[19] *Archaeometry in San Pedro de Atacama: Using hhXRF and hhFTIR in the Study of Obsidian and Ceramics***

Obsidian and ceramic studies in the San Pedro de Atacama (SPA) area of northern Chile have the potential to supplement and expand on studies of trade, resource procurement, and tool manufacture. Ceramic studies have been the basis for many works, however, no large-scale scholarly focus on SPA obsidian artifacts exists, making this important resource under-represented in the literature and not fully understood in comparison with textiles, organic artifacts, and ceramics. Our recent study analyzed over 1000 obsidian artifacts collected from the surface of the formative archaeological site, Coyo Aldea, and the ayllu of Solor, using handheld X-ray fluorescence (hhXRF) and handheld Fourier Transform Infrared spectroscopy (hhFTIR). A large collection of ceramics from Coyo Aldea were also analyzed the same methods. We use these results to explore how local obsidian resources were utilized in the past, focusing primarily on changing use of raw materials and projectile point morphology as a proxy for time. We will present a preliminary methodology for comparing these patterns to information from obsidian and ceramic studies using hhXRF and FTIR.

Dekle, Victoria (University of Kentucky)**[308] *Artistic Style and Identity among the Late Archaic Peoples of the Southern Atlantic Coast***

This paper presents the proposed questions and preliminary results of an ongoing research project of artistic expression in material culture during the Late Archaic period through the southern Atlantic Coastal Plain of the southeastern United States. The material cultures of the Stallings, Thoms Creek, Orange and other archaeologically defined cultures of the area have been unevenly documented across archaeological sites and research agenda. This project approaches the material culture of the Late Archaic context through structural and post-structural analyses connected by the complex and dynamic concept of art.

Delher, Carol [10] see Dalpra, Cody

Delle, James

[118] *The Contradictions of Slavery in Colonial Jamaica's Plantation Mode of Production*

A primary tenet of Marxist historical analysis is the contention that society simultaneously produces and is produced by the relationships people have with each other and the material world in which they live. This material world, expressed in the archaeological record, can be interpreted to understand the nature of past social and material realities produced under an operative mode of production. Colonial Jamaica was shaped by a variant of the capitalist mode of production, the Plantation Mode of Production. Under this mode the relations of production were defined by chattel slavery, a condition that objectifies people to define them as exchangeable components of the means of production. Yet Jamaica's mode of production developed a critical contradiction between the organization of labor for local production, in which enslaved workers controlled the products of their labor and the mechanisms of exchange, and that for export production, from which they were completely alienated from those products and mechanisms. This paper examines the dialectical nature of this contradiction in the Plantation Mode of Production and its effects on the development of social realities through the archaeological analysis of Marshall's Pen, an early 19th century coffee plantation.

Dello-Russo, Robert (Office of Archaeological Studies / Museum of New Mexico) and Vance Holliday (University of Arizona / Depts. of Anthropology & Geology)**[24] *Paleoindians in Socorro County: How the Cramer's Helped Facilitate 10 Years of Research Collaboration in West-Central New Mexico***

Many of my first 20 years of archaeological research occurred in Socorro County, New Mexico and, by the early years of the new century, I had finally managed, with some funding from the New Mexico Historic Preservation Division, to undertake pilot research efforts at the deep rock shelter site known as Lemitar Shelter. This site, as it turned out, was the location of the first archaeological excavations undertaken by C. Vance Haynes in the early 1950s. By turning to him for background information, we began a fruitful collaboration which expanded to include Vance Holliday at the University of Arizona and, through the Argonaut Archaeological Research Fund (AARF), to include Joe and Ruth Cramer. Our AARF-funded work at Lemitar Shelter has been followed by interdisciplinary research, since 2008, at the Water Canyon site. This research is still on-going and it is abundantly clear that funding from the Cramers over these years has helped establish the Water Canyon site as one of the most significant, multi-component Paleoindian sites west of the Pecos River.

Delvigne, Vincent [299] see Wragg Sykes, Rebecca

DeMaio, Justin (University of Nevada, Las Vegas)**[32] *Investigating Lithic Learning Frameworks at the Harris Site***

Utilitarian technology is often studied to understand what specific functions and activities these items represent in a past population's daily life. However, it is important not to forget that technology manufacture, use, and discard are embedded in a social context. Flintknapping is a skill that requires close instruction and training so that the desired outcome can be achieved. This training requires daily mentoring from other individuals in the community, many times within one's own family. These daily interactions create learning frameworks through which craft knowledge is transmitted. Technological style and domestic processing activities can be used as an indicator of social identity, therefore enabling these learning frameworks to be traced. The Harris Site, a Mimbres Mogollon community, has evidence of corporate group organization beginning in the Late Pithouse period (A.D. 500-1000). This is supported by clusters of pithouses sharing similar household traits and extramural areas. The knowledge of craft manufacture and daily tasks transmitted through corporate groups may result in different technological styles of material goods, especially in domestic contexts. This research investigates if learning frameworks exist within these clusters of households by examining the lithic artifacts recovered from the contexts of these pithouses.

DeMaio, Joanne**[327] *The Adair Site: Ouachita River Valley Relations through Ceramic Analysis***

The Adair site (3GA1) is a Northern Caddo site located in the Upper Ouachita River Valley. The site, located on a terrace overlooking the northern fork of the Ouachita River, was composed of one 3-meter high triangular pyramidal mound, at least two other low mounds, borrow pits, structures, middens, and cemeteries. Although it has long been considered an important elite site, due to that it is the only mound complex in the area, little is known about the people who once lived there. The site was excavated by the University of Arkansas Museum from 1929-1932 and again from 1938-1939, but little information from the

excavations still exist. This study looks at the whole vessels that were excavated from the site. The vessels from Adair were analyzed and compared to sites in surrounding areas, the Standridge Site (3MN53), the Poole Site (3GA3), and the Hardman site (3CL419). By looking at all the collections concurrently, a hypothesis about the people who once lived at Adair, and how they interacted with the people around them was formulated. This study was able to provide insight into settlement systems, social influences, and societal hierarchy that was apparent in the Upper Ouachita River Valley.

Demakopoulou, Aikaterini [5] see Day, Peter

Demarest, Arthur (Vanderbilt University)

[128] *Boundaries and Networks of Interaction on the Highland/Lowland “Frontier” of Classic Maya Civilization: Evidence and Interpretations from Cancuen and the Verapaz Highland Region*

For 13 seasons the Cancuen Regional Archaeological Project has been investigating the zone of direct interface between the southwestern Peten lowlands and the Maya southern highlands, ecologically and geologically dramatically contrasting zones. Explorations of the Maya lowland southern frontier port and gateway center of Cancuen have discovered much evidence of intensive economic exchange with the piedmont and highlands to the south – both long distance and regional, and of both exotics and commodities. Meanwhile, project excavations in nearby highland Verapaz sites, just south of Cancuen, have recovered strikingly different material culture with minimal evidence of lowland Classic Maya influence. In contrast, within the Cancuen epicenter itself, highland style ballcourts, cave shrines, and ceramics suggest eighth century adoption of aspects of highland ideology and ritual, perhaps as elements of elite strategy. This interregional boundary pattern contradicts intuitive and traditional (and most “World System”) conceptions of interaction between highly complex state societies and less complex neighbors. However, recent more sophisticated models view borders or boundaries as dynamic zones of networks of interaction between individual or group agents. Such networks are posited for the Cancuen region, directed by elites with specific, identifiable, economic and political agendas.

[128] Chair

Demarte, Pete (Trent University), Gyles Iannone (Trent University), Scott Macrae (University of Florida) and Carmen McCane (University of Cincinnati)

[302] *Ancient Maya Settlement Studies in the North Vaca Plateau, Belize*

Although numerous archaeological investigations focusing on ancient Maya settlement patterns have fostered considerable insights and knowledge, important questions remain regarding the circumstances in which these settlements originated, interacted, developed, and were ultimately abandoned. Exploring the configuration and growth of individual settlement units and their dynamic involvement and influence within the greater settlement continuum over time is essential to improving our knowledge of ancient Maya sociopolitical and socioeconomic interactions, human-environment adaptive strategies, and the circumstances surrounding the Classic period “collapse”. The Social Archaeology Research Program has been conducting multi-scalar settlement studies within the North Vaca Plateau of west-central Belize for several years. One such study has incorporated the analysis of three different settlement zones including the epicenter of Waybil, a minor center, its peripheral settlement units, as well as various settlement units located within the nearby Contreras Valley. In doing so, the project has accumulated large amounts of data pertaining to several levels or scales within the greater settlement continuum. These investigations have resulted in the collection of valuable data that is both diachronic and diverse in nature providing information regarding the development and patterning of ancient Maya settlement within the Vaca Plateau micro-region.

Demarte, Pete [335] see Macrae, Scott

Dempsey, Erin (National Park Service, Midwest Archaeological Center) and Rolfe Mandel (Kansas Geological Survey)

[24] *Use of Geoscientific Methods in the Search for Evidence of the First Americans in the Great Plains and Midwest: Lessons Learned through the Odyssey Geoarchaeological Research Program*

The Cramer endowments have provided considerable support for using geoscientific methods in the search for the material remains of the first Americans. Investigations at sites in the Great Plains and Midwest, including Kanorado and Coffey in Kansas and Big Eddy in Missouri have demonstrated that building landscape-level models of geologic preservation potentials is a critical component of that search.

This approach has proven exceptionally useful in the Ozarks of southeast Missouri where decades of research in the Current River valley have demonstrated the complexity of the archaeological record. Patterns of landform use through the history of human occupation are elusive in this part of North America, a problem mostly attributed to the dynamic nature of Ozark streams, and the Current River is no exception. With support from the Odyssey Archaeological Research Fund established by the Cramers at the University of Kansas, a research program was undertaken to determine the numerical chronology and soil-stratigraphy of alluvial landform sediment assemblages (LSAs) in the Current River basin. From these data, a landscape-based predictive model was developed to target LSAs that may harbor Paleoindian and earlier cultural deposits.

DeMuth, R. Carl [81] see Noack Myers, Kelsey

DeMuth, R. Carl (Indiana University - Bloomington), Kelsey Noack Myers (Indiana University - Bloomington), Thad Bisset (University of Tennessee - Knoxville), David G. Anderson (University of Tennessee - Knoxville) and Joshua J. Wells (Indiana University - Southbend)

[81] Examining DINAA's potential to reframe our archaeological vocabulary

State Historic Preservation Offices (SHPOs) each maintain their own independent archaeological site databases. This can result in states utilizing different language to describe similar sites, imposing modern political boundaries on our understanding of the past. This poster examines how archaeological vocabulary is implemented across state lines, and explores how a supplementary structure - such as the Digital Index of North American Archaeology (DINAA) – can be used to help interoperate divergent systems. DINAA's multi-state approach offers North American archaeology a chance to develop a more standardized vocabulary that can evolve nimbly with user input, but that interoperates with legacy terms so that professionals can recognize and query concepts that relate to those in their local terminologies. Because it has the potential to both 'translate' our past work and update our terminological framework, SHPO databases can be better interoperated across state lines with derivative benefits in multi-state research. DINAA is an ongoing project that seeks to organize archaeological data from multiple states within a common online architecture. Because DINAA is public, it only hosts non-sensitive information, and exists to supplement (not replace) the current data management systems maintained by the SHPO offices in each state.

Denis, Scholz [201] see Gronenborn, Detlef

Dennehy, Timothy and Jacob Harris

[298] Australian and Californian Tribal Area as a Function of Coastal Proximity and Mean Annual Precipitation

Predictable resources are crucial to hunter-gatherer subsistence. An increase in resource density and predictability can lead to an increase in population density and boundary defense (Bowles and Gintis 2011). Since coastal environments can offer foragers unique access to densely distributed, predictable resources, we hypothesize that population packing would lead to smaller tribal territory size in coastal areas. To investigate the effect of resource density on tribal boundary size, we compared the effect of coastal proximity to that of mean annual precipitation (MAP) for two ethnographically-known tribal regions—aboriginal Australia ($n = 594$ tribes) and pre-contact California ($n = 100$). We digitized maps from Tindale (1974) and Kroeber (1922) using updated GIS methods. Each territory was digitized in ArcGIS and precise numerical data extracted. Our preliminary results suggest that coastal proximity explains little of the variation seen in Australian and California tribal boundary size, while MAP accounts for a much greater percentage of the variation. Interestingly, there is a greater correlation between MAP and inland territory size than between MAP and coastal territory size. This study reveals that, although variation in Australian and California tribal territory size can be partially attributed to coastal proximity and MAP, much of the variation is yet unexplained.

Dennett, Carrie (University of Calgary)

[153] Getting to Know You: Ceramics and Identity in Greater Nicoya

Iconographic analyses of ceramics from Greater Nicoya have traditionally focused on aspects of change related to external cultural influences (ca. A.D. 500–1500). Attempts to correlate ethnohistoric accounts of in-migration with typological developments seen in the archaeological record have resulted in a strong focus on the impact of Mesoamerican cultures. This paper, however, takes a different approach, looking instead to flesh out aspects of continuity in tradition within that change in an effort to better understand

more nuanced aspects of identity in this highly complex archaeological region.

Dennison, Meagan (University of Tennessee, Knoxville), Lucinda Langston (East Tennessee State University), Jay Franklin (East Tennessee State University), Jeffrey Navel (East Tennessee State University) and Sierra Bow (University of Tennessee, Knoxville)

[216] *Illuminating Prehistoric Chaînes Opératoires on the Upper Cumberland Plateau of Tennessee Using GIS Modeling and Optimal Foraging Strategies*

We combine multiple lines of evidence to examine archaeological data from 17 years of archaeological surveys and excavations on the Upper Cumberland Plateau (UCP) of Tennessee. We focus on the Late Archaic and Woodland periods. Historically, this area, like many highland regions, has been underrepresented in archaeological research. Ideas regarding practices in highland regions have been oversimplified, if addressed at all. We have sufficient data to explore the prehistory of this region using a chaîne opératoire approach, one through which we can adequately address human agency and practices in highland regions. Toward this end, we employ a variety of analytical techniques including GIS modeling, optimal foraging strategies along with traditional faunal, lithic, ceramic, and botanical analyses. Prehistoric peoples targeted certain resources on the UCP but in myriad ways which defy more conventional processual approaches to North American hunter-gatherer studies.

Dennison, Rory (University of Illinois at Chicago)

[235] *Preliminary Analysis of Sourcing Philippine Porcelain to Southern Chinese Kiln Sites Using LA-ICP-MS*

Long distance, maritime based exchange between mainland imperial powers and island Southeast Asia has had a defining effect on the modern, global world even in periods prior to colonial presence. Porcelain serves as a good indicator of these exchange routes due to both its high durability and its prevalence in the archaeological record as well as its use as a marker of status, legitimization, and elite power. This research examines the network of long distance trade between southern China and the Philippines which existed in the tenth to fifteenth centuries through the use of Laser Ablation Inductively Coupled Plasma Mass Spectroscopy (LA-ICP-MS) to distinguish patterns, examine ceramic homogeneity across the sites and regions, and begin to source porcelains to kilns of production. Porcelain and tradeware from three Philippine sites are considered and compared to chemical data from clay associated with kiln sites in Fujian, China. Though preliminary in nature, this research outlines the potential a multiscalar and chemical analysis approach can bring to bear on the issue, highlighting results which indicate economic variability in porcelain groups across regional and sociopolitical integration.

Derbyshire, Sam (University of Oxford)

[186] *Turkana Past and Present: Tracing Change with the People of the Grey Bull*

This paper explains on-going archival, historical, and ethno-archaeological research currently being conducted with pastoralist Turkana communities in North-western Kenya. At the core of this on-going research is a novel approach to pastoralist material culture systems, which aims first at constructing a material culture history and then using that history to contextualize a contemporary ethno-archaeological investigation. The overall purpose of this research is to create a diachronic picture of material culture development that integrates the historical past with the present. The last century of material culture development in Turkana is explored through an integrative analysis of documents and photographs currently stored in Rhodes house and the Pitt Rivers museum, Oxford, alongside previous ethnographic, historical and oral-historical research dating as far back as the 1950's. Through the analysis of these combined data it is possible to trace changes to Turkana material culture over the last century and explore the way in which material culture has been, and still is implicated in processes of community change. Analyzing how and why material culture has changed over the last century within this pastoralist community raises important questions relating to the broader archaeological analysis of pastoralist sites and periods.

Des Lauriers, Matthew (California State University, Northridge)

[282] *Degrees of Separation: Desert Islands as Remote Landscapes*

Remoteness and isolation are two terms that are quite frequently applied to island settings. While some, such as Easter, can be characterized in no other way, others are parts of complex networks of regional economic and political interaction. The Aegean Islands, the Caribbean Antilles, and others are powerful exemplars of these latter situations. How and where can we see the distinctions between isolated versus integrated systems? Societies which occupy geographically remote landscapes may not necessarily be

isolated socially, while they may display significant self-sufficiency in their economic system. How can we measure these concepts in anthropologically significant ways, and how did people who found themselves in such situations behave in unique and distinct ways from those populations occupying locales more intensively integrated with neighboring regions? The case of Isla Cedros, Baja California provides an excellent example of a geographically isolated population, which though remote from other relatively dense population centers, managed to develop both sustainable and dynamic patterns of human ecology and social organization. This remote Baja California island challenges some common assumptions about island hunter-gatherers, while demonstrating ways that archaeology can engage with larger discussions of human and political ecology.

[282] *Chair*

DeSantis, Larisa [103] see Tung, Tiffiny

Deskaj, Sylvia (Michigan State University)

[64] *The Walking Dead: Establishing and Maintaining Community in Northern Albania*

While bioarchaeology and mortuary analysis are inextricably woven into the study of past populations, the modern communities in which we work also provide valuable information and insight into the complex relationships between past and present. The ebb and flow of population movement, both past and present, has an effect on community dynamics and social relationships. The northern Albanian city of Shkodër is thus an ideal testing ground for examining the social changes that accompany the regional movement of both people and things – particularly since people have been settling and re-settling the area since the Early Bronze Age (ca. 3000 B.C.), when the sudden emergence of tumulus (mound) burial changed the way people disposed of (at least some of) their dead. When subjected to micro- and regional levels of analysis, these burial mounds – which are found throughout the northern Albanian landscape – can inform us about how continuities and/or changes in social relationships are reflected in (and by) their incorporation into living communities, both past and present. Spatial and temporal relationships between tumuli and settlements will be presented, in conjunction with an overview of how present communities incorporate these features into their social systems.

[303] *Chair*

Deskaj, Sylvia [89] see Galaty, Michael

Deter-Wolf, Aaron (Tennessee Division of Archaeology)

[183] *Kanukaski (I Am Scratching It): Examining the Artifacts of Native American Body Art in the Eastern Woodlands*

Prior to removal and acculturation, Native American societies in North America's Eastern Woodlands engaged in a number of forms of indigenous body art, including both tattooing and scratching. The prevalence and cultural importance of these practices are documented in ethnohistorical and ethnographic literature from the region, and their antiquity is reflected in prehistoric human figural art. Nevertheless, archaeological identifications of tools used for tattooing and scratching have been sporadic prior to the last decade. This has likely been the result of reliance on traditional artifact typologies and cultural bias or academic misunderstanding regarding tattooing and indigenous body art. This paper discusses ongoing efforts to identify artifacts associated with ancient Native American tattooing and scratching in the Eastern Woodlands, and particularly within Tennessee and the Southeast. This work includes a combination of ethnographic and ethnohistorical research, experimental archaeology, use-wear analysis, and a reassessment of the appropriate archaeological context for successfully identifying these remains. These studies contribute to our growing understanding of the significance and antiquity of ancient Native American body art.

Deter-Wolf, Aaron [251] see Moore, Michael

Detry, Cleia [116] see Dupont De Sousa Dias, Rita

Devji, Natasha and Tatyanna Ewald

[285] *Investigating the Ancient Elite of Panquilma's Public Sector*

Panquilma is an ancient Ychsma habitation site on the Central Coast of Peru. It rests in the Lurin River

Valley region, approximately 30 km east of Pachacamac. The site of Panquilmá is divided into three sectors. Sector 1 is the sector we are focusing on for our paper; it is considered the public sector and includes three pyramids each with a ramp, as well as storage rooms and a few dwellings. The purpose of this study is to analyze the two funerary contexts in Panquilmá's Sector 1, Unit 10 which were excavated in June of 2013. It is important to note that most found human remains in Panquilmá are part of the funerary cists in Sector 3, however the 5 individuals we excavated were found in a public sector that is also associated with the storage of the elites. The individuals range in ages and contain both sexes. Analyzing the material remains, both artifacts and ecofacts, the funerary contexts, the positioning of the individuals, the types of burials, and identifying the individuals' sex and age will help us to better understand the elite who were buried here, and possible rituals and ideology during ancient Panquilmá.

Devlin, Joanne L. [196] see Yerka, Stephen

DeWitte, Sharon (University of South Carolina)

[102] *The Aftermath of Catastrophic Mortality: Physiological Stress, Stature, and the Effects of the Black Death*

The 14th-century Black Death was one of the most devastating epidemics in history. Previous bioarchaeological research has shown that it targeted frail individuals and therefore might have strongly shaped patterns of demography and health in the surviving population. There is also historical evidence that standards of living, including diet, improved dramatically after the Black Death, and such changes might also have affected health in the post-Black Death population. Previous research has indicated that following the epidemic, mortality rates were lower and greater proportions of people survived to later adult ages than was true before the epidemic. This study examines temporal changes in stature to evaluate the effects of the Black Death on health using a combined sample of 194 individuals from several London cemeteries that date to just before (c. 1000-1300) and after (1350-1538) the Black Death. The results indicate that males were significantly taller following the Black Death; however there was no significant difference in mean height for females before and after the epidemic. This might indicate better physiological buffering of females before the Black Death or that females experienced improvements in diet to a lesser extent than did males after the epidemic.

Dexter, Jaime (University of Oregon), Chantel Saban (Oregon State University) and Tara McCaffrey (Linfield College)

[148] *Assessing Late Pleistocene/Early Holocene Diet Breadth in the Northern Great Basin through Paleoethnobotanical Analysis—A Few Details to Consider before Committing to the Paleo Diet*

The archaeological deposits at Oregon's Paisley Caves (35LK3400) contain key information about the foraging behaviors of late Pleistocene/early Holocene people in North America due to the record of human occupations at the site dated as early as 14,290 cal yr B.P. The antiquity of cultural deposits and the fine resolution of the micro-stratigraphy provide a unique opportunity to reconstruct a record of anthropogenic plant use in the northern Great Basin during the terminal Pleistocene and early Holocene (ca. 14,000-7,600 years B.P.). Macrobotanical data from LP/EH cultural deposits preserved in Cave 2 deposits document the relative importance of plant resources, and the quantification of botanical remains demonstrate the relative importance of various plants in cultural practices. Morphological seed characteristics and statistical analyses are used to distinguish seeds and charcoal deposited by humans from those deposited by nonhuman predators and scavengers. Results are analyzed within a framework of known climate oscillations along with a local pollen record in order to better understand human-environmental interactions during this time.

Dias, Rita [116] see Goncalves, Celia

Diaz, Alejandra, Anna Marie Prentiss (University of Montana), Olaf Nehlich (University of British Columbia) and Michael Richards (University of British Columbia)

[175] *Diet and Mobility on the Canadian Plateau: Isotopic Analysis of Canids and Other Fauna from the Bridge River Site*

This study reports on carbon, nitrogen, and sulfur isotope analyses of dog remains and other fauna from the Bridge River site in the Mid-Fraser region of the Canadian Plateau. We discuss these results in relation to dietary variability, resource mobility, and human-dog interaction through time. While dogs are not a direct proxy for humans in dietary isotope studies, their diets are influenced by human dietary practices, and therefore indicative of human subsistence strategies and activities. Similarly, evidence of

dog mobility reflects the spatial interactions between human groups and resources. Dietary results demonstrate that while salmon played an important part of dog diet at Bridge River, variability occurs across age groups and culture periods. Mobility results demonstrate differences between individual dog values, indicating the mobility of dogs and potential differences in origin through time.

Díaz, María Etelvina, María Fernanda Sola, and María Virginia Gunther**[57] Urnas del Candire**

La práctica de entierro en urnas por parte de los pueblos prehispánicos fue registrada en el noroeste Argentino por las fuentes etnohistóricas y luego corroborada mediante las investigaciones de la arqueología. A partir de un rescate arqueológico realizado en el norte de Salta, el aporte de la etnografía permitió conocer los relatos orales corroborando que esta modalidad de entierros en urnas perduró hasta tiempos muy próximos a la actualidad. La permanencia de este tipo de prácticas, cientos de años después de la conquista, asociados a una particular concepción de la vida y la muerte, permiten reflexionar acerca de los procesos culturales y la construcción de identidades en los pueblos aborígenes e implica y el desafío de la restitución de los restos a la comunidad, según lo acordaron en el año 2010. El hallazgo, por estar relacionado a una cultura viva permite asimismo realizar un abordaje conjunto entre la antropología y la arqueología, dado que las autoras han realizado diversos trabajos y talleres de recuperación del patrimonio en estas comunidades, principalmente en sus expresiones artísticas distintivas desde el año 2004 en adelante y son las únicas comunidades Chané de la Argentina, hecho que incrementa su singularidad.

Díaz, Melissa [146] see Tantaleán, Henry

Diaz-Granados, Carol (Washington University-St. Louis)**[156] Marvin Rowe and the Missouri Pictographs**

Marvin Rowe's work on a sample of Missouri pictographs opened new windows into the past by shedding light on symbols previously dated only by stratigraphic association. Radiocarbon determinations demonstrated the pigments to be ca. 1000 years old. Hence, they are significantly earlier than previously thought to be the case. Rowe's research is a major contribution to the study of ancient pictographs, a long-neglected aspect of Eastern Woodlands archaeology. Although his contributions to numerous interdisciplinary projects are highly significant, my discussion here centers upon Marvin Rowe's ground-breaking work on the Missouri pictographs.

Diaz-Granados, Ph.D., Carol [251] see Duncan, James

Diaz-Matallana, Marcela [93] see Bolnick, Deborah

Dibble, Loretta (Rutgers University)**[4] Fishing and Land Use: What Studies of Fishing Technology and Topography Can Tell Us about Prehistoric Land Use**

Barbed harpoon points manufactured from bones are found around the Lake Turkana basin in Kenya and Ethiopia. A laboratory study of the characteristics of these harpoons has been conducted and harpoon characteristics vary geographically and temporally. Changes in the Holocene landscape particularly variation in the lake levels of Lake Turkana have occurred and models of these changes has been constructed. This paper looks at the quantified assemblage variation of bone harpoons and other archaeological materials in relationship to the hydrological changes and the lake level models of the Lake Turkana Basin. The landscape models created using high resolution topographic data coupled with archaeological data are used to illuminate and explore landscape use by fishing people in the Turkana Basin and then is compared to landscape use of people with differing economic strategies, specifically hunter-gathering and pastoralism. This paper will show how the use of artifact databases can be used to refute or validate models of prehistoric land use.

DiBenedetto, Katelyn (University of Nevada Las Vegas)**[332] Ais Giorkis: The Last Refuge for Cattle on Cyprus?**

Ais Giorkis, an early Neolithic site (ca. 7800 cal B.C.), is one of only three sites on Cyprus dating to the

Neolithic with cattle remains. It currently appears to be the latest of these sites, and the only one located in the uplands. Cattle disappear completely from the island by the later Neolithic and are not reintroduced until approximately 4000 years later. Thus, their presence at Ais Giorkis raises numerous questions, in particular: was this site the last refuge for cattle on Cyprus? Excavations are ongoing, and this is the beginning of a study that examines the role of cattle at the site, including whether they were for subsistence and/or used as status markers. This study will document their spatial distribution to determine if they cluster near the tentatively identified domestic structures and their relationship with other faunal materials. The results will be compared with the other early Neolithic sites to see if all three cattle populations fulfilled the same role and whether this role could be occupied by other animals. This will determine if their disappearance was ultimately tied to the formation of an island-wide identity and whether Ais Giorkis was the last refuge for cattle on Cyprus.

Dickson, D. Bruce (Texas A&M University)

[257] *Kingship as Racketeering: The Royal Tombs and Death Pits at Ur, Mesopotamia Reinterpreted from the Standpoint of Conflict Theory*

The interpretation of the Royal Graves and Death Pits at Ur, Mesopotamia by their excavator, Sir Leonard Woolley (1934) has long been accepted. Woolley concludes the people sacrificed along with these putative dynasts went willingly to their deaths out of loyalty, devotion and faith in their dead monarchs. But other interpretations are plausible. Conflict theory, presumes that profound inequalities in power exist between and within social systems. In Conflict theory, the primary role of the state is to maintain the dominance of one segment of society over the others. Conflict theory is used to reinterpret Ur's kinship and state to suggest these institutions constitute a kind of racketeering. Ur's kings may indeed have been strong and their subjects loyal, but it is equally likely that they were weak and vulnerable and that they practiced ritual sacrifice to terrorize a restive citizenry in order to maintain elite dominance over society.

[257] Chair

Diederichs, Shanna [289] see Sommer, Caitlin

Diederichs, Shanna (Crow Canyon Archaeological Center) and Scott G. Ortman (University of Colorado)

[333] *The Invention of Community in the Mesa Verde region*

A range of evidence suggests that the Mesa Verde tradition formed through the interaction of local foragers and immigrant farmers during the early centuries A.D. New archaeological evidence suggests that local foragers already had a tradition of periodic group assembly at open-air dance circles. As farming was adopted, new social problems related to land tenure and private property required new social institutions, the invention of which is reflected in changing forms of public architecture and social organization, especially the replacement of dance circles by great kivas, and the emergence of episodic community organization in the 7th-century A.D. These changes suggest that, as Pueblo ancestors adopted farming from other peoples, they also invented the social institutions needed to support a Neolithic lifeway. These institutions characterized the Ancestral Pueblo world for the next 600 years.

Diego Luna, Laura

[238] *Ornamentación, poder y cosmovisión en el palacio de Yucundaa*

En esta ponencia se describen los elementos arquitectónicos que decoraban los edificios del palacio de Yucundaa, la sede del poder de un importante señorío mixteco del periodo Posclásico Tardío. Los edificios que componen este complejo arquitectónico tuvieron una decoración consistente en mosaicos y relieves de piedra, estos últimos en el estilo artístico conocido como Mixteca-Puebla. Pese al estado fragmentado de los relieves, podemos inferir que el conjunto de la ornamentación de estos espacios se relaciona con aspectos de la cosmovisión mixteca y la legitimación del poder de los grupos que los ocuparon.

Diehl, Michael

[32] *Paleoethnobotany of the Harris Village*

Recent excavations at Harris Village led by Barbara Roth at University of Nevada Las Vegas resulted in the systematic collection and analysis of 102 flotation samples. The effort accords the first opportunity to fully examine the use of food and medicinal plants from that site, despite its seminal role in the definition of the Mogollon Culture by Emil Haury in the 1930s. Of food consumption at Harris Village, in the late

1930s, Emil Haury wrote that charred maize had been observed, and beans and squash were absent. Modern excavations have, however, yielded both maize and beans, and more than 14 wild plant seed or propagule tissue taxa. This presentation provides a summary of the identified food and medicinal plant taxa and their ubiquties in the Harris Village assemblage, and identifies arenas of ongoing analyses at Harris Village and other Mimbres pithouse villages.

Diehl, Michael [66] see Schollmeyer, Karen

Diehl, Richard

[254] *Aging in Place While Running to Keep Up: Some Thoughts on the "Golden Marshalltown Years*
As Baby Boom archaeologists approach retirement, how might they remain productive in the "Golden Marshalltown" stage of their careers? This essay examines what some of their illustrious predecessors have done, and what they might do in the emergent digital and post-processual stages of the discipline. It opens with an examination of the post-employment careers of four eminent Mesoamericanists, Alfred V. Kidder, Gordon R. Willey, Richard S. MacNeish and William T. Sanders. The focus then shifts to opportunities available to Dan and his contemporaries. These include writing up unfinished research, crafting memoirs, proselytizing archaeology, research in museum and other curated collections, and seizing the endless opportunities the World Wide Web offers for disseminating their thoughts without having to worry about salary increases, tenure decisions, and other parochial academic concerns. In closing, I suggest steps universities, museums and other organizations can take to facilitate the process while reaping an inexpensive bounty; including the provision of office space, secretarial assistance, informal teaching and mentoring opportunities, and similar incentives.

Dietler, John, Benjamin Vargas (SWCA Environmental Consultants) and Jim Potter (SWCA Environmental Consultants)

[119] *Parece Razón: Evidence for Native Americans at Mission San Gabriel, California*

Parece razón: an unusual annotation in Mission San Gabriel's baptismal register indicating that an infant of unknown parents appeared to be ethnically Hispanic. This term may be applied to the mission's archaeological materials as well. Historical data indicate that Native Americans were key members of the mission community, representing the great majority of the population, the providers of virtually all labor, both skilled and unskilled, and primary consumers of much of the mission's products. Why is it, then, that the material culture of the mission's archaeological site does not display more traditional Native American characteristics? Data recovery excavations within the site's garden area have recovered a substantial artifact assemblage that is dominated by European-style objects, both imported and locally made. Non-traditional and traditional Native American goods are present, but less common. Dietary evidence is also heavily skewed towards introduced domesticates, and most identified archaeological features, with one notable exception, represent Euroamerican-designed buildings. We explore several possible explanations, including intrasite sampling bias, the greater visibility of younger deposits, the material impact of San Gabriel's tremendously successful cattle industry, and the differences between European and Native American material practices that may have resulted in different degrees of archaeological visibility.

Dietler, Michael

[243] *Discussant*

Dietzler, Jessica (University of Glasgow - Scottish Centre for Crime and Justice Research)

[273] *The Transnational Market in Illicit Archaeological Antiquities: Preliminary Findings of a Comparative International Study of Governance and Control*

This paper discusses the preliminary findings of a comparative international study of governance and control in the transnational illicit archaeological antiquities market conducted over the last year.

Diez-Martín, Fernando

[26] *Anticipating the Levallois Concept? Revisiting the Bifacial Hierarchical Centripetal Exploitation Model in the African Early Acheulean*

Predetermination of flaked products has been considered a hallmark of complex cognitive skills in human evolution. Traditionally, the landmark of this complex way of knapping stone artifacts has been the Levallois technique. The lithic assemblages from Lake Natron (Tanzania) have been used to argue that

predetermination of the flaked products was observable in East Africa during the Early Pleistocene. Through the use of the so-called bifacial hierarchical centripetal exploitation model, hominins would have hierarchically planned the whole series of knapping steps and would have carried them out successfully until core exhaustion and discard. This reduction model would constitute a significant technological trait intimately linked to other volumetric advances characteristic of the Early Acheulean technology in East Africa. Acknowledging that the verification of the hypothesized model would constitute a significant paradigm turnover, this contribution aims to present a reevaluation of the bifacial hierarchical reduction model and its implications for the evolution of technological behaviors based on archaeological and experimental data.

Dillehay, Tom (Vanderbilt University)**[245] *An Early Andean Enigma: Huaca Prieta, Peru, Research and Meaning***

Huaca Prieta is a large, complex mound site on the north coast of Peru that dates from ca.14,500-4,200 cal B.P. Interdisciplinary research at and around the site reveals a series of stratigraphic, artifactual, and architectural traits that do not fit within known or expected Andean patterns. The site is not only an anomaly in western South America and perhaps beyond, but is also anomalous with regard to other regions of the Americas. The broader social, economic, ideological and ecological implications of the findings to date are discussed from theoretical and culture historical perspectives.

[69] *Discussant***Dillian, Carolyn (Coastal Carolina University)****[249] *Holocene Obsidian Use in Northern Kenya***

The Turkana Basin, with a long antiquity of human occupation offers a unique laboratory for examining changing patterns of lithic material procurement and use through time. Though there remain many undocumented and uncharacterized sources of obsidian in the region, preliminary studies, by us and others, have already demonstrated that early Holocene hunter-fisher-gatherers began exploiting regional obsidian sources, and by the middle Holocene, early pastoralists used this material extensively. Analyses of Kenyan obsidian sources are revealing patterns of obsidian procurement and use that mark changes in subsistence and mobility. As we begin work investigating early Holocene obsidian use we hope to identify new patterns and sources that were used by prehistoric people. This paper provides an overview of research to date.

[50] *Discussant*

Dillingham, Eric [156] see Bates, Lennon

DiMare, Tianna [173] see Shankel, Sarah

DiNapoli, Robert (University of Hawai'i, Manoa) and Alex Morrison (University of Auckland)**[242] *Spatiotemporal Rainfall Variation in the Leeward Kohala Field System: Implications for Prehistoric Hawaiian Agriculture***

Pacific Island agricultural research has focused predominately on measuring the degree of uncertainty in dryland subsistence practices. Environmental risk and uncertainty have been especially important topics in the Hawaiian Archipelago, specifically in relation to the large dryland agricultural systems of Maui and Hawai'i Island. Unlike most windward agricultural systems, leeward dryland agriculture was almost completely dependent on rainfall. It is generally assumed that dryland field systems were highly susceptible to droughts, potentially resulting in food shortages with various societal consequences, such as conflict and the emergence of social complexity. The recent publication of the Rainfall Atlas of Hawai'i enables us to build more fine-grained models of spatiotemporal rainfall variation in the Hawaiian Islands. Using this newly published rainfall archive, we investigate spatiotemporal rainfall patterns on Hawai'i Island, with particular emphasis on the Leeward Kohala Field System (LKFS). We employ geostatistical modeling techniques and time series analyses to quantify the amplitude and periodicity of droughts in the LKFS and discuss the implications of our results for Hawaiian agriculture and emerging sociocultural patterns.

Ditchfield, Kane [244] see Manne, Tiina

Ditchfield, Kane (The University of Western Australia)

[244] Human-Environmental Interaction in a Pleistocene Coastal Environment: Research Strategies for Stone Artifact and Molluscan Assemblages from Boodie Cave, Barrow Island

In Australia, as elsewhere, coastal Pleistocene sites are relatively rare. As a consequence, Pleistocene human-environmental interactions in maritime environments are poorly understood. The relative importance of maritime resources on proximal coastal plains during fluctuating sea levels is even less well described – though models for coastal productivity during the last 50,000 years are being proffered. Barrow Island, located in northwestern Australia, retains a coastal archaeological landscape (a veritable ‘time capsule’ dating to pre-7,000 B.P.) consisting of both open and stratified contexts which may date back to pre-40,000 B.P. One stratified context, Boodie Cave (J08-001), preserves a deeply stratified sequence which includes multiple phases of both stone artifact and molluscan assemblages. These assemblages provide a unique opportunity to investigate patterns relating to human-environmental interactions during the Pleistocene. This paper will outline proposed research strategies for analyzing both the molluscan and stone artifact assemblages. Some preliminary results are presented.

Dixon, Christine (Pacific Lutheran University) and Nancy Gonlin (Bellevue College)**[21] A Site in Motion: Examining Intrasite Mobility at Cerén, El Salvador**

The Classic Maya site of Cerén sits in the shadow of a chain of volcanoes in western El Salvador. Not once, but many times, eruptions have caused residents to hastily vacate the area, only for others to return at a later point in time. In addition to movement in and out of the region, mobility at Cerén is detectable from household to household and in artifact assemblages that contain trade goods from near and far. Variation in the material record may further our understanding of how individuals, even within the same community, differently participated in socioeconomic spheres. The detailed preservation of the site beneath multiple meters of volcanic ash affords the rare opportunity to assess mobility at a micro-scale within the site. The surprising discovery of an earthen sacbe in 2011 indicates a directed and formally constructed flow of traffic. Additionally an analysis of structure orientations and open spaces within and around the site center allow for an evaluation of how and where individuals would have most readily traveled. Cerén provides the opportunity to assess the flow of peoples, ideas, and material goods within and beyond the site core.

Dixon, Kelly [78] see Blecha, Erika

Dobereiner, Jeffrey (Harvard University)**[3] Caught by the Coiffure! Subordination, Ceremony and the Significance of Hair among the Classic Maya**

Hair is unique in the study of dress—it is simultaneously part of the human body and a component of apparel as transformable as any garment. In this paper, I describe patterns and spatiotemporal variation in Classic Maya depictions of coiffure on monuments, murals and vessels. I argue that hair was considered deeply personal by the ancient Maya, and was only displayed in limited contexts, most often to indicate captivity, subservience, or intimacy between participants in ritually charged events. My approach, like the others in this session, treats hair as one component in broader representational ensembles, emphasizing how it articulates with accompanying elements of dress and depicted scenes. In addition to this synthetic typological approach, I consider the settings where the Classic Maya deemed the display of hair appropriate, and when they instead chose to keep it obscured by other pieces of apparel. To explain their conservative treatment of hair, I close with an analysis that draws upon a range of archaeological, ethnohistoric and ethnographic data from throughout Mesoamerica. This work serves to improve our understanding of the Maya sense of body and representation, while providing a new case study in the anthropology of hair.

Dodd, Lynn [228] see Giessler, Kalena

Dodd, Lynn (USC)**[257] Surveying through the centuries: The Amuq Survey in Context**

The Amuq region of Turkey has been an object of inquiry since the 1930s. This research exposed the nature of, and possible motivations for, ancient human exploitation and transformation in a complex mountain-walled valley near the Mediterranean coast, through which three rivers flow seaward to ancient ports near modern Antakya/Hatay (ancient Antioch). The recent survey (2009-2012) targeted the northernmost portion of this valley, which lies roughly 70 kilometers north of the Bronze and Iron Age

palace towns, Alalakh (Tell Atchana) and Tell Tayinat, in an area not intensively investigated previously. U. Bahadir Alkim carried out research in this part of the valley in the mid-20th century. His data constitute an important companion to the most recent work and are considered in tandem. The diverse thematic interests and methodological approaches employed in the Amuq Valley Survey created noteworthy impacts in the data set, which are relevant to understanding what changes occurred and when. The types of sites and time periods discovered over time have varied considerably. Significant changes to settlement organization in the Amuq are evaluated in relation to developments in adjacent areas, and their visibility in comparison to historically-attested changes known from sources relevant to this region.

Dodge, Robyn (The University of Texas at Austin)**[49] *Hun Tun: Home to Social Complexity in the Hinterland***

Ancient Maya household archaeology has recently been focused on understanding ordinary people, understanding social diversity amongst households and understanding households in articulation of the greater social universe. Household identity among ancient Maya commoners serves as the prominent theme of this talk. Maya Household archaeology provides a platform for inquiry into every social actor of Maya civilization. Therefore household oriented studies are applicable to every context of ancient Maya life. As physical dwellings, the material culture from household assemblages provides insight into how households constructed a social world. This is achieved through the expression of ritual, production, socialization and exchange. Households serve as microcosms providing insight into larger social processes operating within complex civilizations. Ancient commoners and their households constitute the bulk of Maya civilization. The Maya site, Hun Tun is located in northwestern Belize on the Programme for Belize Property. Hun Tun is a modest, commoner Late Classic Maya community with multiple household groups. Research at Hun Tun focuses on a household oriented study examining how households contribute to ancient Maya social complexity. This paper discusses information pertaining to Maya hinterland complexity at the household level.

Doelle, William (Archaeology Southwest)**[66] *The Mimbres Foundation in the History of Nonprofit Archaeology***

The history of American archaeology has been shaped in substantial ways by nonprofit organizations. This paper reviews the role of nonprofits in a national context and in greater detail within the American Southwest. Finally, the role of multiple nonprofits within the Mimbres region, with a focus on the Mimbres Foundation, is explored. Nonprofits have historically shown bold and impactful innovations and accomplishments under the leadership of their initial founder(s). Nonprofits provide opportunities that are exemplified by the Mimbres Foundation: private fund raising, institutional agility due to minimal bureaucratic constraints, and potentials for partnerships. Creating an institutional context that can carry forward under new leadership is particularly challenging for nonprofits. Despite the fact that the Mimbres Foundation board of directors chose to close down this nonprofit, the legacy of the foundation is substantial. The highlights of that legacy are reviewed and the future of nonprofits in the Mimbres region is considered.

[212] *Discussant*

Doelle, William [151] see Mayro, Linda

Doering, Briana (University of Michigan)**[78] *Alaskan Subsistence Hunting as an Ethnoarchaeological Resource***

The passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971 guaranteed Alaskan's legal rights to practice subsistence lifestyles. This presentation attempts to ascertain the degree to which Alaskans have been allowed to maintain a traditional subsistence lifestyle, despite legal restrictions and technological advances, and how the study of this lifestyle could further archaeological research in Alaska and around the world.

Doering, Travis [178] see Collins, Lori

Doering, Travis (University of South Florida - AIST)**[178] *El Marquesillo: A Newly Recognized Olmec Center in Veracruz, Mexico***

Investigations at El Marquesillo, on the banks of the middle San Juan River in southern Veracruz,

demonstrate that this settlement was an significant participant in the Early and Middle Formative period archaeological culture referred to as the Southern Gulf Coast Olmec (ca. 1250 to 400 B.C.). The site's physical location fills a major void in the landscape of the Gulf Olmec Heartland, and the presence of a monumental Olmec throne, the results of geophysical surveys, and other lines of evidence suggest the settlement was a regional center during the Olmec period. The earliest demonstrable occupation at El Marquesillo is illustrated by Ojochi phase ceramics (ca. 1500-1350 B.C.), followed by Bajío, Chicharras, and San Lorenzo phase wares. Unlike most other Mesoamerican Formative period settlements, however, El Marquesillo exhibits a consistent occupation through the Late Classic Villa Alta phase (ca. A.D. 500-1000) and beyond. The data from this study provide new insight into the development of Formative period sociopolitical interaction. Thus, the settlement's presence and probable effects on other contemporaneous sites require that El Marquesillo be considered in any discussion of the Olmec phenomenon.

Doershuk, John (University of Iowa), Mary De La Garza (University of Iowa) and Colleen Eck (University of Iowa)

[77] I-SitesGov: Expanding Access to the Iowa Site File for Project Planners

I-SitesGov is a newly available controlled-access GIS website that broadens access to the Iowa Site File (the database of recorded archaeological site locations in Iowa). Subscribers are federal, state, county, and local officials and consultants who do not meet the professional archaeological standards necessary to access I-SitesPro but who need an enhanced level of data for CRM planning and consultation beyond what is accessible to the general public via I-SitesPublic. I-SitesGov provides users with map-based counts of recorded archaeological sites per quarter-section and includes a shapefile layer that illustrates areas previously subjected to archaeological investigation. These data—counts and survey coverage—serve as important compliments to the types of data available through additional sources and allow better informed and more specific decision-making about potential project effects. Additional data layers are planned such as burial project information. Links to other data sources to add georeferenced layers like aerial photography, LiDAR, and soils will be incorporated to further assist in identifying and expediting the need for hiring professional CRM consultants and assisting federal agencies in completing their compliance reviews. The I-SitesGov portal includes live hyper-links to referenced websites and an online tutorial.

[134] Discussant

Dolan, Patrick (Washington State University) and Colin Grier (Washington State University)

[173] Settlement History and Economic Practice at a Late Holocene Fisher-Hunter-Gatherer Village in the Southern Gulf Islands of British Columbia, Canada

Explaining the later Holocene evolution of fisher-hunter-gatherer societies of the Pacific Northwest requires that, alongside households and regional networks, we understand the histories of specific communities. This meso-scale approach contextualizes household social and economic strategies, and, where it has been applied on the Fraser Plateau and lower Fraser Valley, has significantly contributed to explanations of changes in these strategies at the local and regional scale. On the southwestern coast of British Columbia, Canada, logically organized fisher-hunter-gatherer populations moved into settled villages at least 2400 years ago, a facet of settlement systems that continued into the ethnographic period. The long-term research program at the Dionisio Point site for three seasons has targeted village-level historical process at this 1,500 year old village on northern Galiano Island. Here, we present the results of new radiocarbon dates and materials analysis that permit us to further refine the village chronology and examine intra-settlement historical variability in economic practice.

Dolan, Sean (University of Oklahoma)

[287] Past Perspectives and New Issues in Obsidian Sourcing in the American Southwest

Over the past 50 years, obsidian sourcing has influenced the way archaeologists view prehistoric trade, procurement, and social interaction through time and across space. The North American Southwest is one of the most studied geographic regions for obsidian because of the numerous sources available that yield high quality toolstone material. Although this region is known for its painted pottery and architecture, archaeologists are going beyond normative models of trade and exchange to gain more insight into Southwestern social complexity using obsidian sourcing data. In this paper, I provide an in-depth synthesis of obsidian sourcing studies across the Greater Southwest to explore a range of research topics that include ritual economy, long distance interaction spheres, and diachronic changes in obsidian procurement. As more obsidian data accumulates with the increasing availability of archaeometric techniques, it is also important to discuss the pertinent questions for future research such as social

identity, memory, and cultural landscapes which will shed even more light on the dynamics behind southwestern prehistory.

Dollar, Nathanael**[14] Testing Intensification Theory Using Lower Pecos Coprolites**

Intensification theory has been used by archaeologists to understand change in diet and subsistence practices. This theory proposes that changes in food production, including increased production, technological development, and even preferred subsistence methods, is determined by the population levels of a society. Lewis Binford (2001), using ethnographic case studies, built upon this work and formulated very specific predictions for change in diet and subsistence methods based on population densities. These predictions can be difficult to test archaeologically, however, due to uncertainty in use of food resources and the roles they played in diet. Coprolites from the Lower Pecos region of Texas provide a testable case study for the application of intensification theory. Due to preservation conditions, hundreds of coprolites spanning thousands of years have been excavated from latrines at rock shelter sites in the region. These coprolites provide an immediate, certain, and measurable account of what resources were used in the diet. They also allow evaluation of how resources were used and what proportions of the diet they composed. This presentation will examine the data from previously studied coprolites to examine diet change over time in the Lower Pecos and uses the results to evaluate Binford's intensification theory proposals.

Dombrosky, Jonathan, Lisa Nagaoka (University of North Texas, Department of Geography) and Steve Wolverton (University of North Texas, Department of Geography)**[42] Abundance of Large Game and Source-Sink Dynamics in the Northern Rio Grande and Mesa Verde at A.D. 1300**

Abandonment of the Mesa Verde region (ca. A.D. 1300) has preoccupied North American archaeologists for decades. However, little is known about what happened to the people of Mesa Verde after depopulation. The Northern Rio Grande (NRG) region of New Mexico is one of the areas Ancestral Puebloan people may have migrated to, as evidenced by an increase in population density in the area after A.D. 1300. Several migration pull factors may have drawn Mesa Verde people to the NRG, including abundant large game. To address this as a potential pull factor, we assess hunting efficiency using zooarchaeological data from three Mesa Verde Pueblo I-III (A.D. 750–1300) sites and two NRG sites (ca. A.D. 1300–1600). If the Mesa Verde region had become a faunal sink, then large game abundance should have been substantially higher in the Northern Rio Grande after A.D. 1300.

Dominguez, Silvia [30] see Woods, James

Dominguez, Nancy (ENAH)**[200] Lithic Reduction Sequence in Hunter-Gatherers Sites of North Coahuila, Mexico**

Lithic reduction sequence in hunter-gatherers sites of north Coahuila, Mexico.

In 2002, the archaeological project "Rio Escondido-Arroyo Coyote" was carried out in an area that includes the frontier zone in the states of Tamaulipas, Nuevo Leon, and Coahuila. The main reason for the salvage project was the imminent construction of an electric line for the area. The result of the project was the registration of 72 archaeological sites and 39 lithic distributions. Ten years later, employing a techno-morphological method to analyze the corresponding archaeological materials that were found and with the purpose of obtaining information on the manufacturing processes, from the procurement of raw materials to the different flaking techniques employed and the use, adaptation, reuse and discard of artifacts through time. In this paper, we present data from archaeological sites recorded in the state of Coahuila that fall into three categories: camp-workshop, procurement and ceremonial. Also, we describe lithic reduction sequences to establish their possible relationship with the functionality of the sites and the role it played in the study region.

Dominguez Carrasco, Maria del Rosario [52] see Folan, William

Dominici, Davide [251] see Kelly, John

Donahue, Randolph [335] see Evans, Adrian

Dongoske, Cindy (Zuni Cultural Resource Enterprise), T.J. Ferguson (University of Arizona) and Kurt Dongoske (Zuni Cultural Resource Enterprise)

[151] *Zuni and 40 Years of CRM: A Perspective from On and Off the Reservation*

Cultural resource management legislation requires federal agencies to consult with Native American Tribes about places of traditional importance, ancestral archaeological sites, and the appropriate treatment of the physical remains of their ancestors. In 1975, responding to national legislation requiring the preservation of archaeological sites and other historic properties, the Pueblo of Zuni established its own archaeology program. Originally labeled the Zuni Archaeological Conservation Team, the Zuni archaeology program has evolved into the Zuni Cultural Resource Enterprise; a for profit cultural resource management enterprise of the Pueblo of Zuni. This presentation examines 40 years of performing cultural resource management on and off the Zuni reservation, evaluates the accomplishments and the difficulties associated with integrating Zuni traditional preservation values with the dominant Western perspective, and reflects on the persistent traditional cultural issues in cultural resource management.

Dongoske, Kurt [151] see Dongoske, Cindy

Dongoske, Kurt (Zuni Cultural Resource Enterprise), Kelley Hays-Gilpin (Northern Arizona University) and Octavious Seowtewa (Zuni Cultural Resource Advisory Team)

[159] *Kwa Hoth Shiwi at Chama: Never Ending Zuni Presence on the Landscape*

Zuni connections to their cultural landscape differentiates them from other tribal peoples and from the dominant colonialist society. What Zunis know about their cultural landscape flows from the "echo of generations," and their knowledge cannot be universalized; it cannot be quantified scientifically, because knowledge arises from Zuni epistemological experience of landscape. We explain how Zuni concepts of space and time are integral to assigning meaning to places within the Zuni cultural landscape, contrast Zuni concept of time with the linear, measurable time concepts embraced by dominant Western society, and show how these dissimilarities contribute to clash of cultural values in resource management.

Donner, Natalia (UNAM / STRI)

[204] *La piedra: un recurso multidimensional en la vida cotidiana del antiguo Carrizal, Veracruz*

El Proyecto Arqueológico El Carrizal, Ver. (UNAM, UV, CONACyT) llevó a cabo, entre 2009 y 2011, un reconocimiento de superficie de cobertura total de alta intensidad en un área de 56 kilómetros cuadrados alrededor de la Villa Emiliano Zapata, Veracruz. Se identificaron 3,888 estructuras prehispánicas, así como se llevaron a cabo excavaciones intensivas y extensivas; las que determinaron una ocupación desde el Formativo Medio (800-400 a.C.) hasta el Posclásico Tardío (1325-1521 d.C.) El área de estudio cuenta con formaciones calcáreas del terciario marino, por lo que abundan las rocas como caliza, travertino y pedernal. Además, la cercanía con el Río Los Pescados otorga una amplia disponibilidad de rocas: cantos rodados de roca ígnea, sedimentaria y metamórfica, así como minerales como mica, pirita y cuarzo, entre otros. Esta ponencia aborda los diferentes usos de las rocas en la vida cotidiana, desde su empleo en las actividades domésticas, de producción, construcción, elementos arquitectónicos, escultura, etc. El objetivo principal de nuestro aporte consiste en la contextualización de la piedra como un recurso multidimensional integrado a la vida diaria de las poblaciones prehispánicas de la región.

[204] *Chair*

Doolittle, William (University of Texas)

[237] *The Gristmills of La Orotava*

The city of La Orotava on the island of Tenerife in the Canary Islands is home to the remains of an intriguing series of eight water-powered gristmills. Dating from the early colonial period, these mills are located within a city block of each other, and all relied on water from a single spring. The slope on which they were built is so steep that arched aqueducts were built from the canal that ran downslope, paralleling the present-day street, to the top of each millhouse. The arrangement of these mills is similar to the ancient ones found by James A. Neely on the Deh Luran Plain in what is today southwestern Iran. The mills of La Orotava, therefore, serve as a link in understanding technological transfers from the Middle East to Mexico.

Dore, Christopher

[151] *The Two Greatest Business Challenges Heritage Consulting Firms Must Solve for Future*

Success

Over the last 40 years, the business challenges facing private-sector heritage consulting firms engaging in cultural resource management (CRM) have changed. Most firms are currently faced with ownership/management succession, low return in value, insignificant market share, service communication, and high barriers to entry for a new generation of entrepreneurs. To achieve business success in the near future, private-sector heritage firms must respond to two major challenges: capitalization and differentiation. Capitalizing businesses is essential for their growth, competitiveness, scientific capabilities, and reaching key scales of efficiency. To capitalize, though, requires a change to the underlying business model that virtually all heritage consulting firms use. Differentiating between firms is the way to break the cycle of commoditization and raise firm value. Differentiation, though, is challenging because within the CRM regulatory environment it is extremely difficult to differentiate on scientific services: virtually all firms can perform scientific services at a high enough level to gain regulatory approval. Differentiation also requires a strong client orientation and many heritage firms have scientific agendas that don't align with the needs or desires of their clients. While solutions to these two challenges will be varied, the near-future success of heritage consulting firms requires that solutions are found.

[100] *Discussant*

Dorshow, Wetherbee (University of New Mexico)

[295] *Modeling Agricultural Potential in Chaco Canyon during the Bonito Phase: A Predictive Geospatial Approach*

This study presents a geospatial analysis of Chaco surficial hydrology and geomorphology and their relationship to potential agricultural productivity in order to better understand the economic role of water in the Chaco Canyon during the Bonito Phase (ca. A.D. 850 to 1150). Defined as the Natural Agricultural Suitability Analysis, the foundation of this study is a hierarchical geospatial analysis that integrates six key natural factors: slope, soil texture, soil depth, non-catastrophic overbank flooding potential, drainage flow length, and drainage proximity and flow potential. These factors are combined through a raster weighted overlay function to generate composite suitability map that offers a testable proxy for variability in relative agricultural potential during the Bonito Phase at Chaco. The analysis is enhanced by a one-meter resolution LiDAR dataset. The rationale for including this set of natural factors is based largely on ethnographic and modern agricultural studies in Chaco, but the predictive model differs from previous studies of agricultural potential in that it is independent of the specific archaeological distribution of evidence of agriculture in the study area. The results of this analysis suggest that previous models of Chacoan agricultural productivity have underestimated local production capacity.

Dorshow, Wetherbee [344] see Wills, Wirt

Doucette, Dianna (The Public Archaeology Laboratory (PAL)) and Nichole Gillis (The Public Archaeology Laboratory (PAL))

[172] *Localizing Trends among Inland Drainage Systems: Connecting the Data in Northeastern Massachusetts*

Recent archaeological investigations provide information that can be used to establish a current model of pre-contact exploitation of interior uplands in northeastern Massachusetts. This model refines conclusions drawn by Ripley Bullen more than 60 years ago about how settlement patterns, site distributions, responses to environment, technology for obtaining and processing resources (including food and lithic raw materials), and local variations in these patterns change over time. This poster explores trends in Native American utilization of the Shawsheen and Upper Ipswich drainage basins during the Archaic Period and how groups show a preference for carrying out most of their habitation and resource procurement activities on terraces near sizeable freshwater sources, including major rivers, tributary streams, and wetlands. This ongoing research contributes to our understanding of economic organization and relationships between temporary campsites, special purpose sites, and more permanent habitation sites within interior uplands.

Doucette, Dianna [218] see Chilton, Elizabeth

Douglass, Matthew [13] see Chodoronek, Michael

Douglass, Kristina (Yale University)

[40] *Human-Ratite Interaction in Antsaragnasoa, Southwest Madagascar*

The peopling of Madagascar is a rapidly evolving topic. New results from Lakatoni' Anja, a rock shelter in northern Madagascar, suggest that the date for initial human settlement may be pushed back to approximately 2000 B.C.E., 2500 years earlier than previously documented. Intimately linked to the questions surrounding the human colonization of Madagascar are hypotheses about the disappearance of the island's megafauna and the role humans played in their extinction. Madagascar's extinct megafauna include several species of ratites known popularly as elephant birds and classified into two genera, aepyornis and mullerornis. To date little direct archaeological evidence of human impact on elephant birds has been documented. This study investigates the relationship between human and ratite communities with survey and excavation data collected at several sites around Antsaragnasoa, a bay near the modern village of Andavadoake on the southwest coast of Madagascar. In particular, large quantities of eggshell fragments representing different ratite species are being analyzed and dated through a combination of techniques to answer questions about species diversity, paleoenvironment and human predation. Worked eggshell from excavated contexts lends fresh insight into the relationship between humans and the elephant birds through time.

Douglass, John (Statistical Research, Inc.) and William Graves (Statistical Research, Inc.)

[294] *Households on the Social Landscape: A Perspective from the Southern Chuska Basin*

Households are fundamentally economic and social units. Many times conservative in their adaption to change, households are a unique laboratory for studying larger social, economic, and political trends in which they reside and interact. Households excavations dating between the Archaic through Pueblo III periods in the southern Chuska Basin, as part of the U.S. Highway 491 archaeological project, offer an important sample for understanding the relationship between households and dynamically changing larger regional political alliances, ceremonial spheres, and economic relationships through time. Public architecture and communal contexts suggest certain ties and trends for particular time periods. Do household excavations offer similar, or complementary, information? In this paper, we study and juxtapose these trends through the lens of households.

Doumani, Paula [20] see Greene, Alan

Doumani, Paula (Washington University) and Robert Spengler III (Washington University)

[22] *Textiles as an Early Silk Road Commodity: Mobile Pastoralists in Central Asia*

The Iron Age of Central Asia is marked by dynamic and far-reaching interaction spheres mutually operated by mobile and settled societies. The emergence of established trade networks, colloquially referred to as the "Silk Road", was a stimulus for expanded regional interaction from the Han period (206 B.C.-A.D. 220) onward. Within this setting, textiles of animal and plant fibers comprised a highly valued and multifunctional exchange commodity. While it is believed that Central Asian pastoralists, primarily utilized woolen textiles, poor preservation impedes scientific investigation of regional fiber technologies. In this paper we present exotic plant-based and twill textiles from a pastoralist encampment in southeast Kazakhstan, which include: 1) linen (ca. 400 B.C.); 2) cotton (~ first centuries A.D.); and 3) the first evidence for twill manufacturing technology in northern Central Asia (late 2nd millennium B.C.). The use of twills, in some cases with finely spun threads, and domesticated plant fibers among Late Bronze - Early Iron Age mobile pastoralists of the region suggests a wider repertoire of textiles were utilized than wool, but most significantly, the objects demonstrate socioeconomic connections between small scale pastoral communities and more well-known civilizations of China, South Asia, and Europe.

Douze, Katja [26] see Sahle, Yonatan

Dowd, Anne S. [30] see Etchieson, Meeks

Dowd, Anne S. (ArchæoLOGIC USA, LLC)

[74] *Notes on an Interview with Tatiana Proskouriakoff*

As a graduate student, I interviewed and wrote a research paper on the late, great, Tatiana Proskouriakoff (1909-1985). Trained as an architect, much of her professional work was done in the

1930s through 1970s. Proskouriakoff began her career at the University of Pennsylvania Museum with Linton Satterthwaite and worked at Piedras Negras in Guatemala (ca. 1936-1937). Later, she formed part of the Carnegie Institute of Washington's field team to Copán, Honduras (starting in the late 1930s), working with Sylvanus G. Morley and others. For many years, she was affiliated with Harvard University in Cambridge, Massachusetts (ca. 1958-1985). Among her principal contributions to the field of Maya archaeology was establishing unequivocally that Maya hieroglyphic texts communicated history; documenting the reigns of rulers. Additionally, her reconstructions of Maya architecture and recordings of relief sculpture set scientific illustration standards in Mesoamerica. Tatiana Proskouriakoff won a number of prestigious awards, including the Alfred V. Kidder award in 1962, the Pennsylvania State Woman of the Year award in 1971, and Guatemala's Order of the Quetzal in 1984.

[211] *Discussant*

Downey, Jordan (University of Western Ontario)

[219] *Correcting Old Cultural Sequences: Revisiting the Development of the Virú State on the North Coast of Peru*

Early states have been a hotbed of research in the Andean region in recent years, with much attention going towards incipient and secondary states on the coast and highlands. On the north coast of Peru, archaeologists studying early states rely on valley-based cultural sequences that originated with the seminal work of Gordon R. Willey and James Ford in the 1940s. Working in the Virú Valley, Ford, Willey, and their colleagues were the first to develop a long-term cultural sequence for any north coast valley. Their work is largely preliminary and untested, and yet it has formed the basis for subsequent studies in other valleys while Virú itself has been largely overlooked. In this study, I revisit the cultural sequence developed by Ford and Willey, re-seriate the sites included in their work, and study the development of the Virú (Gallinazo) polity out of Puerto Morin (Salinar) society (ca. 150 B.C.) using modern spatial analytical tools (GIS). While Willey's hypothesis that the region's earliest state developed during the Virú Period is still supported, I argue that archaeologists need to revisit the basic dating of cultural sequences for north coast valleys because these sequences still rely on many untested assumptions.

[219] *Chair*

Doyel, David (Barry M. Goldwater Range, USAF, Arizona)

[321] *Earlier than Expected: Specialized Pottery Production in the Southwestern United States*

Specialized production of pottery for exchange was an important component of socio-economic patterns in prehistory in the Southwestern United States. Specialized production has been documented among low-energy as well as more complex societies in diverse settings. An important question is when specialized production became important in the region. A look around the Southwest suggests that specialized production was well established in the Sonoran Desert of southern Arizona by A.D. 600-700. At the Mustang site in the lower Verde River Valley, located 90 km east of the Phoenix Basin, 70 percent of the pottery associated with the Early Formative component was not locally produced, and multiple production sources were represented. Social mechanisms are suggested to account for this distribution. The early development of specialized pottery production, and likely other materials for exchange and/or markets, established some initial conditions for subsequent cultural elaboration.

Doyle, James (Dumbarton Oaks)

[61] *New Light on the Late Middle Preclassic (600-300 B.C.): Lessons Learned Since the Curl Lecture, 1985*

"What happened in the late Middle Preclassic, and why, is one of the most crucial research topics in Maya archaeology today: here lies the key to the genesis of Maya civilization." Norman Hammond's observation almost 30 years ago still rings true. Many recent discoveries at sites such as Ceibal, Cival, and those in the Belize River Valley have clarified the social processes in the early and mid- Middle Preclassic, ca. 1000-600 B.C. Similarly, iconographic and architectural studies of Late Preclassic (ca. 300 B.C.-A.D. 250) materials have rapidly expanded knowledge of the early dynastic Lowland royal courts. This presentation focuses on the murky late Middle Preclassic, ca. 600-300 B.C., in an attempt to shed light on the vital transformations that occurred after the founding of major Lowland ceremonial centers and before clear evidence of the institution of divine kingship.

Doyle, Sean (McMaster University) and Tristan Carter (McMaster University)

[301] *Obsidian Source Characterization at Chalcolithic Çadir Höyük*

This poster presents the results of an obsidian characterization study of artifacts from Middle to Late Chalcolithic strata at Çadir Hoyuk in Central Turkey. This work forms part of a larger project concerning the long-term history of Anatolian obsidian circulation and use, providing important information concerning the little studied post-Neolithic assemblages. The artifacts were analyzed in the McMaster Archaeological X-Ray Fluorescence Laboratory using EDXRF, the elemental data compared to that acquired using the same technique from geo-referenced geological obsidian samples from sources throughout Central and Eastern Turkey.

The Çadir Hoyuk artifacts can be confidently attributed to at least three sources from the region of Cappadocia in central Anatolia, namely: Gollu Dag, Nenezi Dag and Acigöl. The results will be presented chronologically to discuss subtle changes in procurement during the history of the community, and are compared to data from pertinent sites within the larger region. This research ultimately contributes to our understanding of community interaction and inter-regional trade after the Neolithic, and also to determine the aesthetic and qualitative significance placed on certain obsidian sources at the site both spatially and diachronically.

Doyon, Leon (HRAF, Inc.)

[281] *Chair*

Drane, Leslie (Indiana University)

[263] *The Stylistic and Morphological Study of Ceramic Rims and Vessels from the Cahokian Lunsford-Pulcher Site*

The Lunsford-Pulcher site (11-S-40) is a Mississippian mound center located in the American Bottom region, near modern day Dupo, Illinois. The site currently consists of seven mounds and as many as thirteen mounds may have existed at one time. For a ceremonial and village archaeological site, a limited amount of excavation and analysis has been conducted, although Kelly (1993) suggested an occupation period from the late Emergent Mississippian period to the early Mississippian period. A surface collection by Timothy R. Pauketat on discrete portions of the site resulted in a large assemblage, of which 135 ceramic pieces were analyzed for the scope of this study. Based on this analysis, the Lunsford-Pulcher site was likely in occupation from the Late Woodland phases through the Moorehead phase. The largest grouping of ceramics is seen in the Terminal Late Woodland-Lohmann time period, with the second highest assemblage belonging to the Lohmann phase, after which there is a sharp decline, indicating the drop of presence at the Lunsford-Pulcher site. This poster explores the chronology of a Cahokian town through ceramics, contributing to our knowledge about the rise and demise of Cahokia and other surrounding mound centers.

Drass, Richard, Stephen Perkins (Oklahoma State University), Susan Vehik (University of Oklahoma) and Michael Caralock (University of Arkansas)

[79] *2013 Excavations at the Historic Longest Site and Wichita Fortifications on the Southern Plains*
Excavations at a late 18th-19th-century Taovayas village (Longest 34JF1) have provided insights into Wichita fort construction on the southern Plains. Spanish forces attacked this village on the Red River in 1759, and French, English, and American traders visited the Taovayas regularly until around 1811. Visitors described the layout of the village including our first insights on fort construction. Excavations in the 1960s provided archaeological evidence to support historical descriptions, but little information was obtained on the fortifications. May 2013 excavations were undertaken to test various fort features including those mentioned in historic records plus information from magnetic surveys. The excavations documented a moat-like ditch around the fort and "subterranean apartments" that visitors described within the fort. A large post mold may represent part of the stockade. Interior pits and a second ditch were also identified. Daily activities probably occurred outside the fortification as few artifacts were found with interior features.

Draut, Amy [87] see Fairley, Helen

Dreiss, Meredith [237] see Brown, David

Drennan, Robert (University of Pittsburgh)

[197] *Discussant*

Drexler, Carl [30] see Brandon, Jamie

Drexler, Carl (Arkansas Archaeological Survey)

[168] *Gateway to the Southwest: Archaeology and the American Settlement of the Great Bend*

The Great Bend of the Red River, in southwest Arkansas, was on the outer reaches of, and a gateway into, the Old Southwest. Like more central parts of the region, the coming-together of Spanish, American, and indigenous communities greatly affected settlement and cultural change in the early 19th century. This paper examines the processes of American colonial expansion into the region and the ways in which settlers brokered competing national and ethnic interests while bringing the area solidly into the Atlantic World economy. By examining many years' of research at market towns, river crossings, and small settlements, the links between this area and the Southwest emerge very clearly and show how the negotiation of identity and nation along the boundaries help show, in historical context, the liminal nature of such places.

[168] *Chair*

Driese, Steven (Baylor University), Lee Nordt (Baylor University) and Michael Waters (Texas A & M University)

[114] *Analysis of Site Formation History and Potential Disturbance of Stratigraphic Context in Vertisols at the Debra L. Friedkin Archaeological Site in Central Texas, USA*

Archaeological sites within physically "active" soils (e.g., Vertisols) are a concern of archaeologists because of potential disturbance of stratigraphic context. Pedology, micromorphology, and geochemistry are tools useful for assessing soil mixing. Clay-rich floodplain soils (Typic Haplusterts) were examined at the Debra Friedkin site along Buttermilk Creek in Bell County, Texas, USA. The soil contains abundant lithic (mainly chert) artifacts and was assessed for disturbance by vertic soil processes. Vertic features are weak to moderate in the field (slickensides and coarse angular blocky peds), and they are weak in thin section (stress cutans around detrital grains, microslickensides, and cross-striated birefringence fabric). Although there is evidence for clay shrink-swell, there has not been significant upward vertical displacement of older materials and no mixing of cultural horizons. Vertical fractures with dark infilling are narrow, and largely preclude downward movement of even small artifacts. Based on previously published OSL ages and magnetic susceptibility, sedimentation at the site was nearly continuous except for increases during the Younger and Older Dryas, possibly triggered by climate change, and subsequent pedogenesis resulted in uniform element leaching and concentration depth profiles. Vertisols can preserve 'undisturbed' Paleoindian archaeological sites and therefore should not be excluded from archaeological surveys and excavations.

Driver, Jonathan (Simon Fraser University)

[286] *Discussant*

Druc, Isabelle [19] see Marsh, Laura

Druc, Isabelle (University of Wisconsin-Madison)

[19] *Forams in My Plate: Ceramic Production in Puemape, North Coast of Peru*

Petrography allows a rare window into the coastal environment of Puemape potters, a Formative ceremonial site of the Cupisnique littoral. Foraminifers, carbonates, ooids, excretion pellets and graminea remains can be observed in the ceramic thin sections of Puemape, along with rounded lithic fragments of mixed composition. All of these inclusions are indicators of a coastal ceramic production. Non-local wares are rare and point to a particular set of vases with graphite decoration produced inland and distributed or traded over to different sites in the Jequetepeque and Cupisnique areas.

[19] *Chair*

Du Menil, Leann

[224] *Structure and Termination Deposit of Lubul Huh, Baking Pot, Belize*

Archaeological investigations of Lubul Huh at the site of Baking Pot, Belize were conducted in 2011, 2012, and 2013 by the Belize Valley Archaeological Reconnaissance Project to develop a chronology and explore the terminal structure of the mound. Terminal structure architecture is composed of two

superstructures made of varying sizes of cut limestone. Approximately 17m of Structure A (horizontally) was exposed although neither corner was found. Structure B intersected Structure A and approximately 5m of Structure B was exposed. Both structures had associated termination deposits with artifacts classes including: ceramics, chert, granite, quartz/quartzite, daub, obsidian, freshwater shell, marine shell, and faunal remains. Diagnostic ceramics included in the deposits date the termination deposits to the Late Classic.

Ducady, Geralyn (Haffenreffer Museum of Anthropology, Brown University), Mariani Lefas-Tetenes (Rhode Island School of Design Museum of Art), Sarah Sharpe (Joukowsky Institute for Archaeology and the Ancient World) and Christopher Audette (Nathan Bishop Middle School)

[68] *Museum Education and Archaeology: Using Objects and Methodology to Teach 21st-Century Skills in Middle School*

Museum educators and graduate students at the Haffenreffer Museum of Anthropology, the Joukowsky Institute for Archaeology and the Ancient World, both of Brown University, and the Rhode Island School of Design Museum of Art are in their fourth year of partnering with sixth grade social studies teachers in Providence Public Schools in a five-session classroom and museum-based archaeology program called "Think Like an Archaeologist." This experiential program uses the study of archaeological methods to address state and national social studies standards, enabling students to not only understand the science behind the content in their textbooks but also to learn how to use museum objects and archaeological artifacts as primary resources. In addition, the program uses the study of archaeology as a means to bridge social studies content with new nationwide Common Core literacy standards that aim to move towards 21st-century skill building. Students learn to "read" artifacts, to write as historians, and to use academic vocabulary as required by the Common Core while thinking like archaeologists. This program is an effective, successful example of the benefits of archaeological skills in middle school curricula and can be duplicated at other schools in other regions.

Dudgeon, John [242] see Field, Julie

Dudgeon, John (ISU - Center for Archaeology, Materials and Applied Spectroscopy) and Amy Commendador (ISU - Idaho Museum of Natural History)

[242] *Bioarchaeology of the Post-Lapita Manifestation in Fiji: Preliminary Observations and Model Expectations*

The Post-Lapita expression in Fiji is marked by significant changes in the dimensions of human behavioral ecology and geographic investigation and incorporation of coastal, inland, and upland environments across the archipelago. These changes are thought to be marked by a decreased reliance on marine foraging and protein-focused diet and an expansion of inland and upland farming and the emergence of a carbohydrate-focused diet. There is some evidence that cultural exchange and/or integration with regional Melanesian populations partially explains the rapidity and magnitude of this subsistence change. Although little is known of the details of Post-Lapita subsistence transitions, our ongoing collaborative research is attempting to discern the archaeological implications of this process, using ecological, spatial and biomolecular datasets. Archaeologically, our biomolecular analyses are concerned with signals of human-environment interaction in and on the skeleton at scales appropriate for discovering diet partitioning, specific taxa consumed and possible cultural affiliation of individual skeletons. These analyses provide well-articulated and justifiable classes of evidence to evaluate competing hypotheses of the mode and tempo of subsistence change in the Fijian Post-Lapita manifestation. We present evidence for a bioarchaeological model of subsistence and biological change and offer a preliminary view of Post-Lapita Fiji.

Dueppen, Stephen (University of Oregon)

[171] *Transformations in Specialized Ceramic Production at Kirikongo, Burkina Faso (15th-17th Centuries C.E.)*

The archaeological site of Kirikongo, Burkina Faso (West Africa) contributes a significant case study of the shift from household to specialized ceramic production. The site was occupied for most of the past two millennia (ca. 100-1700 C.E.), growing from a small homestead to a large village while undergoing dramatic political transformations. While to date research has focused on the development and increasing elaboration of household traditions during the period of increasing inequality (ca. 100-1100 C.E.) and the community-wide changes associated with specialization following an egalitarian revolution (1100-1450 C.E.), this poster explores the previously undescribed transformations in the specialist-produced assemblage during the later phases of occupation (1450-1650 C.E.). For much of Kirikongo's

history, the local ceramic traditions were characterized by myriad innovations in forming techniques, firing technologies (kilns), vessel form, decoration styles and methods. However, once specialization was well-established in the community (and likely the region), the pottery became simpler for the first time in the site's history, including the loss of significant decorative diversity. This poster characterizes these transformations in practice and advances explanations contextualized within sociopolitical events in the community.

Duff, Andrew [42] see Satterlee, Ashton

Duffy, Christopher [52] see French, Kirk

Duffy, Lisa (University of Florida)

[123] *The Right Tools for the Job: The Manos and Metates of Cerro Maya, Belize*

Maize processing is generally presumed to be the primary function of ancient Maya manos and metates; however, analysis of ground stone tools from Cerro Maya, Belize suggests that significant amounts of other products also were prepared with these devices. Use-wear patterns on these stones reflect the items that they were used to process, for example a reciprocal, back-and-forth grinding motion is the most efficient way to process maize. However, non-reciprocal rotary movements are also associated with some types of ground stone implements. This paper will review the frequency and distribution of reciprocal motion flat and trough metates and two-handed manos from Cerro Maya as compared to the rotary-motion basin metates and one-handed manos. Metates of both rotary and reciprocal motion types are present, but basins are predominant and comprise the majority of metates at the site. Manos are highly fragmented and both one and two-handed varieties are present. The implications of these findings suggest that, in addition to maize, significant non-maize food processing also took place, and may reflect the sites function as a center of ceremonial activity and trade.

Duffy, Paul (University of Toronto)

[222] *Remote Sensing, Soil Cores, and Systematic Survey in Mortuary Landscape Analysis*

The disposal of the dead is a multi-step process often involving a number of people and places over time. Washing and viewing the corpse, burning the body on a pyre (if it is cremated), placing the skeletal remains in containers in the ground, and eating with the bereaved are potentially all important components of the funerary process that commonly leave marks on the archaeological record. Although remote sensing techniques, surface collection, and soil chemistry are increasingly used in characterizing the organization of settlements, they are infrequently used to describe mortuary spaces. This paper addresses the shortfall by using several classes of minimally intrusive data collection to describe activity areas at a Middle Bronze Age (2000-1500 B.C.) cemetery in Eastern Hungary. While prehistoric features and activity areas are difficult to identify using a single line of evidence, we find that the combination of several datasets in a GIS permits both well-targeted excavations and more realistic models of prehistoric activity across mortuary spaces.

[222] *Chair*

Duggan, Rebecca [157] see McNeill, James

Dugmore, Andrew [29] see Ingram, Scott

Dugmore, Andrew (University of Edinburgh)

[75] *Comparative Island Ecodynamics and the "Conservation of Fragility" in the North Atlantic*

The 'conservation of fragility' is a concept that has major implications for both our interpretation of the past and policies for the future. If fragility is conserved within socio-ecological systems, then any development of robustness to a distinct set of disturbances and drivers of change will necessarily result in increased vulnerabilities to other drivers and other disturbances. We use North Atlantic archaeology and long term human ecodynamics to explore robustness-vulnerability trade-offs and their implications. In Greenland, thirteenth century climate shocks are a plausible trigger for changing Norse subsistence practices. The increased utilization of marine mammals critically-enhanced robustness to one particular set of drivers and disturbances, but vulnerability was conserved and the changing circumstances of the 15th century realized those vulnerabilities, so ending Norse settlement. In Iceland, robustness was

developed to similar but different disturbances and drivers of change. These strategies have succeeded and endured without conserved vulnerabilities becoming realized. Theory would suggest that despite this long-term record of Icelandic robustness, fragility exists that could be realized as a result of contrasting disturbances and different drivers of change. This provides an important caveat to Iceland's remarkable record of resilience over multi-generational periods and has implications for future policy.

Duke, Guy (University of Toronto)

[59] *Communities in Motion: Peripatetic Households in the Late Moche Jequetepeque Valley, Peru*
Households have been variously theorized as social units, physical structures, symbolic representations of interactions, and entanglements of all of the above. This paper examines households as fluid and dynamic social units rooted in multiple locales and pivoting on activities performed by household actors. I highlight the agency of both people as household members as well as the material elements that serve to both unite and differentiate people, places, and things. I focus on the Late Moche Jequetepeque Valley, Peru, where evidence of peripatetic movement of people from location to location for purposes of work parties, ritual observances, agricultural production, etc. blurs the lines between the physical and social spaces these activities occupied. I compare the material manifestations of daily life at two contemporaneous, but discrete sites: Huaca Colorada, a ritual site on the south side of the valley with evidence of both monumental architecture and expedient camps, and; Je-64, a rural site featuring agricultural terraces with living spaces as well as small, permanent, ritual structures. I argue that households in the Late Moche Jequetepeque were dynamic, fluid, and eminently social structures tied to notions of identity and community more so than they were to specific people or places.

Duke, Hilary (IDPAS, Stony Brook University, New York)

[255] *Weaving Simple Solutions to Complex Problems: An Experimental Study of Bipolar Quartz Cobble-Splitting at Eagle's Nest, NY (3.5-5 kya)*

Bipolar lithic technology, the use of a hammer and an anvil to produce tools and process materials, is present across time and space in the Stone Age. This technology is highly variable and serves multiple purposes. However, most studies of bipolar technology describe it as simple, inefficient, and less standardized than other lithic reduction strategies. In this paper we present a pilot study assessing the efficiency and skill of experts and novices employing a bipolar quartz cobble-splitting technique. These results were then compared to those from Eagle's Nest, a mid-late Holocene (ca. 3.5-5 kya) quartz assemblage on Long Island. Here, bipolar cobble-splitting was embedded with free-hand and pressure flaking techniques to produce quartz tools from split-cobble cores. The occupants of Eagle's Nest overcame the challenges of time and energy conservation to produce and process these cores. In this case, a skilled interplay of freehand and bipolar techniques minimized the unpredictable nature of quartz knapping. More broadly, bipolar techniques are malleable approaches to navigating contextually dependent tasks. A focus on technological variability in bipolar knapping can help build robust analogies for understanding broader behavioral and evolutionary relationships amongst humans and their ancestors.

[255] Chair

Duke, Daron (Far Western Anthropological Research Group)

[282] *What Was Remote or Isolated to Mobile Paleoindians in the Desert West? A Case Study from the Great Salt Lake Desert*

Great Basin Paleoindian foragers possessed a specialized adaptation to lake-margin wetland habitats which were unevenly distributed among the region's large intermontane valleys. Travel between basins had costs that people used mobility to mitigate, but the distances involved also entailed risks related to environmental unpredictabilities. This appears to have become problematic for Paleoindian peoples as pluvial systems declined and desiccated by the Early Holocene. The Great Salt Lake Desert sits in the largest internally drained basin in the western United States. Paleoindian foragers used an extensive wetland area at its center, which would have placed them 30 kilometers from ready exit and farther from alternatives than anywhere else in the region. The archaeology of the area provides a case study for examining how what was previously remote and manageable became increasingly isolated and unmanageable as the environment declined precipitously.

[282] Chair

Dulanto, Jahl (Pontificia Universidad Católica del Perú)

[245] *Political and Economic Dynamics of Maritime Communities of the South Coast of Peru During the*

First Millennium B.C.: The Excavations of the Paracas Archaeological Project at Disco Verde and Puerto Nuevo

Extensively excavated by Frederic Engel in the 1950s and 1960s, Disco Verde and Puerto Nuevo are very well known in the archaeological literature of the south coast of Peru for their occupations dating back to the first millennium B.C. Recent excavations by the Paracas Archaeological Project in these two sites have resulted in the recovery of crucial information to improve our understanding of the role maritime communities played in the expansion and intensification of long-distance exchange networks during this critical period in the history of complex societies in the Central Andes. In this paper, I focus on the compelling evidence we have found of long distance exchange networks of prestige pottery vessels along the Peruvian coast.

Dull, Bryan (Indiana University South Bend) and Joshua Wells (Indiana University South Bend)

[81] Embodying Materiality within the Landscape: A Multiscalar Analysis of Woodland Earthwork Structures in Northern Indiana

This poster contributes to the discussion of the ways that social and natural landscapes played a role in structuring Woodland lifeways in northern Indiana. The Woodland period is marked by increased complexity, interregional exchange networks, and the construction of earthen monumental structures. Despite extensive research on the Woodland period in northern Indiana, a regional analysis of earthwork placement is conspicuously absent. Earthworks materialize cultural identity by impacting agency and beliefs through ritual practice in relation to natural and social environments. To understand the materiality of the landscape, this research uses a multiscalar analysis of Woodland earthworks and villages. Earthwork data was compiled in collaboration with Dr. Mark Schurr and the Preserve America Mound Project; habitation data came from Indiana DHPA archives. Intraregional neighborhoods were established by combining cluster analysis of habitation and mound center distributions with viewshed analysis, which considered visibility of features across the landscape. Cost surface data was analyzed along with cluster and viewshed data to model how the natural landscape could have affected movement between village and mound neighborhoods. Inter- and intraneighborhood variation was then compared with these datasets to determine factors that could have influenced locational choice.

Dull, Robert

[158] Reconsidering the Environmental Impacts of the Early 6th-Century Ilopango Eruption throughout Mesoamerica

The largest volcanic eruption to impact the inhabitants of Mesoamerica—and likely the most deadly volcanic eruption ever to affect our planet—was the early 6th century A.D. Tierra Blanca Joven (TBJ) eruption of Ilopango caldera in central El Salvador. Virtually all of El Salvador was uninhabitable immediately following the Ilopango eruption because of pyroclastic flows and deep deposits of sterile volcanic tephra. The total volume of tephra from the eruption is estimated at ~84km³, and it has been geochemically identified as far afield as the Copan Valley, Honduras and the vicinity of Kaminaljuyú, Guatemala. AMS ¹⁴C data from successive growth increments of trees growing in El Salvador at the time of the eruption have helped to more precisely date the event, implicating the eruption as the cause of the global atmospheric dust veil and cooling event that affected the earth in the years 536–537 C.E. Assuming that a 535 C.E. eruption of Ilopango was indeed the cause of the well-documented dust veil and cooling, the Classic Period Maya were uniquely situated geographically to experience the full range of impacts of the Ilopango eruption from local biological extirpations to regional drought to persistent global cooling following the event.

Duncan, William (East Tennessee State University)

[25] What Essences Were Ritually Sealed through Maya Cranial Modification?

Over the past 10 years researchers in Mesoamerica have increasingly come to agree that cranial modification was a normal part of growing up in Maya society. One component of cranial modification appears to have been ritually sealing one or more of these animating essences in infants' heads. Bodies in Mesoamerica were both permeable and partible and contained multiple animating essences associated with various aspects of personhood, animacy, and illness. Thus, one current question is identifying precisely what was being sealed in cranial modification. In this paper I review animating essences among the Maya to discuss which appear to have been the most likely candidates for sealing through cranial modification. The two most relevant essences are baah and ik'. Baah is a conflation of personhood and the head, could be interacted with by other individuals after corporeal death, and appropriated by enemies. Ik' is breath soul and could exit the body from various orifices. Although baah is explicitly associated with the head among the Maya, here I argue that ik' is at least as likely as baah to

have been targeted for sealing through cranial modification.

Duncan, Neil (Stanford University)

[250] *Multiple Approaches in Paleoethnobotany: Incorporating Proxy Indicators at Buena Vista, Peru*
Deborah Pearsall has long advocated through her work the relevance and importance of multiple approaches in paleoethnobotany to archaeological research. Each proxy indicator of the past, plant macroremains, phytoliths, starch grains, and pollen, has unique, relative interpretive value given the context of research. No environment or archaeological site is the same and various factors differentially affect deposition, preservation, and recovery of each indicator type. Using a dataset from the Peruvian site of Buena Vista, a study of plant macroremains, phytoliths, and starch grains provided multiple lines of evidence for diet, economic importance of non-local introduced cultigens, and the use of foods in a ritual context, whereas each indicator type alone would have had only minor interpretive value at the site. This example, among many others, supports the continued need for better methods and techniques in compiling, comparing, and interpreting data sets that incorporate multiple proxy indicators

Duncan, James and Carol Diaz-Granados, Ph.D. (Washington University, St. Louis, MO)

[251] *The Mace and the Bi-lobed Arrow: Their Place in the Cosmos*

Two of the most defining symbols associated with the Mississippian Ideological Interaction Sphere are the mace and the bi-lobed arrow. These two motifs, and their earliest dated imagery, have been found near the confluence of the Missouri and Mississippi rivers. This region had long been the cradle of ideology, and hence its associated iconography, for much of the Mississippian world. Previous scholars have used these symbols to establish chronological parameters without attempting to connect the motifs themselves to any spiritual or cosmological use within societies that employed them. We believe that by studying the co-occurrence of mace and bi-lobed arrow motifs, particularly in the region's rock art, we can construct at least two possible rites in which these icons were used to identify important celestial characters.

Duncan, Marjorie

[280] *Calf Creek Campsites on the Flint Hills of Kansas and Oklahoma: The Grouse Creek and Kubik Sites*

Groups of hunter-gatherers known today by archaeologists as Calf Creek foragers lived on the southern Plains about 5500 years ago. This paper discusses two Calf Creek sites on the western edge of the Flint Hills; the Grouse Creek site in south-central Kansas and the Kubik site in north-central Oklahoma. Grouse Creek is a surface find with over 300 Calf Creek-style points indicating variation in the amount of heat treatment and reduction strategies but without subsistence remains. In contrast, the deeply buried Kubik site has few tools but is the best-dated Calf Creek campsite in Oklahoma. The few lithics and faunal remains at Kubik provide additional context to the unique surface collection from Grouse Creek.

[280] *Chair*

Duncan, Lindsay (University College London)

[341] *Waste and the Environment: Long-Term Environmental Signatures at a Coastal Maya Site, Marco Gonzalez*

The Maya site of Marco Gonzalez on Ambergris Caye has a long occupation history from ca. 100 B.C. until at least A.D. 1300s, including intensive processing activities, thought to be salt production ca. AD 600-800. As suggested by the site's distinctive soils and vegetation, the site's occupation, as seen through cultural materials deposited and resources used, appears to have played some part in the trajectory of local ecosystem development. The current project aims to investigate the development of distinctive soils, notably black earths, which can be used to look at questions of long-term settlement sustainability and impact, through resource use and waste disposal, which might have applications for modern waste and materials issues. The 2013 summer field season, including coring, soil micromorphology and archaeobotanical sampling, was aimed at uncovering soil profiles which spanned the site's occupation, to understand the morphing of the environment through to the present, with cultural contributions forming one facet of a complex ecological history. This paper will present the initial results of the 2013 investigations, including thoughts on resource use by coastal Maya, and the impact of waste disposal on the long-term formation of ecosystems.

Dungan, Katherine (University of Arizona) and Matthew Peebles (Archaeology Southwest)

[333] *Geography, Geometry, and Religious Transformation: Great Kivas and Social Change along the*

Southern Colorado Plateau and Mogollon Highlands

Large public and religious structures in the 11th to 14th century Mogollon Highlands and on the southern Colorado Plateau share the label “great kiva” and have often been interpreted as having an integrative function. There are, however, substantial differences in the form of structures between the two areas, the most obvious being that Mogollon great kivas are typically rectangular while those farther north are circular. Furthermore, the relationship of such structures to settlements across the greater region – and likely the roles they played – changed through time as they were incorporated into larger settlements and into more complex systems of religious space. This raises questions of how, when, and if great kivas served to integrate communities. We begin to address such questions by comparing the two great kiva traditions through time, exploring the size and structure of the communities that surrounded great kivas, their articulation with other forms of religious or public architecture, and comparative evidence for ways in which these structures were constructed, used, and retired. Areas in which these two traditions intersect (in particular the Upper Little Colorado) are particularly germane to this discussion, with questions of integration and disintegration taking on new importance in such borderlands.

Dunham, Sean (Michigan State University & CCRG, Inc.)

[34] *An Analysis of Late Woodland Archaeological Site Locations in the Eastern Upper Peninsula of Michigan*

The relationship between people and their physical environment is a critical facet of the study of human culture in the past as well as the present. This paper revisits Late Woodland (A.D. 700 to 1600) settlement and subsistence models for the Upper Peninsula of Michigan. The dominant model for this region, the inland shore fishery model, derives from a relatively small number of coastal Great Lakes sites. Recent research examines data from both coastal and interior sites resulting in a more complete picture of Late Woodland settlement dynamics. The results show that Late Woodland peoples exploited certain site settings and habitats more extensively than others. Some site settings appear to change over time, and others exhibit characteristics of culturally modified landscapes. While it can be assumed that the distribution of Late Woodland sites reflects the location of resources used by Late Woodland peoples, their distribution is not entirely random and suggests that other cultural factors played a role in the selection of site locations. This exploration of ecological and cultural factors influencing choices of site location at different times and in different areas of Michigan's Upper Peninsula is well situated within the framework of settlement ecology.

Dunning, Nicholas [158] see Tankersley, Kenneth

Dunning, Nicholas (University of Cincinnati), Michael Smyth (Stetson University), Philip van Beynen (University of South Florida), Eric Weaver (University of Cincinnati) and David Ortegon Zapata (Instituto Nacional de Antropología e Historia)

[158] *Puuc Region Paradox? Water and Settlement in the Hill Country of Yucatan*

The Puuc, or hill country, has long been known to contain some of the most productive agricultural land in the Northern Maya Lowlands, yet is perhaps the most water-challenged part of the region. The Puuc has been thought to have experienced a settlement history quite different than many other areas, including scant early occupation, and an anomalous fluorescence in the Terminal Classic. However, recent research indicates a much longer time-depth for settlement in the Puuc, including the presence of sizeable Middle and Late Preclassic centers made possible by investment in large reservoirs. In contrast, during the Classic, widespread occupation of the Puuc occurred, made possible by the construction of thousands of household cisterns. Analysis of speleothems from inside and outside the Puuc indicates that the region experienced fluctuations in rainfall similar to those throughout the Maya Lowlands. The hydraulic adaptations needed to survive in the Puuc likely helped Maya communities in the region withstand some droughts that brought down settlements in surrounding areas. Nevertheless, Puuc communities were inherently vulnerable to prolonged or extreme aridity and droughts ultimately were a significant factor in cultural and demographic disruptions within the region.

Dupont De Sousa Dias, Rita (University of Algarve), Cleia Detry (Centro de Arqueologia da Universidade de Lisboa) and Nuno Bicho (University of Algarve)

[116] *Small Vertebrate Zooarchaeology of Muge: Preliminary Results on Subsistence, Seasonality and Social Complexity*

The aim of this paper is to reconstruct economic aspects related to diet, subsistence, and settlement patterns, through the study of the remains of small vertebrates, marine and terrestrial, from recent excavations of a Mesolithic shellmidden, Cabeco da Amoreira, in Muge, Portugal. A secondary objective is

to infer socio-economic transformations, from which the more recent data seem to indicate clear distinctions on the basis of intra- and inter-site patterns, reflecting social status, stylistic and ethnic differences. The approach will offer an ecological and economic perspective in a way that makes possible to address questions about these people's subsistence, based on settlement dynamics and its relation to seasonality, type of resources, the observation of capture systems (dependent on species?), and non-dietary catch.

Dupont-Hébert, Céline [29] see Woollett, Jim

Dupras, Tosha [102] see Whitmore, Katie

Duran, Victor [287] see Giesso, Martin

Durand, Karen [256] see Munoz, Lizette

Durand Gore, Kathy (Eastern New Mexico University), Meradeth Snow (University of Montana), Michelle Greene, Elizabeth Adams and Cathey Cline

[247] *Life and Health in the Point Community, an Ancestral Puebloan Population in the Middle San Juan Region, New Mexico*

A bioarchaeological project was conducted at two sites, the Tommy and the Mine Canyon sites, in the Point Community, a Chacoan outlier community in the Middle San Juan region. These sites are located on the B-Square Ranch just to the south of Farmington, New Mexico. Our research included analyses of demography, paleopathology, bone chemistry, discrete dental traits, craniometrics, and mitochondrial DNA. This project revealed changes in demographics and health patterns over time from the late Pueblo I through Pueblo III periods. These changes included fluctuations in male to female ratios, as well as shifting workloads, particularly for the Pueblo III period female population. Differences in the mitochondrial DNA also were discovered, revealing the presence of a distinct subgroup in the later, Mine Canyon population. Results of these studies reveal increasing variability among site samples across the Middle San Juan region in the transitional Pueblo III period.

Duranleau, Deena [218] see Chilton, Elizabeth

Durante, Mark [172] see Showalter, Stephanie

Durusu-Tanriöver, Müge [41] see Johnson, Peri

Duryea, Dean [45] see Kremkau, Scott

Duryea, Dean (Statistical Research, Inc.), Scott Kremkau (Statistical Research, Inc.) and Kenneth Becker (Statistical Research, Inc.)

[45] *What's Rocks Got to Do with It: Results of a 10,000-Acre Survey at Fort Irwin and the National Training Center*

This poster presents the results of a 10,000-acre survey conducted by Statistical Research, Inc., (SRI) at Fort Irwin and the National Training Center, in the central Mojave Desert in California. The 10,000 acres were divided into three large survey blocks, each between 3,000 and 4,000 acres. SRI recorded 113 prehistoric sites and 1,108 isolates, totaling over 46,000 artifacts. Although each survey block had unique geo-morphological and topographic characteristics, prehistoric sites discovered in each of these survey areas were typically related to lithic procurement and surface quarrying. We investigate regional scale settlement and land-use patterns tied to the surface quarry sites recorded during this survey.

Dussault, Frédéric [325] see Miszaniec, Jason

Dussubieux, Laure [10] see Walder, Heather

Dutilleux, Fanny

[60] Chamba, Center of the Himalayas? Human Appropriation of a Mountainous Landscape
Following a pattern widely recognized in the Indian sub-continent, people of the Himalayas tend to appropriate the landscape in which they live. By naming "Kailash" the highest mountain in their valley, they make it a holy center, equivalent to the famous Kailash. The dynasty of Chamba, in Himachal Pradesh, left archaeological traces that indicate that the rulers tried to build consent-to-rule by turning the geomorphological features of their mountainous territory into holy places, thus transforming the small valley of Chamba into a macrocosm. For the villagers of Chamba, the valley is inhabited by ancestors, naga (snakes), ghosts, and village deities. A particular corpus of sculptures appears in Chamba as early as the 10th century. The fountain stone slabs of Chamba are decorated with representations of pan-Indian deities, naga, ancestors and deceased warriors. Thus, we find in the small valley of Chamba an organized cult, receiving royal patronage. As a similar process of appropriation is expressed by common people with the fountain stone slabs, we attempt in this presentation to compare those two levels of religion. They both indicate that the valley is a center with a strong cultural distinctiveness, linked to the mountainous landscape.

Duwe, Samuel (Eastern New Mexico University)

[333] Summer and Winter People: The Development of Tewa Pueblo Moieties

The Tewa of northern New Mexico are unique among the Pueblos for their emphasis on dualities. Nearly every aspect of Tewa life is structured around the dual-division of the Summer and Winter Peoples. This moiety system, with its inherent tensions and complementarity, has sustained village life for hundreds of years. However, when and how this unique organization was created is up for debate. Using archaeological evidence of site settlement patterns, public architecture (particularly kivas), and ritual landscape data I propose that this unique organization arose in the Classic period (A.D. 1350-1598) through the coalescence of disparate people along the northern Rio Grande and its tributaries. I then discuss why dual-division organization developed as a mechanism to allow for people to aggregate as well as to create a flexible pattern of movement in an environment of ecological uncertainty.

[46] Chair

Dwyer, Rachel (SUNY-University At Buffalo)

[170] Blame It on the Rain: Using Statistics to "Weed Out" Plant Materials Incidentally Deposited through "Seed Rain" or Other Additive Natural Transformations

Paleoethnobotanical studies have concentrated their attention to interpreting crop plant materials because these are often recovered in quantities assumed significant and are easily connected to cultural activities. Data from macrofloral analyses documenting observations of plant remains (especially non-crop products) are deemed irrelevant to these research questions and if discussed, they are dismissed as "background noise" or environmental indicators, accidentally or incidentally deposited in a cultural context through natural transformations (i.e., "seed rain"). Assumptions of quantities and significance hamper research into other past plant use (e.g., medicinal use, religious offerings, or craft production) that may not leave as obvious traces in the paleoethnobotanical record. Using statistics and data compiled in the SEAD database (Umeå University, Sweden), these assumptions are tested, the effects of incidental and/or natural additive transformations are clarified, and a formulaic tool for determining statistically significant quantities within a recovered sample is discussed.

[170] Chair

Dye, David (University of Memphis)

[251] With Culture Heroes on Our Side: Two Realms of Mississippian Warfare

Warfare existed in two articulated worlds for Mississippian people: the realm of interpolity conflict and human experience, and the celestial realm with its culture heroes. Mississippian iconography offers a rare glimpse into these two worlds and how they were intertwined. In this paper I offer an interpretation of how Mississippian elites defined their relationship with violence and warfare in the quotidian world and how they perceived that relationship with other-than-human beings in the celestial realm. Sacred narratives recorded in the nineteenth century provide convincing evidence for the roles that dramatic performance and stories played in chartering warrior behavior. A consistent theme of "trophy-taking" runs through Mississippian iconography, with emphasis on decapitation and dismemberment. Trophy-taking is interpreted here as one way in which life forces were granted by Siouan culture heroes such as He-Who-Wears-Human-Heads-As-Earrings, Morning Star, and Storms-As-He-Walks.

[182] Discussant

Earle, David [163] see Wiewall, Darcy

Earley, Caitlin (University of Texas at Austin)

- [130] *Tallest Mountain, Deepest Lake: Cosmology and Landscape in Maya Centers of the Comitán Valley, Chiapas, Mexico*

This paper explores the ways in which Maya centers in the Comitán Valley of Chiapas, Mexico adhered to and diverged from widespread Maya concepts of sacred landscape. From the cenote at Chinkultic to the caves of Quen Santo, the Maya of this area both shaped and paid homage to the contours of the land on which they lived in the Late Classic and Early Postclassic periods (600-1200 C.E.). This paper considers the ways in which architecture interacted with landscape to express fundamental aspects of Maya cosmology and site-specific identity. I begin with Chinkultic, where a mountaintop acropolis surrounded by lakes and cenotes expressed the city's control over the surrounding lake region. I continue with Tenam Puente, where rulers constructed a physical and conceptual center by harnessing ideas of mountains and caves. Finally, I examine the caves of Quen Santo, where a previously unexplored sculptural record enables us to understand the site as a center for pilgrimage and ancestor worship. Throughout, I place an emphasis on how these areas would have been used and understood, paying particular attention to ritual and performance as important means of interaction between people, landscape, and worldview.

Earley, F. Lee [248] see Huffman, Thomas

Earnest, Howard (Illinois State University) and Kathryn Sampeck (Illinois State University)

- [128] *Late Classic to Late Postclassic Political and Ethnic Boundaries in Western El Salvador: Maya-Pipil Dynamics and Routes of Exchange*

Western El Salvador and regions of Guatemala and Honduras fall into what is often described as the Maya periphery. Late Classic networks of exchange can be reconstructed on the basis of shared material culture, particularly ceramics. Post-Ilopango (circa A.D. 425) resettlement of the Ilopango-devastated zone and subsequent development in central and western El Salvador show that this region was occupied by complex, heterogeneous groups who developed distinctive affiliations with the lowland Maya city of Copan. Routes of exchange appear to have been focused north-south, with less obvious interaction with the eastern Guatemala highlands. By the Early Postclassic, due to forces still not well understood, western El Salvador was largely depopulated, creating a vacuum that the Nahua-speaking Pipil filled during the Late Postclassic. The Pipil redirected interactions towards fundamentally different social, economic, and political ends. While exchange routes in the Late Classic were vectors to reinforce social exchanges, roads during the Late Postclassic were discursive spaces to define Maya-Nahua difference within a new political and economic order.

East, Nicole

- [46] *Clay Procurement Strategies and Population Coalescence in the Ancestral Tewa World, New Mexico*

This study explores how human groups alter their use of landscape when experiencing population reorganization. The ancestral Tewa people of northern New Mexico underwent dramatic population coalescence in the Classic period (A.D. 1350–1598) by moving to fewer but much larger villages, while at the same time establishing the boundaries of the Tewa world as recorded in historic documents and ethnographic literature. To understand the relationship between residential reorganization and the development of land use patterns (and in extension the production of social space), I use as a proxy temporal changes in clay procurement strategies for pottery production. I performed X-ray diffraction (XRD) and X-ray fluorescence (XRF) analyses to characterize mineralogical and chemical compositions of temporally sensitive Abiquiu Black-on-gray and Bandelier Black-on-gray painted pottery. These methods complement results from previous chemical and petrographic analyses and allow for a comprehensive assessment of variation within ancestral Tewa pottery in the Classic period. Compositional variation between the two assemblages are then compared to identify shifts in resource procurement patterns of available clay sources and to understand how social and residential reorganization affected ancestral Tewa land use strategies.

Eastauth, Edward (University of Western Ontario), Lisa Hodgetts (University of Western Ontario), Jean-Francois Millaire (University of Western Ontario), Claude Chapdelaine (Université de Montréal) and Chris Ellis (University of Western Ontario)

- [157] *The Untapped Potential of Magnetic Survey in the Identification of Pre-Contact Archaeological*

Sites in Southern Ontario and Quebec, Canada

Despite their well-established utility in archaeological prospection, geophysical instruments are rarely used in Canadian archaeology. The failure to embrace these techniques may relate to the ephemeral nature of the majority of the region's archaeological sites, which makes them difficult to detect using geophysics, although it is more likely driven by a lack of familiarity among archaeological practitioners in this region with the techniques and their potential applications. Here we present the results of a number of magnetic surveys on pre-contact sites from southern Ontario and Quebec that demonstrate the great potential of magnetic susceptibility and gradiometer survey in identifying and mapping archaeological features that are commonly found in this region. We also demonstrate that magnetic susceptibility can be used to identify features within the region's many wood lots (which are notoriously difficult to survey) and to rapidly determine site limits in ploughed fields. Our results show that the cost and time benefits demonstrated for these techniques elsewhere also apply to academic and commercial archaeological research in Northeastern North America.

Eastep, Brigit [328] see Dean, Emily

Ebert, Claire [52] see French, Kirk

Ebert, Claire (Pennsylvania State University), Douglas J. Kennett (Pennsylvania State University) and Jaime J. Awe (Belize Institute of Archaeology (NICH))

[137] *Excavations at Tzutziy K'in: Preclassic Settlement and Classic Development at an Ancient Maya House Group*

Demographic expansion and economic growth during the Preclassic Period (1000 B.C.–A.D. 250) in the Belize Valley were accompanied by the appearance of public architecture, sometimes at larger household groups, suggesting increasing centralization of economic power and the emergence of higher status individuals within ancient Maya communities. The goal of excavations at Tzutziy K'in, a large high-status residential group located 2km west of the major political center of Cahal Pech, was to examine the distribution, scale, and technology of ancient Maya household activities from the Preclassic through the Classic periods. Results of radiocarbon dating and ceramic analysis indicate that Tzutziy K'in was first settled in the Middle and Late Preclassic periods (ca. 350-100 cal. B.C.). Major construction in the group began in the Early Classic, with the largest and final construction episodes occurring during the Late and Terminal Classic (ca. 700-880 cal. A.D.). Geochemical sourcing of finished obsidian blades from the site and nearby settlements indicates that the Belize Valley was economically linked to the highlands of Guatemala and that this persisted through time. Changes in artifact assemblages at the group, compared with elite assemblages from Cahal Pech, demonstrate differences that resulted from economic and social inequalities through time.

Echevarria, Gori Tumi [90] see Nieves, Ana

Eck, Colleen [77] see Doershuk, John

Eckert, Suzanne L. [43] see De Smet, Timothy

Eckert, Suzanne (Texas A&M University) and Deborah Huntley (Archaeology Southwest)

[202] *Moments in Time: Inferring Meaning from Artifact Assemblages at Goat Spring Pueblo, New Mexico*

The concept of "moments in time," one theme of materiality theory, inspires this presentation. Our relationships with Linda Cordell were composed of moments in time, several of which led us to our work at Goat Spring Pueblo, located in the highlands near Magdalena, NM. We believe that this village has three components dating to various phases within the Rio Grande glaze ware period (A.D. 1300-1680). During our recent field work, we encountered multiple artifact assemblages that appear to represent brief moments in time. Considered together, these groups of artifacts provide us with glimpses of specific behaviors. Drawing on materiality and practice theory, we discuss these assemblages and consider possible social practices, meanings, and traditions connected with them. Further, we argue that examining these artifacts as assemblages rather than as separate artifact categories allows us to better understand how these objects influenced, and were influenced by, specific moments in time lived by residents of this village.

Eddins, Amy [206] see Popejoy, Traci

Edgar, Heather (Maxwell Museum of Anthropology), Corey Ragsdale (University of New Mexico) and Emiliano Melgar (Museo del Templo Mayor)

[103] *Origins of the Offering Skulls and Skull Masks of the Templo Mayor, Tenochtitlan: A Biological and Archaeological Approach*

The offerings at the Templo Mayor of Tenochtitlan include decapitated skulls, some of them reused as masks. In this paper we combine the analysis of dental morphological observations with experimental archaeology and SEM analysis of manufacturing techniques to address the questions: who were the offerings at the Templo Mayor; were they local or from outside the Valley of Mexico; and, were the skull masks made locally or before coming to Tenochtitlan? We compared skull offerings from Tenochtitlan corresponding to the reign of Axayacatl (1469-1481 A.D.) with skulls from other groups around the Valley of Mexico, as well as from the Huasteca, Tlaxcala, and the Tarascan Empire. These regions are documented in the Codex Mendoza as military campaigns of Axayacatl. The offerings we examined consisted of skull masks ($n = 9$), tzompantli skulls ($n = 4$), and unmodified skulls from sacrificial offerings ($n = 34$). We used discriminant function analysis to determine whether individuals in the offering samples were similar to the comparison groups. Also, we identified the tools employed in the manufacture of the skull masks. The results presented here are the first attempt to use archaeological and biological data to understand the origin of the Templo Mayor offerings.

Edgar, Heather JH [247] see Ragsdale, Corey

Edinborough, Kevan (University College London), Enrico Crema (University College London) and Stephen Shennan (University College London)

[187] *Evolution of Arrowhead Complexity in Neolithic Europe*

The evolution of lithic arrowhead complexity in Neolithic and Early Bronze Age Europe is reclassified with a new paradigmatic taxonomic system. Archaeological context, sample size and time averaging issues are identified and addressed. We examine the cultural distance between consecutive phases at each site using different diversity indices and then evaluate whether the distribution of these measures exhibit any spatial structure. We further assess correlation with key variables, including population density inferred from C14 data, climate, and subsistence strategies.

Edwards, Briece

[136] *Discussant*

Edwards, Susan (Desert Research Institute) and Jeffrey Wedding

[230] *Jack Northrop's Flying Wings at Roach Lake*

In 1944 heavy spring rains inundated Southern California, flooding the usually dry playa near Muroc (now Edwards AFB) where Jack Northrop and his self-named aircraft manufacturing company, the Northrop Corporation, had been testing several tailless airframe designs. To prevent delays Northrup searched for an alternate location and turned his attention to southern Nevada, which had escaped the deluge. Northrup and his crew obtained permission to construct a small hangar at Roach Lake, a 2 mile long playa in the empty desert along the highway to Las Vegas. For three months the N-9M-2, XP-56A, and MX-324 flew through southern Nevada skies. Flying wings are theoretically the most aerodynamically efficient designs for fixed wing aircraft. However, available construction material and technological limitations prevented early designs from being successful. The three small wings flown at Roach Dry Lake were a major leap forward, a leap that culminated for Northrop Aviation four decades later in the form of the B-2 Spirit stealth bomber following computer and electronic advances in fly-by-wire systems. Using period photographs the authors relocated the 1944 Northrop hangar site and other locales seen on the lake bed, and replicated the images showing the settings today.

Edwards, Steven (University of Toronto)

[257] *Settlement Connectivity and Power Relationships in Early Bronze Age Northwest Syria: An Integrative Geospatial and Computational Approach*

Using least cost pathway and network analyses, this paper employs an integrative approach to provide a more nuanced understanding of settlement connectivity and power relationships in Early Bronze Age

Northwest Syria by considering the impact of topographic and socio-political constraints on movement across the landscape. Particular emphasis is placed on the impact of the rise of a hegemonic state centered at Ebla (Tell Mardikh) on local settlement patterns in the Amuq Plain and Euphrates Valley. It has been suggested that in hegemonic dominance relationships, local settlement systems have frequently been reorganized in an attempt to optimize agricultural productivity in order to meet tributary demands. This paper challenges this notion, arguing that while settlement patterns in the Amuq Plain and Euphrates Valley were influenced by the expanding Eblaite state, this impact was limited, and local trends persisted as the Amuq Plain and Euphrates Valley continued to assert a significant level of political and economic autonomy.

Edwards, Richard (UW-Milwaukee)**[320] An Examination of Canid Treatment at the Crescent Bay Hunt Club**

Dog and other canid remains have been recovered in different types of feature contexts at the Crescent Bay Hunt Club, an Oneota village in southeastern Wisconsin. The majority of the canid remains have been recovered from refuse/storage pits. However, several dogs have been recovered in burial or other specialized contexts, which suggest that at least some canines received differential treatment in life or at least death. The canid remains identified to date from the site will be discussed in terms of osteological markers of post or antemortem treatment.

Eerkens, Jelmer [19] see Gorman, Alicia

Eerkens, Jelmer (University of California, Davis)**[284] Archaeology as Long-Term Ethnography: Stable Isotopes as Short-Term Records of Behavioral Variation**

In his 1991 paper "Archaeology as Long-Term Ethnography" Michael Jochim considered the effects of year-to-year variation in behavior, and inter-individual differences in decision-making, on the archaeological record of hunter-gatherers. He emphasized that the goal of archaeological research should not be the generation of ethnographies equivalent to those cultural anthropologists write. Instead, the archaeological record has its own, and different, potential for informing on human behavior, the strength being long-term adaptive processes. This paper examines new stable isotope approaches being applied in archaeological research in light of his 1991 paper. The focus, in particular, is the potential of human teeth. Because teeth grow in incremental layers, and the composition of their tissues are affected by a range of dietary and environmental factors, they record life histories of sorts, again with their own potential to inform on human behavior. Such approaches allow us to add considerable detail about the intra- and inter-individual behavioral variation Jochim examined in his paper.

Egan, Rachel (University of Colorado at Boulder) and Pascale Meehan (University of Colorado at Boulder)**[341] El Temblor Grande. The Ethnohistoric Record as a Means to Understand Past Disasters: A Reassessment of the A.D. 1567/1568 Jalisco Event**

In 1567/1568 Jalisco, Mexico experienced potentially the one of the worst natural disasters in the history of the region. Called el temblor grande, the ethnohistoric records tell us of an event so large that the ground liquefied and the people faced a fear so great that people thought the world was ending. What makes the 1567/1568 event potentially one of the worst historical earthquake in the history of Mexico, however, is not damages recorded in the historical record but the already disaster state of the region pre-earthquake. Starting centuries before conquest of Nueva Galicia in the 12th century the megadrought and then later with the 14th century expansion of the Aztecs un-stabilized the region. The conquest, starting in the 1520s, was particularly brutal. Moreover, the intentional and unintentional consequences of conquest effectively undermined the political authority and social systems of previous autonomous groups resulting in a loss of the traditional effective adaptive strategies developed by native populations to deal with natural disasters. Importantly, these records highlight the potential for the occurrence of a major natural disaster in a region not often considered a high-risk zone for earthquakes.

Egitto, Antoinette (The University of Kansas)**[225] Remote Sensing in Identifying, Mapping, and Understanding the Use of Karez Water Systems in Maywand District, Southern Afghanistan**

In times of conflict, researchers must look for alternative ways to study and protect items of cultural heritage. Remote sensing technologies have proven successful in the identification and analysis of

archaeological remains. Lab work is almost always followed by ground verification, but in southern Afghanistan this is not currently feasible. Remote sensing technologies can assist in mapping karez (traditional water systems), identifying active vs. inactive systems, and determining whether there has been a decline in karez use. This paper presents the results of orthorectified aerial photography analyses for identifying archaeological remains in Maywand District, southern Afghanistan.

Eichner, Katrina (UC Berkeley)

- [87] *Community Formation in 19th-Century Texas: Preliminary Findings from Fort Davis National Historic Site*

This paper presents the initial findings from the 2013 field season at Fort Davis National Historic Site in Texas. Known for its association with African-American soldiers in the 19th century, Fort Davis provides a unique look into race relations on the American frontier. The U.S. Army fort is a promising location from which to archaeologically investigate the effects of race, ethnicity, class, and gender on the formation of a Western American community. A close consideration of the artificial landscape constructed by the military highlights differential areas of living segregated by race, rank, and sex. Through an investigation of households located on fort grounds, the project looks to highlight the economic, political, and personal interactions which took place between different sectors of the community. Military influence on civilian communities through evidence of economic interaction and family building are discussed in depth using the results of geophysical testing, surface survey, and analysis of legacy collections. Future directions for research are also considered.

Eimers, Molly (University of Montana) and Alexandra Williams (University of Montana)

- [175] *Tradeoffs and Trade: Adapting Subsistence Practices in the Fur Trade Era*

Inhabitants of Housepit 54 at the Bridge River village (south-central British Columbia) participated in a seasonally structured subsistence strategy requiring great knowledge of the regional ecology. Household residents employed careful planning to coordinate hunting and gathering activities with processing and storage to ensure enough provisions were amassed for the winter village occupation when resources were scarce. This system became more complex as Housepit 54 entered the Fur Trade period. For indigenous groups, the Fur Trade offered new opportunities to create alliances and extend power by reworking existing subsistence practices. However, few studies have centered on aboriginal sites or the role of Native culture during the Fur Trade era within the Mid-Fraser Canyon. This faunal analysis informs not only about subsistence practices within a seasonally occupied village, but also about the complex decisions and tradeoffs of Housepit 54 members participating in the Fur Trade.

Eiselt, B. Sunday [46] see Burger, Rachel

Ek, Jerald (SUNY Albany) and Carlos Pallán Gayol (Universität Bonn)

- [319] *Merchants, Migrants, Opportunists, and Invaders: The Aftermath of the Fall of the Kaan Hegemonic State in the Gulf Coast Periphery*

The mid eighth century A.D. witnessed major transitions across the Maya Lowlands which are clearly reflected in settlement ecology, exchange networks, urbanism, political ideology, and geopolitical dynamics. The breakdown of large political hegemonies in the interior Maya Lowlands instigated particularly notable changes in the Western frontier of the Maya Area, as coastal and riverine states transitioned from peripheral participation in political networks dominated by city-states in the Petén to a central role in pan-Mesoamerican exchange networks focused on maritime trade routes. This paper examines the nature and aftermath of the breakdown of the Calakmul hegemonic state in coastal and inland polities in central Campeche. There is compelling evidence that the decline of the Calakmul state opened new opportunities for migrant communities with strong ties to the western Gulf Coast. These shifts resulted in fundamental and long-term changes in human ecology, urbanism, subsistence systems, and networks of political interaction. Epigraphic, linguistic, and archaeological data are combined to evaluate different models to explain these changes, including older Putun and Chontal Maya invasion theories, trade cartel models, merchant diasporas, and pan-Mesoamerican politico-religious movements.

Ekblom, Anneli [75] see Sinclair, Paul

Eldridge, Kelly (University of California Davis) and Christyann Darwent (University of California Davis)

- [320] *Subsistence Roles in a Late Western Thule Household: A Zooarchaeological Analysis at Cape*

Espenberg, Alaska

Faunal remains recovered from a Late Western Thule house (Feature 33, KTZ-088) at Cape Espenberg in northwest Alaska support the idea that paleoenvironmental factors caused a change in subsistence during the Little Ice Age. Archaeofauna from the site provide evidence consistent with earlier Thule subsistence traditions specific to male gender roles, such as hunting large marine mammals. Interestingly, they also demonstrate an increased reliance on shellfish, traditionally harvested by women and children. The results of this analysis provide a look into the subsistence roles performed within a household dating to a period of climate change.

[320] Chair

Elia, Ricardo [332] see Smith, Alexander

Ellick, Carol [304] see Watkins, Joe

Elliott, Michelle (Université Paris 1, Panthéon-Sorbonne)

[34] *Climate, Ecology, and Social Change in Prehispanic Northwestern Mesoamerica*

The northwestern edge of the Mesoamerican culture area fluctuated significantly across space and through time. Cyclical migrations of farming groups from Mesoamerican core areas to the south into and out of this northern “frontier” zone, traditionally occupied by hunter-gatherers, contributed to cultural dynamism within this region. Groups along the northwestern frontier adopted various subsistence and settlement strategies (e.g., hunting and gathering, large-scale sedentary farming systems), the full range of which archaeologists still seek to understand. Although scholars have proposed a number of factors (e.g., climatic, ecological, cultural) to explain these socio-economic contrasts, research in the frontier zone lacks an integrative focus for understanding them in tandem. Coverage of archaeological, ethnohistoric, and paleoecological data is uneven, resulting in significant temporal and spatial gaps in all three records. An interdisciplinary, multiscalar approach to exploring the consequences of interacting cultural and natural factors would greatly improve our understanding of settlement dynamics through time in Mesoamerica’s northwestern frontier. In this paper, I present recent advances in our understanding the settlement history of the region, discuss ongoing challenges, and suggest potential approaches in future research that could lead to a more nuanced understanding of cultural and ecological change in the northwestern frontier zone.

Elliott, Daniel

[196] *Six Feet of Earth Makes Us All the Same Size; GPR Prospection of Cemeteries in Georgia's Coastal Plain*

The author summarizes the history and deployment of ground penetrating radar (GPR) for surveys of historic cemeteries in Georgia's coastal plain. In spite of the difficulty in accessing some privately-funded GPR cemetery information, this data set includes more than 50 studies completed by archaeologists, geophysicists and others since the 1980s. This overview represents the first inventory of GPR deployment in mapping and identifying historic period graves and graveyards in this region of North America. The Georgia coastal plain GPR sample spans a variety of sub-divisions of the coastal plain, including the barrier islands, coastal strand, and interior coastal plain. The investigated cemeteries range from small family plots to large urban cemeteries. It includes cemeteries dating from the early eighteenth-through early twenty-first centuries. The author highlights selected examples of GPR surveys representing different time periods, physiographic subdivisions and sizes. The author evaluates the effectiveness of this remote sensing tool for this physiographic region and he identifies problems, shortcomings and inconsistencies with these data. Overall, the author was impressed with the effectiveness of GPR in an area often characterized by unconsolidated coastal sands, near surface ground water conditions, close proximity to salt water, and heavily vegetated landscapes.

Ellis, Chris [157] see Eastaugh, Edward

Ellis, Peter (Wake Forest University) and Eric Jones (Wake Forest University)

[263] *Intrasite Patterning at a Late Pre-Contact Piedmont Village Tradition Settlement in the Upper Yadkin River Valley*

The Piedmont Village Tradition (PVT) encompasses many of the Siouan-speaking societies living in the Piedmont region of North Carolina and Virginia after A.D. 200. Within the region, there was significant

variability in cultural practices in different river valleys, which were the focus of settlement activity. At this time we have a limited understanding of PVT community organization in the upper Yadkin River Valley of North Carolina. Only a small number of sites have been excavated, and postmold features and other settlement-related features are not always well preserved, making it difficult to recover data on intrasite activities and patterns. The first season of excavations at site 31YD173 produced results with the potential to inform us about the spatial arrangement of activities within communities. These results are helpful in understanding the variability across PVT societies and communities, the characteristics and development of non-Mississippian societies in the Southeast, and the Mississippian frontier in the Southeast.

Ellison, Leigh Anne (Arizona State University)**[101]** Moderator**Ellyson, Laura (University of North Texas), Amy Hoffman (University of North Texas), Christy Winstead (University of North Texas) and Steve Wolverton (University of North Texas)****[42]** *Assessing the Impacts of Pueblo III Resource Depression on Leporid Populations in Southwestern Colorado, A.D. 1000–1300*

The Goodman Point community in the Mesa Verde region contains a high density of archaeological sites. Ancestral Puebloan people lived in small hamlets early on (ca. A.D. 1000) and appear to have aggregated to a large pueblo, Goodman Point (ca. A.D. 1260), at the end of their occupation. Periods of drought occurred prior to the abandonment of this area (ca. A.D. 1300), influencing the availability of animal resources. Zooarchaeological studies have focused on the declining relative abundance of large game animal remains and an increase in abundance of cottontail and turkey remains during the Pueblo II and Pueblo III periods (ca. A.D. 1000–1300). Faunal assemblages from the later occupation periods (ca. A.D. 1150–1300) of the Goodman Point community contain few artiodactyl remains; however, leporid remains, specifically cottontails, are abundant. Zooarchaeological studies of resource depression use the test implication that under substantial harvest pressure, mortality profiles exhibit steepened survivorship (increased representation of juvenile animals). In the Mesa Verde region, remains of large hares (*Lepus* sp.) decrease in abundance relative to cottontails (*Sylvilagus* sp.) over time. To assess the potential for intense harvest pressure, we statistically examine temporal changes in leporid survivorship by investigating ordinal measurements of age based upon epiphyseal fusion.

Ellyson, Laura [42] see Hoffman, Amy

Elquist, Ora (PAL, Inc.)**[218]** *The Old Place Neck Site: New Data for an Old Problem*

New York City's archaeological record is largely represented by sites identified and described during the late 19th to early 20th centuries, or by more recently investigated shell middens. Together with nearly 200 years of intensive urban development, the result has been a somewhat limited understanding of precontact settlement and subsistence in the lower Hudson Valley. Data recovery investigations at the Old Place Neck Site, Staten Island, New York have yielded important new evidence of Archaic through Early Woodland period settlement and subsistence.

Erlandson, Jon [320] see Willis, Lauren

Elson, Mark (Desert Archaeology) and Mary Ownby (Desert Archaeology)**[117]** *Dating the Volcano to Sourcing the Ceramics: Geoarchaeology at Desert Archaeology, Inc.*

Interest in geoarchaeology has grown over the years not just in the academic environment, but also in cultural resource management. The ability to use techniques from the geological sciences to address a myriad of previously unanswerable questions has led to this increase. Desert Archaeology has a long history of examining sand temper variation to provenance ceramics, but we have also undertaken other geoarchaeology research. This has included the use of x-ray diffraction to source argillite artifacts and scanning electron microscopy to better characterize small beads. Research into the timing of the Sunset Crater Volcano eruption employed dendrochronology, dendrochemistry, strontium isotope analysis, and paleomagnetic assays. Geoarchaeological studies of ceramics have continued to employ petrographic methods to identify provenance and elucidate pottery technology. Ceramic analyses have also included a microprobe study to explore whether non-sand tempered pottery from the Middle Gila River can be

sourced. Petrographic results have also been combined with chemical compositional data from neutron activation analysis in several ceramic studies. These case studies highlight two points: 1) the importance of geoarchaeology in the CRM sector; and 2) the necessity of educating clients in the importance of this research to contribute to a better understanding of past human behavior.

Elston, Robert (University of Nevada, Reno - Department of Anthropology)**[282]** *Discussant*

Elston, Robert [284] see Bettinger, Robert

Elverson, Matthew (Texas State University) and James Garber (Texas State University)**[188]** *A Smoker's Delight: An Analysis of English Tobacco Pipes from St. George's Caye, Belize*

Maya sites have largely been the dominant focus of archaeological projects in Belize throughout the country's excavation history. However, the potential for studying the historic past of Belize is beginning to emerge. Excavations on St. George's Caye, the country's first capital, have revealed a diverse artifact assemblage dating to the country's earliest European inhabitants. English clay pipe fragments, including pipe bowls and stems, represent some of the most prevalent cultural materials discovered within the island's archaeological record. Focusing on several decorated clay pipe bowls and stems, this study aims to analyze the cultural and economic connections between the historic inhabitants and European pipe manufacturers and estimate the temporal ranges of occupation according to dating techniques identified by Seth Mallios.

Emanuel, Jeffrey (Harvard University)**[88]** *Modern War and Living History: Syria, Iraq, and the Fate of Antiquities*

The Syrian civil war, which began in 2011, has killed and displaced hundreds of thousands of people while bringing some of the world's major powers into diplomatic and, largely by proxy, military conflict. Another casualty of the ongoing conflict is the extensive cultural heritage to which Syria is home. Aleppo in particular, a site which boasts material remains dating back several millennia, has been a . This paper chronicles the Syrian civil war from the perspective of this area's material culture, with special emphasis on a small number of specific archaeological sites. Discussion includes comparative references to the fate of Iraq's material remains and antiquities between the U.S.-led coalition invasion of 2003 and the present, as well as a general look at respective media treatment of the two conflicts vis-a-vis the treatment and fate of their historical sites and artifacts.

Emanuelson, Pamela [288] see Willer, David

Ember, Carol**[115]** *Reconstructions of Child Labor: A Cross-Cultural Consideration of Children's Labor Activities*

If archaeologists want to know what children are doing, it is prudent to study the extant ethnographic record. Previous cross-cultural research suggests that children largely follow adult tasks. However, among some hunting and gathering groups, such as the San, it is reported children largely play and do little work. Whether or not this is a common pattern amongst hunter-gatherers remains to be examined. This paper reports on a comparison of children's work activities with adult activities amongst a sample of hunter-gatherers from eHRAF World Cultures. Hunter-gatherers are also contrasted with a sample of agriculturalists.

Emberling, Geoff (Kelsey Museum)**[329]** *Ceramics and Trade within Mesopotamia during the Uruk Expansion*

This paper presents results of neutron activation analysis of ceramics from Upper and Lower Mesopotamian sites dating to the later 4th millennium B.C. Samples included classic Late Uruk types thought to have been traded (spouted bottles, jars with nose lugs) as well as standard forms that were less likely to have been trade items due to size or poor quality (jars with reserve slip; jars with heavy expanded band rims; and beveled-rim bowls).

In particular, ceramics from Lower Mesopotamia recovered during the surveys of Robert McC. Adams are

compared with similar vessel forms from Upper Mesopotamia: two sites from the Syrian Euphrates Valley (Jebel Aruda and Tell Hadidi); Tell Brak in the Khabur River Basin of northeastern Syria; and Nineveh, located near the Tigris River in northern Iraq. Archaeological contexts for the samples will be discussed along with results of chemical characterization of samples from each site, including the very few outliers that represent likely traded ceramics.

Results of the analysis suggest that groups of clay sources can be distinguished, which had been a source of doubt in Mesopotamian archaeology in the past. Yet the study shows that there was almost no trade in ceramics during the Uruk expansion.

[329] Chair

Emerson, Thomas (Illinois State Archaeological Survey) and Dale McElrath (Illinois State Archaeological Survey)

[74] *From Squares to Sites: Exposing the Archaeological Record in Illinois*

In the 1930s and 40s Fay Cooper-Cole and the University of Chicago played key roles in the introduction of standardized archaeological field techniques and the professionalization of the discipline. But by the early 60s UC had abandoned Midwestern archaeology and institutions such as the University of Illinois, the Illinois State Museum, Southern Illinois University at Carbondale, and the newly created professional organization, the Illinois Archaeological Survey, took a leadership role in creating a new archaeological approach to field investigations – the switch from test squares to excavation blocks, from sampling sites to excavating sites. This change recognized that the primary driver of investigations in the state were development projects tied to road and reservoir construction. Archaeologists as diverse as Lewis Binford, Charles J. Bareis, and Warren Wittry employed heavy equipment to clear large portions of archaeological sites for recovery. This approach caused a sea change in research agendas from those focused on artifact typologies and chronologies to broader issues of community spatial and social organization, inter- and intrasite-level analyses of assemblage homogeneity and variation, and household and landscape archaeology—a focus that continues to dominate the region to this day.

Emerson, Thomas E. [272] see Zejdlik, Katie

Emery, Kitty [113] see Thornton, Erin

Emery, Kitty (FL Museum of Natural History, UF) and Erin Thornton (Washington State University)

[286] *Something's Fishy: Why Maya Archaeologists Should Use Fine-Gauge Screens (Sometimes)*

Decades of zooarchaeological research has shown the utility of fine-gauge screening for recovering representative assemblages from archaeological sites. But many Maya archaeologists continue to use ¼" screens if any at all. Several years of zooarchaeological recovery method testing at Maya sites shows that screening is vital at some sites, but reveals that it is not justified at all sites and within all deposits because of difficulties, cost, and low recovery rates. We suggest a balanced approach to recovery methods for testing, stratified sampling, and careful interpretation that ameliorates the complications of fine gauge screening in the Maya world and elsewhere.

Endfield, Georgina (University of Nottingham)

[17] *Re-particularizing Climate: The Importance of Context, Culture, and Complexity*

Anxieties over 'imminent' climate threats have obscured a long, complex and dynamic cultural history of public engagement with climate and the distinctive meaning that climate and climate change holds, and has held in the past, for different people in different places at a range of scales. Particular experiences of climate changes can become inscribed into the social memory and cultural fabric of communities in the form of oral history, myth, tradition, folklore, technological adaptation or narrative. These different ways of recounting the past represent vital media through which information on long-term climate change and short-lived weather events is gathered and transmitted across generations and can influence how contemporary societies understand risk and prepare for future climate changes. The relational context of climate change, the places people live, their histories, daily lives, cultures or values, is in turn thought to be critical for understanding how different groups of people in different cultural contexts have been affected by and have responded to past climate changes. This paper will argue that understanding these complexities and particularities of past climate-society relationships is thus an important step in helping to understand the way in which contemporary society might articulate and conceptualize future climate

change risk.

Engelbrecht, William (Buffalo State College)**[342] A Point Refit Study of an Iroquoian Village**

Seventeen summer archaeological field schools on the Eaton site resulted in the recovery of 692 point tips, 129 point mid-sections, and 893 point bases. A total of 114 refits were made between these fragments. This paper examines the distribution of refits relative to longhouses, refuse areas, and the palisade. A number of long distance refits between longhouses were discovered and some possible interpretations of these are discussed.

Englehardt, Joshua (El Colegio de Michoacan) and Michael Carrasco (Florida State University)**[178] Diphrastic Kennings in Formative Period Art: Olmec Iconography, Grammatical Encoding, and the Emergence of Mesoamerican Writing**

This paper explores the existence of diphrastic kennings in Olmec art and writing. Two particularly cogent examples are found on the Cascajal Block, an incised serpentine slab dated to ca. 900 B.C. It is suggested that the iconic signs on the Block are divorced from Formative period representational canons and are instead recontextualized within the grammatical syntax of language. Nonetheless, the signs on the Block and other early examples of Olmec writing are best understood within the wider context of contemporaneous iconography, particularly since many signs found on the Block and other items represent objects regularly depicted in Middle Formative period iconographic systems. It is argued that the diphrastic kennings explored here—one (CS 11 and CS 22) related to rulership and the other (CS 23 and CS 26) to sacrifice—represent one instance of such abstraction from “normative” contexts and therefore offer potentially significant insights into the origin and development of writing in Mesoamerica, as well as onto Formative period Olmec iconography.

Engleman-Rhodes, Jenny [343] see Gilmore, Kevin

Enloe, James [109] see McCall, Grant

Enloe, James (University of Iowa), Brendan O'Keefe (University of Iowa), Tyler Buck (University of Iowa) and Rose McCarty (University of Iowa)**[340] Lithic Raw Material Source Identification at Woodpecker Cave, Iowa**

Identification of technological raw material is an important source of information about prehistoric mobility, landscape usage and social interaction. Lithic raw materials are frequently identified through macroscopic comparison with type collections from known source locations. This was the initial analysis of archaeological material from the late Woodland component of Woodpecker Cave, Iowa. X-ray fluorescence, a potentially more accurate means of identifying the elemental spectrum of raw materials, was performed on the same assemblage. The type collection of the archaeological dominant materials was also subjected to fluorescence analysis. Comparison of results evaluates respective utility of each method and yields inferences about technological behavior of upland rockshelter occupants during the late Woodland period.

Enríquez, Roxana**[293] Arqueología en Colima: al rescate del patrimonio y la investigación.**

En las últimas tres décadas, la arqueología de Colima se ha caracterizado por intervenciones de tipo rescate y salvamento arqueológico debido al acelerado desarrollo de sus ciudades principales. Como resultado existe la exitosa protección y recuperación de vestigios, pero además gran cantidad de información que requiere nuevas propuestas teórico metodológicas para su interpretación. Esta dinámica de investigación es bien conocida en México, pero poco se conoce el esfuerzo que este tipo de intervenciones representa para la interpretación del pasado prehispánico del occidente mesoamericano.

Ensor, Bradley (Eastern Michigan University)**[118] Modes, Classes, Gender, and Agency**

Many interpretations of agency are problematic for universalizing and projecting behaviors specific to neoliberal capitalism onto non-capitalist past societies. Meanwhile, Marxist archaeology has been portrayed as ecological or technological reductionism, evolutionary, or unconcerned with gender and

agency. Rejecting that portrayal, this paper illustrates how Marxist analyses can indeed address agency, without faulty projections, among variously contextualized classes and genders interacting within modes or forms of production. Prehispanic Maya, Hohokam, and Taíno case studies illustrate how this framework identifies the specific social contexts for different forms of agency leading to cultural changes.

[291] *Discussant*

Eppich, Keith (Collin College)

[183] *Breath and Smoke: Tobacco among the Maya*

Among the most important plant products employed by Native American cultures, tobacco is certainly one of the most prominent. Of the family Solanaceae, sp. Nicotiana tabacum bearing the parasympathomimetic alkaloid nicotine, a stimulant, was selected for a number of properties which ranged from ritual consumption to medicinal purposes. The uses, specifically among the Maya of Central America, are currently being explored. This research reveals that tobacco has been written about, celebrated as a god-like substance, and carried on the person to treat common afflictions for many centuries. From Classical antiquity to the present, it remains a potent ritual substance. This paper explores the ways in which scholars of various fields and specialties assemble the current knowledge of Maya tobacco consumption and employment.

Eppich, Keith [312] see Navarro-Farr, Olivia

Epstein, Lori (University of Central Florida) and Marla Toyne (University of Central Florida)

[28] *When Space Is Limited: A Spatial Exploration of Chachapoya Mortuary and Ritual Landscape*

The Chachapoya culture of northern Peru is often associated with elaborate and visually striking mortuary structures such as anthropomorphic sarcophagi known as purunmachus and burial chullpas, visually situated within the Andean vertical environment. This study focuses on the archaeological site of La Petaca, a natural exposed rock escarpment that was chosen as a sacred space, housing a series of funerary structures located across the cliff. Natural overhangs were selected as open collective burials; however, a large number of small structures were also built into this vertical environment to serve similarly as communal tombs. An analysis of the spatial dimensions reflected in this mortuary expression allows us to explore the ritual creation of this space by the living to commemorate and honor the dead. By using a standardized method of data retrieval and recording, it appears that individuals were deposited over a period of time, resulting in a gradual accumulation and unintentional commingling of the dead. This decision to both construct and continuously return to small sacred spaces within a challenging physical environment may help illustrate the role that cave burials and chullpas play within the greater Chachapoya ritual landscape.

Epstein, Lori [105] see Toyne, Jennifer Marla

Erek, Cevdet Merih [299] see Basiran, Alper

Eren, Metin (University of Kent, UK)

[26] *A Comparison of Edge Angle Variability in Experimental "Preferential" Levallois Flakes vs. Debitage Flakes*

Using an experimental approach, we empirically compare the edge angle mean and variability exhibited by "preferential/lineal" Levallois flakes (PLF) versus the debitage flakes produced during their manufacture. Using the caliper method of Dibble and Bernard (1980), we recorded edge angle at five flake locations (left lateral, left distal, center distal, right distal, right later) on 75 PLFs and 450 debitage flakes. We conclude with a discussion of edge angle standardization, functional significance, and whether edge angle was potentially a motivating factor in the hominin decision to knap products via Levallois reduction schemas.

[26] *Chair*

Eren, Metin [255] see Gurtov, Alia

Erickson, Katrina and William Reitze (Petrified Forest National

Park)**[43] Basketmaker Occupation of the Petrified Forest**

There is a long history of Basketmaker research on important sites within the Petrified Forest National Park (PEFO). Sites such as the Flattops site and Sivu’Ovi are prime examples of large Basketmaker habitation sites with dozens of structures, which have formed the foundations of our understanding of Basketmaker occupation and landuse. Research began during the summer of 2013 is focused on expanding our understanding of Basketmaker occupation in the Petrified Forest. As part of the PEFO boundary expansion survey project, several large Basketmaker habitation sites were identified. Preliminary recording and research has begun on these sites, and initial findings are presented here.

Erlandson, Jon [316] see Jazwa, Christopher

Ermigiotti, Paul [289] see Fadem, Cynthia

Ernenwein, Eileen (East Tennessee State University)**[55] Discussant****Ernst, Logan (Logan Glen Ernst) and Jonathan Haws (Dr. Jonathan Haws)****[299] Archaeological Charcoal Analysis of a Middle Paleolithic Site, Praia Rei Cortico, in Portuguese Estremedura**

Charcoal analysis allows archaeologists to identify the woody resources that were available, selected for and utilized by ancient humans over time. This poster presents the results of archaeological charcoal recovered from Praia Rei Cortico, a Middle Paleolithic site dated to 100,000 B.P.. The site is located at the edge of a peat deposit that records a five-part pollen sequence of vegetation change during the Last Interglacial. Throughout the pollen sequence, arboreal and shrubby species fluctuate but pine, oak, birch, hazel and Ericaceae are the main woody types. The archaeological charcoal assemblage derives from dispersed pieces recovered from across the site and two distinct clusters likely remnants of hearths. Two species (*Pinus sylvestris* L. and *Myrtus communis* L.) have been identified consistently within different areas and levels of Praia Rei Cortico. The results suggest a targeted selection of wood for fuel despite the availability of a broader range of woody shrubs and trees.

Eronat, Kristina (UCLA & The University of Kansas)**[139] Bioarchaeological Investigation as Evidence of Elite Group Status in the Prehistoric Population at Boca del Drago, Panama**

This presentation represents a portion of my Master's Thesis research on the skeletal collection from the prehistoric site of Sitio Drago, located off the Caribbean coast of Northern Panama. The research attempts to glean evidence of elite rank social practices by comparing overall skeletal health and the analysis of phytoliths found within dental calculus and from residue on ceramics and lithics found at the mortuary site to collections of skeletal data from this region identified as non-elites. This information will expand our understanding of how prehistoric social rank played a key role in an individual's ability to access nutritionally valuable foodstuffs. This research explores the possibility that Sito Drago is an elite mortuary feasting cemetery where both human and faunal remains, as well as imported ceramic goods, are found. The hypothetical elite remains are needed to comparatively analyze their skeletal qualities with those of contemporaneous remains found in other sites of this region already identified as "non-elites." Comparative analysis can demonstrate a distinctive osteological difference between levels of social rank among prehistoric societies by showing the effects of preferential food and care accessibility for one group over another.

Erturaç, Korhan [249] see Mouralis, Damase

Erturaç, Korhan (Sakarya University), Laurence Astruc (CNRS-UMR7041-Du Village à l'Etat au Proche et Moyen), Bernard Gratuze (CNRS-IRAMAT, Orléans), Sébastien Nomade (CNRS-LSCE, Gif-sur-Yvette) and Nur Balkan-Atli (Section of Prehistory, Istanbul University)**[249] Geological Mapping in the Golludag Volcanic Complex: New Implications for Obsidian Sourcing**
The archaeological survey conducted by the Istanbul University in the Golludag volcanic complex in

Cappadocia allowed us to map in detail the obsidian bearing formation of the Golludag and the Nenezidag. 246 geo-referenced obsidian samples are analyzed using LA-ICP-MS offering a new basis for sourcing. We propose a classification integrating for the first time geological, geochemical and spatial data. As a complement, 700 pieces of obsidian were used to determine the magnetic properties of the Golludag's obsidians. On these bases, new implications for obsidian sourcing will be discussed.

Escamilla, Marlon**[190] *Pipil Migrations and Postclassic Ritual Landscapes in the Balsam Coast, El Salvador***

The nahua-pipil staged a massive diasporic migration from central Mexico to the Central American area. Although it is difficult to establish a specific date of the pipil's arrival to Central America, there is linguistic, historical and archaeological evidence indicating a strong migration during the Epiclassic (700-900 A.D.) and Postclassic (A.D. 900-1524) periods. During the Conquest period (1524), nahua-pipil groups were located southeast of the Central Pacific coast, south of the highlands of Guatemala, and specifically in the central and western areas in El Salvador. This paper analyzes, from a landscape perspective, recent discoveries of Postclassic archaeological sites registered in the Balsam Coast, interpreting particular geomorphological areas as ritual landscapes, which are formed by both physical and symbolic appropriation. The nahua-pipil treated this region as the ideal place for the development of defensive and symbolic landscape appropriations as part of a process of emulation. This was all designed to preserve cultural identity practices, evoking their deities in order to legitimize their own historical memory through cognitive constructs associated with their homeland.

Escamilla, Marlon [197] see Amador, Fabio

Eschbach, Krista (Arizona State University)**[72] *Ceramic Traditions at the Port of Veracruz, Mexico: Four Centuries of Persistence and Transformation***

I investigate local and regional ceramics that are represented at the Port of Veracruz from the seventeenth century to the present day in order to assess the significance of native, African, and Spanish traditions within the port's culture. As late as the mid-twentieth century, locally and regionally produced ceramic vessels were sold for everyday use in the port's markets. Today, potters in central Veracruz continue to produce ceramics, but in the port these vessels are primarily sold in artisan shops as regional folk art. Ethnographic research among these potters is important for understanding changing ceramic technologies and traditions in central Veracruz. I review ethnographic and historical evidence of regional pottery production and exchange. Analysis of the chemical and mineralogical composition and technological style of colonial period pottery recovered from Afromestizo neighborhoods in the port provide evidence of clay sources and procurement methods, formation techniques, and firing technologies. These multiple lines of evidence present an excellent opportunity to trace the persistence and transformation of multi-ethnic traditions through four centuries of post-conquest Mesoamerica.

Espinoza-Vallejos, Sandra [153] see Brown, Clifford

Esquer, Michael [163] see Wiewall, Darcy

Estes, Mark (WCRM, Inc.)**[316] *Home is Where the Hearth Is: Late Holocene Housepit Features from the Black Rock Desert, Nevada***

Recent investigations in Nevada's Black Rock Desert identified three Late Holocene housepit features and associated activity areas from two archaeological sites. While similar housepit features have been identified and investigated from Middle and Late Holocene contexts in northeastern California and southeastern Oregon, few such features are known from this region of the Great Basin. Preliminary analyses indicate these three structures were of similar shape and size, but may have functioned differently based on associated archaeological remains. This poster reports on the preliminary findings of these structures, their ages, and functions in comparison to data generated from housepit features located in nearby regions. These structures and associated remains have important implications regarding the prehistoric use of the Black Rock Desert and can inform on settlement and subsistence practices, raw material procurement, exchange networks, and sexual division of labor during the Late Holocene.

Estrada-Belli, Francisco (Tulane University/Boston University/AMNH)**[61] Preclassic Maya Civilization. A Perspective from the Holmul Region**

The last decade of research by the Holmul Archaeological project in Northeastern Petén, Guatemala has contributed a high-resolution dataset on the Preclassic period that includes paleo-environmental and settlement data, monumental architecture, ritual activity, and iconography. The interpretation of these data has confirmed many of the patterns of early complexity delineated decades earlier by Norman Hammond with the Cuello, Belize data. The knowledge accumulated here and in other parts of the lowlands now permits a more detailed timeline of the development of civilization in the Maya Lowlands with the identification of important turning points or conjunctures in such development resulting in greater consensus therein among scholars. Patterns of convergence of regional cultural traditions in time and space are also evident in early times and bespeak of processes of increased closeness in cultural and political integration of Maya communities during the Preclassic period. The beginning of these processes can now be traced back to the first emergence of ceramics and sedentary life in the Maya Lowlands around 1000 B.C. Many unanswered questions still remain in that distant and obscure period before 1000 B.C. as to the causes, circumstances, and agents of these beginnings.

[295] Discussant**[61] Chair**

Estrada-Belli, Francisco [279] see Canuto, Marcello

Etchieson, Meeks (USDA, Ouachita National Forest), Richard E. Hughes (Geochemical Research Laboratory) and Anne S. Dowd (ArchæoLOGIC USA, LLC)**[30] Lithic Raw Material Choices**

In the Ouachita Mountains of central Arkansas and southeastern Oklahoma, when prehistoric quarries are mentioned, extensive novaculite quarries are the first things that come to mind. In the northwestern part of the mountains, outside the Novaculite Uplift, however, Novaculite-type chert is a minor component of the lithic materials present on most prehistoric sites. A variety of cherts eroded from Johns Valley Shale and silicified sandstone from a variety of sources are the predominant lithic materials available and used. In Yellowstone National Park, Wyoming, obsidian from Obsidian Cliff quarry dominates the area's lithology in much the same way as do novaculite cherts from Spanish diggings in Arkansas. In parts of northwest Wyoming, obsidians from other sources (such as Idaho) or other materials (like chert, quartzite, ignimbrite, porcellanite and steatite) are less common. Farther from Yellowstone, least-cost choices may have caused people to seek more direct and lower-elevation routes to obsidian quarries. The authors compare and contrast raw material choices in these two regions, using source analyses or distinctive combinations of raw materials, in an effort to better understand why people used multiple sources in places where very high-quality materials that were traded long distances were available, or not.

Etnier, Mike [286] see Butler, Virginia

Etter, Bonnie (Johns Hopkins University)**[307] Alaska Shipwreck Patterns as Determined by Geographic Information Systems**

Shipwreck patterns of the southern coast of Alaska (16th-20th centuries) are established and analyzed by employing Geographic Information Systems (GIS). Data for this project were provided, with permission, from the State Archaeology Office of Alaska. They consist of geographic coordinates and associated archival data (historical documents and photographs) which I plot and analyze to create a predictive model for future archaeological excavations. From these data I create maps which serve as a case study to demonstrate how GIS technology can be combined with the archaeological and historical record to create a comprehensive visual record of a set of coordinates. My analysis contributes to the history of Alaskan shipwrecks and their spatial significance, and to the history and methodology of GIS. I propose that an increased understanding of GIS applications will improve archaeological excavations, especially at submerged sites. This project provides a method of transforming a cumbersome system of mapping into programs where entire databases can be accessed and manipulated in compact digital files. In turn, my research produces a prototype which can be accessed by other investigators and aims to be a tool that will facilitate excavation and educational outreach in Alaska public archaeology.

Evans, Victoria [79] see Span, T'Shawna

Evans, Susan (Penn State University)**[120] Teotihuacan Water Worship and Processional Space**

At Teotihuacan, processions were crucial to the social and religious life of the city, as evidenced by murals and also by the plan of the city and the relationship of its built environment to the surrounding vista. A large city in a region where water was the critical resource in least supply, Teotihuacan was always a center of water worship, and as the city's relation to different water sources changed, so did the veneration of particular deities. Extrapolating from the belief system of the Aztecs, we would interpret the city's great expanses of avenues and canals as arenas of ritual and processional activity. Looking at probable processional routes within the city, we detect the intent of the planners as they manipulated distant vistas and constructed impressive and meaningful spaces for performance.

[120] Chair**Evans, Adrian (University of Bradford), Thomas Sparrow (University of Bradford), Andrew Holland (University of Bradford), Andrew Wilson (University of Bradford) and Randolph Donahue (University of Bradford)****[335] 3D Scanning at Small Scales: Implications for Improving Traditional Techniques in Artifact Analysis**

Scanning techniques with fields of view below 1m can allow recording of whole artifacts and can provide detail of surface texture for analytical techniques. This paper is framed around improving techniques used to understand social organization and cognition. We briefly discuss the use of nanometer resolution imaging (different flavors of microscopy), and its use for production and functional analysis, and then focus on the application of lower resolution imaging systems for surface capture. Photogrammetry, laser scanning, and structured light scanning are introduced as potential techniques for the imaging of lithics with examples of data gathered by these techniques and the issues related to their use. This is followed by examples of how this data can be used to optimize key traditional techniques within lithic analysis including refitting, morphometrics, and functional analysis. Implications for increasing accuracy and efficiency of techniques are an ability to study larger proportions of excavated samples while at the same time increasing data quality.

[335] Discussant**Evans, Damian (University of Sydney) and Roland Fletcher (University of Sydney)****[337] Applications of LiDAR at Angkor and Beyond: Towards a Comparative Study of Urbanism in Tropical Forest Environments**

LiDAR technology has begun to revolutionize the practice of landscape archaeology in tropical forest environments. Until recently, however, large-scale projects of archaeological LiDAR in those ecological contexts were limited to the Americas, at sites such as Caracol. In 2011 a group of eight research institutions and government bodies formed the Khmer Archaeological LiDAR Consortium (KALC), with a view to reproducing those research outcomes at the great medieval temple complexes of the Khmer. In 2012, KALC successfully acquired 370 km² of LiDAR across northwestern Cambodia, including the World Heritage landscape of Angkor. The results of that mission have transformed our understanding of Angkor as a lived-in space, and have led to new insights into the role of human-environment interactions in the collapse of classical Angkorian civilization. More broadly, ongoing programs of archaeological LiDAR in Southeast Asia, Mesoamerica and elsewhere are now paving the way for a rigorous comparative study of urbanism in tropical forest environments, underpinned by relatively consistent and comprehensive datasets and common theoretical approaches. This paper is a preliminary attempt to chart ostensible parallels and differences in the new archaeological data between different regions, and to explore the potential for moving forward with this broader, comparative research agenda.

Evans, Lance (University of Calgary)**[343] Geophysical Exploration of Timber Structures at the Cluny Fortified Village**

The Cluny Fortified Village is an enigmatic late Pre-Contact site with characteristics that make it an anomaly on the Canadian Plains. Within the highly visible earthworks, including a 230-m-long semi-circular perimeter ditch and 11 associated pits, excavations have revealed a pattern of vertically-emplaced timber posts. This pattern of posts appears to extend along the inside of the perimeter forming the support elements for an as-yet undefined structure that follows the curve of the ditch. The relatively small size of these posts (10-20 centimeter diameter) makes them challenging to detect by means other than excavation. A geophysical approach to non-intrusively identifying these posts, and thus the extent of

the structure(s), has been explored through a high-resolution ground penetrating radar survey linked with real-time kinematic positioning data at centimeter-level accuracy. The results of this method will be discussed.

Everett, Mark (Texas A&M University), Timothy de Smet (Dept. of Anthropology, Texas A&M University) and Ruth Mathews (Texas Parks and Wildlife Dept.)

[169] *Geophysical Surveys at the Fanthorp Inn State Historic Site (41GM79) in Anderson, Grimes County, Texas*

The La Bahia Road (also known as the El Camino Real) was one of the main Spanish Roads in the New World, transporting precious minerals, supplies, soldiers, slaves, and religious and political officials throughout their Empire. The exact location of this road, however, is difficult to ascertain as much of it has been either lost to modern development or time. A well known spur of this road, known as the Kinnard Road, runs through Anderson, Texas. In November 2007 the Texas Parks & Wildlife Department purchased land adjacent to the Fanthorp Inn State Historic Site (41GM79) in order to build an addition to the parking lot. In January 2011 ground-penetrating radar and magnetometry surveys were conducted at the site in order to locate the remains of the Kinnard Road. Two linear anomalies were discovered within the data sets, one of cultural origin, the other geological. Subsequent ground-truthing via trenching found the road, proving the effectiveness of the geophysical surveys.

Everhart, Jennifer (Stony Brook University)

[236] *Environmental Change? Faunal Exploitation across Climactic Shifts*

It is widely recognized that the Early-Middle Epipaleolithic was characterized by a series of climatic fluctuations. However, scholars know far less about how the peoples of the early and middle phases reacted to the resulting changes in their environments. The long-lived Middle Epipaleolithic site of Uyun al-Hammam, Jordan, was situated in an ecotone, with access to at least two major ecological zones. Was this location perhaps selected because it offered resources that would have enabled its inhabitants to maintain a reasonably stable subsistence strategy despite climatic change? This paper will explore the extent to which faunal resource exploitation was influenced by climate change, with implications regarding hunter-gatherer risk-buffering strategies.

Evershed, Richard [63] see Robertson, Ian

Evis, Laura (Bournemouth University), Tim Darvill (Bournemouth University), Paul Cheetham (Bournemouth University) and Ian Hanson (International Commission on Missing Persons (ICMP))

[283] *Digging the Dirt: An Evaluation of Archaeological Excavation and Recording Techniques and Their Applicability in Forensic Casework*

As a result of recent reviews of forensic science that have found many forensic fields wanting, disciplines such as forensic archaeology have been required to ensure that the methodological approaches used by its practitioners satisfy the admissibility regulations of the international courts. These regulations require that any methodological approaches used during the course of a forensic investigation have been subjected to empirical testing, peer review, have known error rates, have standards controlling their operation, and be widely accepted amongst the academic community from which the methodology originates. To date, however, no substantial empirical testing has been conducted, and no internationally accepted forensic archaeological investigatory process has been established. Therefore, as it currently stands, forensic archaeology fails to meet the requirements of the international courts. However, this presentation will discuss the recent research conducted by Evis and colleagues at Bournemouth University that has experimentally compared forensic archaeological excavation methods and recording systems using a controlled grave simulation that will satisfy the court's requirement for empirical testing. This presentation will also discuss the implications of this research and will examine the potential for the formation of a standardized, tested, widely accepted forensic archaeological investigatory protocol.

Évora, Marina (Núcleo de Arqueologia e Paleoecologia - FCHS-UAlg)

[116] *Antler and Mammal Bones as Tools: Osseous Technology in Cabeço da Amoreira Shellmidden (Muge, Portugal)*

Muge shellmiddens, located in central Portugal, have been known for 150 years. Being one of the most important Mesolithic sites in Europe, the archaeological locality is composed by Moita do Sebastiao, Cabeco da Arruda and Cabeco da Amoreira shellmiddens. As an important part of the material culture of prehistoric hunter-gatherers, osseous materials are present in Cabeco da Amoreira shellmidden, although bone tool studies are yet to be done. Information has been published about the hundreds of human

burials, but not much about the lithic and faunal assemblages. We present here the results of the technological and typological analysis of the osseous artifacts that were recovered from Cabeco da Amoreira shellmidden in the most recent excavations, from 2008 to 2013, featuring the choices of raw materials, the methods of debitage, and the techniques of manufacturing tools.

Ewald, Tatyanna [285] see Devji, Natasha

Ewen, Charles

[276] *The Legacy of the Governor Martin Site*

In 1987 construction in Tallahassee, FL revealed a site that later was interpreted as Hernando de Soto's first winter encampment. Metal and ceramic artifacts distinctive to the sixteenth century entrada were used to identify the site and have since been used to aid in the identification of other Spanish contact sites. These subsequently identified sites have added to the pattern of artifacts that can be used to identify other, contemporary sites. Once identified, these sites, along with the historic narratives of the expeditions, allow archaeologists to reconstruct the political geography of the late prehistoric southern United States as well as better understand the intruders who disrupted those boundaries.

Fabian, Lara (University of Pennsylvania)

[20] *Revisiting Roman-Period Eastern Transcaucasia: Entanglements past and present*

The Roman-period history of eastern Transcaucasia remains very poorly understood from both archaeological and textual perspectives. The only known kingdom from the region in this period, Caucasian Albania, has been at the center of a highly politicized and heated discourse about ethnic identity and national boundaries in the modern South Caucasus, thus discouraging nuanced archaeological scholarship both in the Soviet period and more recently. However, a growing body of archaeological material combined with more sophisticated models of Roman borderland interactions provide a compelling argument for revisiting the region. In the liminal space between the Roman and Parthian empires, local material culture reflects the overlapping and intersecting identities and agendas of residents, regional authorities and outside actors. Interestingly, this picture of diversity is echoed also in textual references and representations produced by Hellenized and Romanized authors, which, from the early days on, stress the region's flexible diversity. In stark contrast to modern totalizing conceptions of Caucasian Albania, then, this paper argues that both archaeological and textual evidence for the period in question suggest profound regional complexity and fragmentation and a wide variety of mediatory strategies.

Fadem, Cynthia (Earlham College) and Paul Ermigotti (Crow Canyon Archaeological Center)

[289] *Pedology, the Pueblo Farming Project, and the Village Ecodynamics Project: Intersections and Directions*

The Pueblo Farming Project (PFP) seeks to incorporate the knowledge of traditional farming practices and educate the public concerning ancient farming and the unique place of corn cultivation in Pueblo cultures. Project gardens, planted since 2008 in collaboration with Pueblo farmers, provide direct measures of changes in yields across a Mesa Verde Loess-derived catena. PFP results show alignment with predictions of the Village Ecodynamics Project (VEP), albeit with greater variation in yield through time. We recently conducted soil profiling at each of five experimental gardens, including classification of color, texture, horizonation, structure, root density, and carbonate accumulation. We also sampled profiles for future analysis of mineralogy and granulometry, and measurement of ion content, pH, and conductivity. Our examination of dryland (direct precipitation) farming practices and interviews with non-irrigation farmers in experimental, subsistence, and commercial contexts suggests intimate connections between long-term fertility, soil identity, and physical management practices. These findings have implications for interpreting the cultural record of past Puebloan agriculture and modeling paleoproduction in the VEP.

Fairley, Helen (US Geological Survey), Brian Collins (US Geological Survey), Amy Draut (US Geological Survey), Skye Corbett (US Geological Survey) and David Bedford (US Geological Survey)

[87] *Evaluating the Effects of Glen Canyon Dam on Downstream Archaeological Sites in Glen and Grand Canyons, Arizona*

The role of Glen Canyon Dam operations in affecting the physical condition and rates of erosion at downstream archaeological sites in Glen and Grand Canyons has been a subject of debate for more than

20 years. Although decades of research demonstrate that Glen Canyon Dam has altered the geomorphological and ecological conditions of the Colorado River corridor, the effects of the dam on archaeological sites is still poorly understood. In order to determine if dam-related physical and ecological changes have impacted archaeological site condition, a team of USGS scientists has implemented a multi-pronged research and monitoring project involving high-resolution monitoring of local weather and sediment-supply conditions, repeat measurements of site topography using terrestrial and airborne lidar surveys, mapping of surficial sedimentary deposits, and modeling of potential and actual erosion scenarios. This program is unprecedented in the study of regulated rivers and dam effects on archaeological sites. Preliminary results show that erosion of archaeological sites downstream of Glen Canyon Dam is ongoing, driven largely by overland flow from rainfall events; initial results also indicate that dam operations have affected the ability of the sedimentary system to rebound from erosional events over time, thereby contributing to the degradation of some archaeological sites.

Falk, Carl [265] see Picha, Paul

Falvey, Lauren (Desert Research Institute/UNLV)

[32] *Written in Stone: Assessing Household Activities at the Harris Site Using Ground Stone Technology*

This paper explores the nature and organization of household activities at the Harris Site through an examination of ground stone technology. Studies of ground stone technology in the Mimbres Valley have often focused on addressing questions related to subsistence practices. The object of this paper is to move beyond a typological documentation of subsistence technology and discuss how tools used in a variety of tasks were manufactured, maintained, and used in household activities. By examining how the inhabitants of Harris organized their daily activities, a clearer picture emerges of how people interacted and negotiated social relationships during the Late Pithouse period.

Fan, Wenquan [126] see Pechenkina, Ekaterina

Farah, Kirby

[293] *Finding Common Ground: A Comparative Study of Elite and Commoner Domestic Practices at Postclassic Xaltocan*

Xaltocan has been extensively researched over the past three decades by Elizabeth Brumfiel and her students, resulting in an impressive corpus of data pertaining to production, agriculture and everyday life. However, the bulk of this research has focused primarily on commoners and there is a relative lack of information regarding local elites. In an attempt to fill this gap, my research/paper will focus on an elite household near the center of modern day Xaltocan, and will compare with extant data on commoner households to determine how class affected domestic spatial practices. In order to glean ideal comparative data, my paper discusses archaeological methodologies employed similar to those utilized for studying commoner households at Xaltocan. This not only facilitates fine-tuned analyses of day-to-day elite practices but results in datasets analogous to those collected from commoner domestic spaces. Such an approach recognizes that the lives of elites, just like commoners, were shaped primarily by mundane repetitive activities rather than by the more widely studied monumental works. The goal of this research/presentation is to determine the degree to which elite and commoner everyday lives differed, and what these differences or similarities exhibit about class and local identity.

[293] *Chair*

Farahani, Alan (University of California, Berkeley)

[127] *From Site Formation Processes to Forming Site Practices: Using Multiple Complementary Data Sets to Identify Long-term Changes in Everyday Depositional Practice at Dhiban, Jordan, 500 C.E.–1400 C.E.*

Grand archaeological narratives globally, and especially in the historic Eastern Mediterranean, often rely on monumental architecture and associated elite objects to explain wide-ranging political, social, and economic change. In contrast, the local practices of the communities that constituted these large changes are often overlooked. Intentionally and unintentionally deposited archaeobotanical remains have been particularly under-utilized in exploring long-term changes in everyday practice. Using data from the archaeological site of Dhiban, Jordan, I present the results of several statistical and qualitative analyses of archaeobotanical, artifactual, and other ecofactual remains recovered through four recent seasons of excavation and flotation to explore this topic. Deposit formation processes are sometimes considered

tangential to artifact and feature-centered interpretive frameworks. Nevertheless, long-term changes in depositional practice at the site of Dhiban, especially of agricultural byproducts, wood charcoal, and ceramics, correlate to the interventions of historical non-local polities during the Byzantine (ca. 300–650 C.E.) and Middle Islamic (ca. 1250–1400 C.E.) periods in this area. The holistic integration and analysis of these often independently analyzed categories of archaeological data enhance the reconstructions of the localized repercussions of known periods of tumultuous political change in Levantine history.

Faraldo, Monica [28] see Welch, Katherine

Fargher, Lane [112] see Uriarte Torres, Alejandro

Fargher, Lane (CINVESTAV del IPN), Verenice Heredia Espinoza (Centro de Estudios Arqueológicos, El Colegio de Michoacán) and Alejandro Uriarte Torres (Direccion de Estudios Arqueológicos, Instituto Nacional de Antropología e Historia)

[130] *Collective Action, Intermediate Sociospatial Units, and Urban Organization in Prehispanic Mesoamerica: An Interregional Cross-Scale Comparison*

Anthropological theory on complex societies has begun to incorporate cooperation into explanations of long-term social change. Consequently, the role of commoners in shaping political-economic processes has emerged as a key area of interest. Yet, the impact of cooperation in urban settings has received scant attention, especially in Mesoamerica. This lacuna resulted in part from a lack of information on the internal sociospatial organization of cities, but sufficient data has now accumulated to allow more fine-grained research. Accordingly, using a combination of archaeological, ethnohistoric, epigraphic, and cross-cultural information, we develop an interregional diachronic database (including Classic and Postclassic Central Mexico, Mixteca Alta, Valley of Oaxaca, Tequila Valleys, and Maya Lowlands) to evaluate the degree to which internal urban spatial organization resulted from top-down processes imposed by political architects versus bottom-up processes managed by semi-autonomous households and other groups. These results are then compared with the degree to which cooperation figured into political policies. We hypothesize that highly collective states developed powerful infrastructures that penetrated deep into the social fabric of cities and reorganized intermediate scale units (and households) to achieve collective goals; whereas, states low in collectivity lacked such infrastructure and were dominated by a diversity of bottom-up strategies.

[130] *Chair*

Farias, Deisi [129] see DeBlasis, Paulo

Farnsworth, Paul (Temple University)

[111] *San Francisco, the Irish heartland in the West*

Over the last decade there have been a number of cultural resource management studies in downtown San Francisco that have encountered mid-to-late-nineteenth-century archaeological assemblages associated with European immigrants to the city. These immigrants included people from Britain, Ireland, France, Germany, Poland, Scandinavia, as well as other countries. However, it has been estimated that first and second generation Irish constituted one in three San Franciscans by 1880 and assemblages related to the Irish in San Francisco form a major component of those that have been recovered archaeologically. This paper will draw on examples from various studies in order to examine the degree to which Irish heritage influenced selected aspects of daily life, such as food and beverage consumption, and purchasing decisions when compared to those of other immigrants to the city during the second half of the nineteenth century in San Francisco.

Farquhar, Jennifer (Albion Environmental, Inc.)

[313] *Moderator*

Farrell, Pat [250] see Siegel, Peter

Farstad, Kendra, Caroline Antonelli (University at Albany) and Cuauhtemoc Vidal Guzman (University at Albany)

[140] *Long-term Patterns in Garden-Orchard Management: Medicinal Plants and Maya Gardens at Mayapan*

This poster will look at the use and management of medicinal plants and trees in a modern Yucatec Mayan garden-orchard and use the results to interpret ethnohistorical and archaeological data related to ancient Maya houselots. The history and origin of these plants will be traced to help understand the long-term evolution of houselot garden-orchards through time. These data will then be compared to similar studies in the Maya area to trace how management strategies may have evolved in the greater context of the Maya area and what strategies may have evolved in response to the local geography of the region. These data were collected in the northwest Yucatan Peninsula at Mayapan, a Late Postclassic Maya site. Mayapan represents a unique opportunity to explore houselot management since much of the urban architecture and enclosed houselot walls are still visible on the surface and have been mapped fully. In addition to the archaeological conditions of the site, due to the late prehispanic occupation of Mayapan, ethnohistoric documents written early in the Spanish conquest reference the site.

Fash, William (Harvard University)

[128] *A Kingdom on the Edge: New Research on Boundary Maintenance and Ethnic Diversity in Ancient Copan*

The material culture of Copan, long considered the “eastern-most capital” of the Maya area, reflects a palimpsest of diverse groups and cultural practices from many adjacent areas, beginning long before the Classic period Maya dynasty (426-822 C.E.) and continuing thereafter. Recent research at the outlying residential site of Rastrojon in the eastern end of the Copan Valley uncovered occupational evidence for non-Maya groups both before and after the dynastic era. During the Late Classic period this defensible site became part of a ritual circuit and visual communications system that likely served the ruling dynasty in monitoring activity along the city’s eastern boundary. One of the many elaborately decorated buildings at Rastrojon featured the iconography of war, and the memory of the long-lived 12th king who created the monitoring system. This “palace” structure was dedicated by Ruler 12’s ill-fated successor, who subsequently was captured, possibly on a battlefield. Projectile points found in three buildings at Rastrojon span the Late Classic, Terminal Classic, and Early Postclassic period occupations there. The new evidence suggests that on the eastern frontier of the city, armed conflict was a constant concern in shifting alliances and population movements before, during and after the Maya hegemony.

Fash, Barbara [154] see Tokovinine, Alexandre

Fash, Barbara (Harvard University) and ALEXANDRE TOKOVININE (HARVARD

UNIVERSITY) [154] *Fresh Angles: 3D as a Research and Preservation Tool*

How can we study and preserve monuments that are deteriorating at an alarming rate? Using today's high-resolution 3D scanning technology and printing we stand a chance of reviving some of the world's sculptural treasures by virtual and physical replication. Not without its challenges, this is our era's contribution to the preservation of ancient knowledge. The talk will touch on what lies ahead and how 3D applications are aiding in the documentation, preservation, and interpretation of Copan's lengthy and vulnerable Hieroglyphic Stairway.

Faulseit, Ronald (Tulane University)

[254] *Classic to Postclassic Household Economic Strategies in the Oaxaca Valley*

The Classic to Postclassic transition, which brackets the decline of the Monte Albán polity, has been the subject of some debate. While a few scholars suggest that the centralized political system experienced a crisis causing rapid demographic shifts, others have argued for a more gradual transition to a system of fragmented and competitive minor states that dominated the Late Postclassic (A.D. 1300–1521). Less attention has been paid, however, to what occurred immediately in the aftermath of Monte Albán's "collapse." My research focuses on the Late Classic and Early Postclassic settlement at Dainzú-Macuilxóchitl, an important secondary center during the Monte Albán era, to examine how the community reorganized in the post-Monte Albán environment. In this paper, I discuss the economic strategies employed in an Early Postclassic house complex derived through the spatial analysis of materials associated with craft production and consumption. These data present a pattern consistent with an economic strategy employing multi-crafting and the procurement of finished obsidian tools, which suggest dependence on regional market interactions.

[254] *Chair*

Fauman-Fichman, Ruth (University of Pittsburgh)

[112] Is It an Absence of Evidence or Is There Evidence of Absence in Dynamic Interactions in Tlaxcala and Puebla?

If we view Tlaxcala and Puebla as regional places of unique material character, our method for understanding dynamic interaction is based on material comparisons between local and more regional centers of influence. If we see material evidence we might conclude there was dynamic interaction. If there is no material evidence should we conclude there was no interaction? If on the other hand we view Puebla and Tlaxcala as areas with inhabitants who made behavioral choices based on relational and environmental constraints and opportunities we may understand interaction over time in other terms. Such a paradigm that frees our thinking about Tlaxcala and Puebla as essentially unique allows us to study patterns that occur in other places and times to follow the particular trajectory of interaction in this area of Mexico over time.

Faust, Katherine (UC Riverside)**[62] The Iconography of Huastec Engraved Shell Ornaments and Ceramics**

The pre-Columbian peoples of the Huastecas produced one of the most unique corpuses of ancient Mesoamerican iconography, inspiring the interest of scholars since the turn of the nineteenth century. The main focus of this study are the materials known as Huastec Black-on-White and Tancol Polychrome ceramics, as well as engraved conch shell ornaments. Motif permutations adorning these objects are highly standardized, underscoring the significance of context and location in the production of meaning. I will explore the multiple meanings embedded in Huastec iconography through a gestalt analysis of motif and form.

Fauvelle, Mikael [2] see Smith, Erin

Fauvelle, Mikael (University of California, San Diego) and Erin Smith (Washington State University)**[198] Beyond the Periphery: Comparing Complexities in Coastal California**

All societies are characterized by some degree of resistance to hierarchical authority. This is equally true for societies whose members toil under an entrenched state apparatus as it is for those where the state exists primarily as a mythological concept opposed to individual autonomy. Pre-Hispanic California was geographically distant from the experience of the Mesoamerican state, yet individual Californians would have obtained knowledge of such authoritarian ways of living through regular and well-documented exchange with the American Southwest and Northern Mexico. This paper explores the impact that such concepts of authority might have had on the development of societies of resistance in coastal California. We explore the material and ethnohistoric evidence for a long history of connections between coastal California and inland areas and compare how different Californian societies chose to navigate their experience with organizational authority. We argue that coastal Californian hunter-gatherers were aware of the ways of living experienced by their eastern agricultural neighbors, and suggest that the social and political trajectories of the region cannot be understood outside of broader known landscape.

Faux, Jennifer (SUNY Buffalo)**[37] Fingerprinting the Past: A Dermatoglyphic Evaluation of Figurine and Candelero Production at Teotihuacan, Mexico**

Household craft production has been a research concern of archaeologists for decades with the aim of reconstructing the sociopolitical economy of past societies. Given the difficulty of determining how and where goods were produced, and particularly who produced goods, archaeologists have surmised that the identification of craft producers may be indeterminable. In this paper, the social implications of figurine and candelero production at Teotihuacan, Mexico, will be evaluated by determining the sex the figurine and candelero producers. Household-based production at Teotihuacan will be studied through the examination of material culture recovered from the 1959 excavations of Plaza One, currently housed at the University at Buffalo. In an attempt to deconstruct the social implications of figurine and candelero craft production at the residential level, this paper describes an effort to determine if figurine and candelero production was gendered. Through the use of paleodermatoglyphics, or fingerprint analysis of archaeological material culture, and ethnographic analogy, the present research aims are to assess the sex of past figurine and candelero producers in an attempt to understand the boundaries of household-based craft production at Teotihuacan and reveal divisions of labor at the residential level.

Fayek, Mostafa [115] see Milne, Brooke

Feathers, Valerie (Louisiana State University), Heather McKillop (Louisiana State University) and E. Cory Sills (University of Texas-Tyler)

[177] *Excavating Underwater Maya: Does the Shell Midden Enhance Preservation in the Mangrove Peat?*

Mangrove peat provides an ideal matrix for the dramatic preservation of wooden architecture below the seafloor at ancient Maya salt works in Paynes Creek National Park, Belize. The absence of animal bones and human burials typical of ancient Maya communities is not surprising due to the slightly acidic peat, and perhaps not expected at the salt works. Several of the Paynes Creek salt works have associated shell middens, where animal bone or human remains could be preserved due the addition of a calcium carbonate compound to the peat matrix. Excavations in Spring 2013 were carried out at a shell midden associated with a wooden building at the Eleanor Betty underwater salt work to discover whether bone was present. In this paper, we describe mapping and underwater excavations at the shallow inundated Eleanor Betty salt work, including the shell midden and the accompanying wooden architecture.

Feathers, Jim [201] see Kappelman, John

Fedick, Scott (Anthropology, University of California, Riverside)

[330] *Maya Cornucopia: Indigenous Food Plants of the Maya Lowlands as Commodities*

Agricultural products are generally considered the most common of commodities; marketable items produced to satisfy wants or needs. Corn, or maize, is the soft commodity usually thought of as the food product of ancient Mesoamerica that could be marketed and potentially transported over significant distances. Other food commodities such as cacao were certainly important and marketable, but could be thought of as satisfying elite wants rather than common needs. This presentation will consider the 500 indigenous food plants of the Maya Lowlands, and explore the potential commodity value and transportability of food plants that might have been carried in the Maya cornucopia.

[63] *Discussant*

Feeley, Frank (CUNY Graduate Center)

[29] *Medieval Fishing at Gufuskálar, Snæfellsnes, Iceland*

This presentation details some of the new developments at the excavation of the Medieval fishing station at Gufuskálar, Western Iceland. One of the largest fishing stations of its time, dried cod fish from this site were exported to Continental Europe.

Fehrenbach, Shawn

[18] *Managing Digital Data in the Laboratory for NGWSP*

The Navajo-Gallup Water Supply Project provides a case study for incorporating cutting-edge capabilities in archaeological data management, as well as the hurdles to implementing these methods. There has been a proliferation of digital data in archaeology over the past several decades. Often, massive datasets have been generated with little attention paid to the tools required to leverage and curate such datasets. Developments in smartphone and tablet hardware over the past six years have brought digital data collection workflows to the fore in archaeological field studies, making the effective management of digital datasets all the more critical. This paper outlines advances made by PaleoWest archaeology in managing data collected in the field and laboratory, and in the context of managing collections, conducting analyses, reporting, and curation.

[18] *Chair*

Fehren-Schmitz, Lars [270] see Aronsen, Gary

Feibel, Craig [295] see Hlubik, Sarah

Feinbert, Joshua [209] see Hunstiger, Matthew

Feit, Rachel (AmaTerra Environmental)

[155] *In the Valley of Waters: Archaeological Investigations at a 19th century African American*

Cemetery (41NV716) in Navarro County, Texas.

The postbellum period in Texas was a time of rapid transition and intense social upheaval for blacks and whites. Black communities in particular withered and reformed, as people migrated to other places in search of family, new employment, and land to call home. This paper looks at the aftermath of the Civil War through mortuary remains from the Montgomery Hill Cemetery in Navarro County. This unmarked cemetery, located within the Richland-Chambers Reservoir, came to light during the drought of 2009 when falling lake levels exposed human remains on a beach. Subsequent excavations, oral histories, and research suggest that African Americans from around the town of Eureka were interred here just after the Civil War. The material remains from the cemetery suggest a hybridized spirituality coupled with a deep sense of tradition among community members. But research has also exposed the precariousness of existence for African Americans after emancipation. This paper highlights how artifacts found with the interred remains reflect the endurance of a specific African American spirituality and community identity within a context of social change.

[155] *Chair*

Feld, Steven (U New Mexico)

[122] *Discussant*

Felling, Danielle (University of Nevada, Reno)

[148] *Returning to Last Supper Cave: New Results from AMS Dating and Ongoing Analyses of a Late Paleoindian Occupation in Northwest Nevada*

Located in the High Rock Country of northwest Nevada, Last Supper Cave was tested in 1968 and fully excavated in 1973-1974 under the direction of Tom Layton and Jonathan Davis. The site revealed a long sequence of human occupation including an extensive Paleoindian component initially dated to ~9,000 14C B.P., although large standard errors on many radiocarbon dates precluded precise dating of the early occupation. In 2008, a hearth from the lowest deposits returned an AMS date of 10,280 14C B.P., suggesting that the initial occupation occurred during the latest Pleistocene, over a millennium earlier than initially believed. Here I present results of further AMS dating of the early deposits at Last Supper Cave as well as my ongoing analyses of diagnostic artifacts to determine the stratigraphic integrity of the site. I also point the direction towards future research with the Last Supper Cave materials, which will make use of an old collection to reveal additional information about early prehistoric lifeways without furthering our impact on the archaeological record.

[148] *Chair*

Fenn, Thomas (School of Anthropology)

[58] *Botswana, Southern Africa and Glass Bead Trade in the Indian Ocean during the 1st and 2nd Millennium A.D.*

Imported glass beads are important evidence to study Indian Ocean trade. The presence of thousands of imported glass beads on archaeological sites in eastern and southern Africa are an excellent example of this, but questions remain about the potential sources for these beads. Typologically, these beads are similar to beads from Southeast and South Asia and the Middle East. Glass beads from Botswana, and several other locations in southern and eastern Africa were subjected to chemical composition analysis and grouped into various glass "recipes". Many of these can be correlated with known broad regional glass manufacturing traditions. In this paper I will present and discuss the compositional data as well as lead, strontium and neodymium isotope analyses of a sub-sample of glass beads from these sites and regions. These beads originate from contexts dated from as early as the 8th century A.D. until the 17th century A.D., and include several defined chronologically progressive typologies. Possible provenances for the raw primary glass production and bead production are suggested from the elemental and isotopic data. These isotopic results, combined with the chemical compositions, have identified at least two primary regions of origin for the glass beads, the Middle East and South Asia.

Fenn, Thomas [237] see Hill, David

Fennell, Christopher (University of Illinois)

[94] *Tradition and Modernity on Great Blasket Island, Ireland*

This project in archaeology, history, and landscape studies examines the lifeways of residents of the

Great Blasket Island off the southwest coast of the Republic of Ireland in the period of 1800 through the early 1900s. The lifeways of the residents on the Great Blasket Island were the focus of concerted, nationalist mythology construction by proponents of the new Republic of Ireland in the early 1900s. Those lifeways, supported by maritime and agrarian subsistence, were hailed by nationalist advocates as representing an authentic Irish cultural identity uncorrupted by the impacts of British colonialism, modernity, or new consumer markets. Great Blasket's population decreased as emigration to America or to the mainland towns of the new Republic of Ireland drew families away. All residents had departed that island by the 1950s and no research has examined the cultural landscape and archaeological record of their actual lifeways. This project examines what was known about the lifeways of the islanders from ethnographic and historical descriptions, and the likely ways in which those accounts were shaped by nationalist sentiments in the early 1900s. Those accounts can be compared and contrasted with data from archaeological investigations and cultural landscape studies.

[94] Chair

Fenner, Jack (The Australian National University) and Dashtseveg TUMEN (National University of Mongolia)

[41] *Fit for a Khan: Stable Isotope Analysis of Elite Mongolians from the Mongol Empire Period*
During the thirteenth century A.D., Mongol peoples from the steppes of Central Asia conquered a huge swath of Asia and eastern Europe. Diet is one cultural component that might have changed as Mongol people became both wealthier and more knowledgeable of foreign customs. Here, we use collagen carbon and nitrogen stable isotope analysis of human remains from eastern Mongolia to see whether certain aspects of diet differed between a group of probable Chingisid elites buried in a cemetery at Tavan Tolgoi in southeast Mongolia and a group likely composed of lesser elites or commoners. We also compare the Chingisid data to data from Mongolian pastoralists from the Bronze Age and from the immediate post-Empire period. The results indicate that the elites had significantly different stable isotope ratios, but it may be related to environmental rather than dietary differences.

Fenoglio, Fiorella (Fiorella Fenoglio) and Juan Carlos Saint Charles

[336] *Restos de textiles en un contexto de ritual de abandono. El caso de El Rosario, Querétaro*
Durante los trabajos de exploración del principal edificio arqueológico de El Rosario - lugar considerado como enclave teotihuacano en el Valle de San Juan del Río- fueron localizadas una serie de objetos como pequeños cuchillos de obsidiana, puntas de proyectil y una importante cantidad de fragmentos de braseros, todos ellos cubiertos por una gruesa capa de ceniza y troncos carbonizados. En ese mismo contexto, se localizaron algunos restos de textiles. En este trabajo se plantea que dicho contexto corresponde a un ritual de abandono del sitio hacia 650 d.C. coincidiendo con la "caída" de Teotihuacan, además de que la evidencia se encuentra depositada sobre el piso correspondiente a la tercera etapa constructiva del edificio y última asociada a la ocupación teotihuacana en este lugar. Consideramos que la localización de los fragmentos de textil dentro de este complejo contexto arqueológico es sumamente interesante e importante de anotar.

Ferguson, Josalyn

[123] *The Allure of the Regional Hinterlands of the Land of Chocolate and Honey: Terminal Classic Population Movements and Resettlement in the Progresso Lagoon Region of Northern Belize*
While there is consensus that the processes of decline and abandonment at many sites associated with the Terminal Classic Maya "collapse" (A.D. 800-1050) included the movement of peoples across the Maya lowlands, there has been little focused archaeological research on the resettlement and regeneration of these migrant groups. The movement of peoples across the Maya landscape was additionally encouraged by a revolution in exchange systems, with a notable increase in mercantilism and entrepreneurialism across the Maya Area, and a more integrated economic system focused on a wide range of commodities that served to link polities and regions on a more inclusive scale. As a result many regions experienced marked population growths with the expansion of existing settlements, the resettlement of previously abandoned sites, and the establishment of new communities. The Progresso Lagoon region of northern Belize, in the hinterlands of Chetumal Bay is one such area that witnessed such marked population growths. This paper will examine what combination of social, economic and political processes and geographical features encouraged the resettlement and regeneration of communities in this region during this formidable period, as elucidated through the archaeological investigation of the settlement of the Terminal Classic Strath Bogue community.

Ferguson, T.J. [151] see Dongoske, Cindy

Ferguson, T. J. (University of Arizona) and Stewart Koyiyumptewa (Hopi Tribe)

[152] *Co-Creation of Knowledge about the Past by The Hopi Tribe and Archaeologists*

For two decades, the Hopi Cultural Preservation Office has worked with archaeologists to co-create knowledge about the past and the contemporary values associated with heritage sites. Much of this work has been accomplished in the framework of research mandated by the National Historic Preservation Act and National Environmental Policy Act. Here we describe the processes of this community-based participatory research, including research design, implementation of fieldwork, peer review of research findings, and reporting. The Hopi Tribe's collaborative research with archaeologists provides intellectual benefits for the management of archaeological resources and the humanistic and scientific understanding of the past.

Ferguson, Jeffrey (University of Missouri)

[287] *Upper Paleolithic Obsidian Use on Hokkaido, Japan*

Collaborative efforts between researchers in Japan and the United States have generated a large, and growing, database of obsidian provenance studies in the northern Japan island of Hokkaido. We discuss the obsidian raw material procurement patterns of hunter-gatherers at Upper Paleolithic sites on Hokkaido based on obsidian compositional studies using XRF and NAA. Further insight results from detailed lithic reduction sequence analysis. The result shows that the procurement and reduction strategies varied by industry and relative distance from the more than twenty obsidian sources, while through time there is a general increase in the diversity of sources used.

[287] *Chair*

Fernandes, Paul [299] see Wragg Sykes, Rebecca

Fernandez, Andrew, Nicholas Rakita (Jacksonville Florida), Andrew Krug (The University of Missouri Columbia), Brent Willhite (The University of Missouri Columbia) and Todd VanPool (The University of Missouri Columbia)

[44] *From Field to Photoshop: Photo Recording, Post Production Image Digitization and Lithic Analysis of a Rock Ring Feature from 76 Draw, New Mexico*

Throughout the American Southwest and Mexico, prehistoric people cultivated and processed wild agave using a variety of rock-lined pit earthen ovens. 76 Draw, a Casas Grandes Medio Period pueblo (1250-1450 AD) located south of Deming, NM, has a rock ring surface feature characteristic of a roasting pit. This anomaly has endured significant site deflation and erosion since its initial recording in 2009. Its evident preservation and possible cultural importance justified more intensive study. During the summer of 2013, the ring was systematically photographed, mapped, and partially excavated. Surprisingly, test excavations yielded few subsurface artifacts and quickly revealed a hard sterile clay stratum. This poster reports the results of the excavation and lithic analysis of the rock feature while also exploring how field photography and postproduction image digitizations facilitate the documentation of large-scale ground features.

Fernandez, Andrew [44] see McCarthy, Elizabeth

Fernández, Abel [146] see Tantaleán, Henry

Fernandez Diaz, Juan (University of Houston / NCALM), Michael Sartori (University of Houston / NCALM), Abhinav Singhania (University of Houston / NCALM), William Carter (University of Houston / NCALM) and Ramesh Shrestha (University of Houston / NCALM)

[337] *Airborne Mapping LiDAR Data Collection and Processing for Archaeological Research*

In this presentation we will cover lessons learned from performing archaeological mapping projects in Belize, Mexico, and Honduras by comparing and contrasting them to other more traditional LiDAR mapping projects executed over more than a decade by the NSF National Center for Airborne Laser Mapping (NCALM). A complete description of the LiDAR data production workflow from mission planning to on-field data collection and from data processing to final data products delivery will be provided. Emphasis will be placed on how the nature of archaeological research requires special considerations to be taken at each of these above mentioned steps in order to deliver data with the required quality to

achieve the research goals. Furthermore, aspects of LiDAR commissioning and data quality metrics will be discussed to provide researchers interested in LiDAR, but without previous experience, with a starting point to apply this technology to their research. Finally, the current state of the technology, its potentials and limitations, will be presented with a view to new technologies and algorithms that have the potential to overcome existing limitations.

Fernandez-Diaz, Juan-Carlos [337] see Leisz, Stephen

Fernández-Díaz, Juan-Carlos [337] see Fisher, Christopher

Fernandini, Francesca (Stanford University)

[245] *Cerro de Oro: A Coastal Settlement during the Middle Horizon*

This paper will present results from analysis performed on maritime-associated products obtained from our recent research at Cerro de Oro, in the lower Cañete Valley. Cerro de Oro is a large urban-like settlement that experienced important demographic growth during the Middle Horizon Period. This analysis focused on shell species determination, the analysis of contexts with fishing implements, and evidence associated with intensive pluvial events. Through these studies we explore the role marine elements played in daily life as well as understand how the local population dealt with sudden climatic changes possibly caused by ENSO events.

Fernstrom, Katharine (KW Fernstrom & Associates)

[215] *Topics in the Ethics of Appraising Art-Made-for-Sale and Commodified Antiquities*

I am a Professional Archaeologist with extensive Art Museum experience and a member of the SAA, SHA, and RPA. I am starting an appraisal business specializing in Native American and Pacific Islands commodity-art, but I have to establish formal business practices that take a stand against appraising illegally commodified antiquities and ethnographic objects. Collectors of art-made-for-sale frequently possess, buy, and sell antiquities and ethnographic objects. Objects put into commodity circulation before the enactment of the Antiquities Act, the Archaeological Resources Protection Act, and the UNESCO convention of 1970 are not illegal to buy and sell. Further, since these objects have already been removed from their archaeological and cultural contexts, appraising them does not violate the ethical codes of the SAA, SHA and RPA. In and of themselves, however, these statements constitute a sell-out, a cop-out, and an easy-out. It is necessary to demonstrate their commodity-age by such documents as receipts or wills. Further, it is necessary to risk losing clients by refusing to appraise antiquities and ethnographic art that fail the document test. Finally, I wish to proactively educate the public about protecting finite archaeological and ethnographic resources.

Ferraro, Joseph (Baylor University), Katie Binetti (Baylor University), Gary Stinchcomb (Pennsylvania State University) and Fredrick Manthi (National Museums of Kenya)

[209] *Farre: An Early Middle Pleistocene Archaeological Locality in the Chalbi Basin, Northern Kenya*

The Middle Pleistocene of Africa saw the rise of Homo sapiens, the emergence of cumulative culture, and the appearance and proliferation of a battery of sophisticated new technologies. And yet, as relatively few African localities sample this important timeframe (ca. 781 to 126 thousand years ago), the specific details of the timing, setting, and dynamics that underlie the emergence and early evolution of these advances remain poorly understood. With an estimated minimum age of ~600 ka, recent discoveries at the open-air locality of Farre, northern Kenya, add important new data to the early Middle Pleistocene archaeological record in Africa. Initial interest in the site centers on an intriguing assortment of spatially and temporally associated lithic technologies: a combination of tool forms and production techniques that transcend simple assemblage-wide classification to either the Acheulian or to the Middle Stone Age (MSA). Instead, the assemblage reflects a relatively high level of technological skill coupled with tool forms characteristic of both traditions. This result is consistent with suggestions that the transition between the Acheulian and the MSA was a mosaic process; one characterized by non-synchronized advances and retreats in technological know-how, with some general tool forms (points, blades, etc.) likely having multiple independent origins.

Ferris, Neal (University of Western Ontario)

[134] *Discussant*

Fertelmes, Craig (Arizona State University)

[268] *The Development and Application of Nondestructive Portable X-ray Fluorescence Spectrometry for Hohokam Vesicular Basalt Groundstone Provenance Analyses*

Vesicular basalt was often acquired by the Phoenix Basin Hohokam for groundstone tool manufacture. However, the precise nature of this acquisition remains poorly defined due in part to an inability to identify the source of the raw material. This presentation summarizes ongoing research efforts aimed at developing the use of nondestructive portable X-ray fluorescence (PXRF) spectroscopy for vesicular basalt provenance analyses. Evaluations of instrumental sensitivity and reliability, combined with chemical assays of material from nearly two dozen quarry sites, has found that PXRF analyses can provide valid provenance assignments for groundstone artifacts. Moreover, analysis of provenance determinations for a sample of groundstone artifacts from nine Hohokam sites suggests spatial and temporal variation occurred in material acquisition practices. The implications of this patterning for Hohokam groundstone procurement practices and culture history in general are examined.

Fetterman, Jerry [289] see Sommer, Caitlin

Feuer, Bryan

[15] *Discussant*

Fiedel, Stuart (Louis Berger Group)

[211] *The Back Creek Quarry Complex: A Newly Identified Chert Source in Northern Virginia*

In a recent transmission line survey, a cluster of chert quarries and processing sites was identified on hills along Back Creek, located northwest of Winchester, Virginia. Diagnostic bifaces indicate these sites were visited during the Late Archaic, Terminal Archaic and Late Woodland. The huge number of triangular points and preforms recovered previously from the nearby Fout Site suggests that use of this source was most intensive during the Late Woodland. Neutron activation and petrographic analyses show the Back Creek chert is distinctive from all previously sampled Mid-Atlantic cherts.

Field, Les [119] see Leventhal, Alan

Field, Julie (Ohio State University)

[242] *Sigatoka Valley Revisited: Preliminary Results from the Post-Lapita Subsistence Transition Project*

Settlement of the interior of Viti Levu, Fiji has long been assumed to have occurred ca. 2500-2000 B.P., during a period that is known as "Post-Lapita," or the early portion of the "Mid Sequence." It has also been assumed that settlement was part of a broad expansion of agricultural production, and the transition of diets with largely marine components to ones with a base of carbohydrates. Our research project, initiated in 2013, seeks to detect the presence of initial settlement in the interior of Viti Levu, Fiji, and examine the linkage of this settlement with major landscape change associated with farming. This presentation reports on the preliminary survey of sites in the Sigatoka Valley and associated GIS modeling. Outcomes and plans for the next stage of research will be discussed.

[242] *Chair*

Figol, Timothy [322] see Malainey, Mary

Figueiredo, Olívia [116] see Umbelino, Cláudia

Figueiredo, Olívia (NAP - Universidade do Algarve), Nuno Bicho (NAP - Universidade do Algarve) and Cláudia Umbelino (CIAS - Universidade de Coimbra)

[116] *Bones Don't Lie: Approaches to the Social Dimension of the Mortuary Practices at Cabeço da Amoreira (Muge Shellmiddens, Central Portugal)*

The great number of skeletal remains recovered from the Muge sites makes this series one of the most important for the study of Mesolithic societies. Since its discovery in 1863, around 300 skeletons were discovered in the Muge complex. From Cabeço da Amoreira, one of the largest middens of this complex, more than 30 skeletons were recovered but unfortunately any systematic study has been done in previous researches. Given that, little is known about the symbolic value of these funerary practices.

Besides variations regarding grave goods, body position, and chronology, burials can also expose indicators of social status and organization. Based on new analysis and a review of published evidence, including skeleton position and orientation, spatial location and presence/absence of votive materials, the aim of this paper is to discuss the mortuary variations archaeologically visible at Cabeço da Amoreira as a result of a social hierarchy and division.

Figueroa, Alejandro (Southern Methodist University)

[161] *From Foragers to Early Agriculturalists: The Deep History of the Highlands of Southwestern Honduras*

Preceramic research in Honduras has focused on the El Gigante rockshelter, where evidence of early human occupation and a detailed record for a rich foraging economy during the Early Holocene were uncovered. This work also highlighted the potential for hunter-gatherer studies in the area, and presented sound hypotheses to be further tested. This paper presents ongoing research in the Sierra de La Paz mountains, located approximately 15km southwest of El Gigante. Survey and excavation data suggest that this landscape was rich in key resources necessary to sustain foraging human populations, including natural shelters, permanent water sources, and lithic materials. Moreover, research continues to show that the material culture from this area is unique in its level of detail and preservation, and can expand what we know of past lifeways, behaviors, and beliefs, as well as how these developed into the cultural traditions of modern populations.

[161] Chair

Fike, David [260] see Munoz, Samuel

Filimoehala, Chris [242] see Herdrich, David

Filin, Sagi [65] see Nadel, Dani

Filin, Sagi, Vera Miller (Technion - Israel Institute of Technology), Dani Rosenberg (The Zinman Institute of Archaeology, The University of Haifa) and Dani Nadel (The Zinman Institute of Archaeology, The University of Haifa)

[65] *Photogrammetry and 3D Modeling of Bedrock Features (Mortars and Cupmarks)*

Bedrock features such as mortars and cupmarks are known in the southern Levant at least from the late 1920s. Many were dated to the Natufian and the Pre-Pottery Neolithic A periods (15,000-10,300 cal B.P.). The appearance of large and diverse assemblages of bedrock features, reflecting a variety of functions, seems to have played an integral role in the earliest transition from hunting-gathering to food producing economies based on cereals and legumes. Our research team has been studying bedrock features for almost a decade now. Though there are many advances and insights, the accurate documentation and modeling lingered behind. Furthermore, characteristics of production technology, spatial distribution and preservation patterns are yet to be fully established and analyzed. Aspects such as rim morphology, shaft characteristics and size await meticulous intra- and inter-site studies. We present in the current paper new implication of using photogrammetry for a high resolution 3D documentation, even of the deepest and narrowest mortars. We propose geometrical and volumetric analyses to characterize the 3D models of each specimen. We then explore the possibilities and advantages of this method for bedrock feature documentation and analyses. The Natufian graveyard at Raqefet Cave, Mount Carmel, serves as our case study.

Filini, Agapi (El Colegio de Michoacan)

[91] *Symbols Are Important: Teotihuacan and Foreign Political Practice*

Teotihuacan, the largest city in Mesoamerica, had developed a variable spatial interaction network which required reproduction in order to perpetuate itself. This paper suggests that symbolic acts (rituals and ceremonies), a distinct category of the state's institutionalized practices, were instrumental in structuring the network and thus securing the success of Teotihuacan's foreign political practice. Based on a GIS approach, the material manifestations of symbolic acts are explored to allow for the definition of social differentiation, and a consideration of how "otherness" was defined and of the effects of symbols on the local social fabric.

Filloy, Laura (Museo Nacional de Antropología)

- [25] *Idiosyncratic and Individualizing Traits Used by Mayan Artist to Punctually Qualify the Portrait (Facial and Head Treatment) of the Ruler during the Reign of K'inich Janaab' Pakal of Palenque (A.D. 615–683).*

The city of Palenque, achieved its greatest splendor when it became one of the foremost centers in the Maya world during the reign of K'inich Janaab' Pakal (A.D. 615–683). Refined craftsmen used different media to create a repertoire of portraits of their rulers, heirs and courtly members. Although Mayan artists bear with different epigraphic resources to indicate the individuality of the represented personages, they complemented the image of each human being with a series of idiosyncratic and individualizing traits to punctually qualify the individual and to lead the observer to recognize who or what kind of person was characterized in the image. By placing the individual in his context and environment, analyzing the traits that shears with his collectivity and those of his individuality, will lead us to discover its proper identity. In this work, we will discuss different aspects linked to the inherent complexity of the notion of person and its representation. Thanks to the number of examples that Janaab' Pakal left of his image we can examine portraits (facial and head treatment) of his youth as well as his mature years created by Palenque artists.

Finlay, Nyree

- [115] *Kid-Knapped Knowledge: Emergent Sociality and Stories of Skill and Stone*

Within lithic studies, the identification of kid-knapped products and an engagement with skill has offered identifiable signatures to explore how self and stone become imbricated in a number of ways. Along with experimental methodologies, such studies have provided powerful insights with which to explore the interplay of emergent identities in various knapping techniques and in diverse lithic raw materials. The main aim of this paper is to offer an overview of, and commentary on, interpretative narratives around the recognition of children's stone working practices. Attention will also be given to if, and how, overarching narratives have changed over time and in light of recent studies. What are the wider lessons for the future of the archaeological child? Using examples from prehistoric Europe and Mesolithic assemblages, issues of gender, age and other aspects of personhood will be highlighted through a focus on the sentient and relational properties of lithic technology.

Finley, Judson [148] see Carey, Peter

Finnigan, Jim [117] see Gilliland, Krista

Fischbeck, Shelly (Atkins), David M. Hyde (Western State Colorado University) and Samuel Roberts (Western State Colorado University)

- [137] *Raising the Roof: A Corbel Vaulted Roof at a Maya Commoner Household: Structure B-2 of the Medicinal Trail Community*

This poster presents evidence for a corbel vaulted roof from a small Maya hinterland commoner structure. Initially used in elite tombs, corbel vaults eventually are used for a variety of structural features such as temples, palaces, and residences. By the Late Classic they are found in abundance in urban settings, most closely associated with the elites. Corbel vaulting is an expensive construction technique in terms of labor as they require thick walls supporting walls, and large amounts of cut stone. Moreover, they require access to the necessary engineering knowledge to be properly constructed. Medicinal Trail is a hinterland commoner community in Northwestern Belize, and Structure B-2 is a residential structure at the Tapir Group, a formal household within the community. Exceedingly rare for small commoner households, Structure B-2 was constructed with a corbel vaulted roof. Evidence for complex architecture of this sort within a commoner setting demonstrates the complex and integrated role small peripheral communities played in the larger Maya interaction sphere.

Fisher, Kevin (University of British Columbia)

- [5] *Differing Trajectories of Urbanism on Late Bronze Age Cyprus*

The Late Bronze Age on Cyprus was a period of revolutionary social change in which the island transformed from a relatively egalitarian, village-based society to one with hierarchical and heterarchical social structures. The Kalavasos and Maroni Built Environments (KAMBE) Project seeks to understand the relationship between these developments and contemporaneous changes to the built environment, including new forms of domestic and mortuary architecture, monumental construction, and the island's first urban centers. Using both large-scale and more focused, high-resolution archaeological geophysics combined with test excavations, the project has been investigating the important Late Bronze Age sites of Kalavasos-Ayios Dhimitrios and Maroni-Vournes/Tsaroukkas. This work is providing important new

insights into the urban fabric of these early cities, revealing contrasting patterns of spatial production. While Kalavasos appears to have a planned and relatively nucleated urban form, the evidence from Maroni reveals a low-density cityscape with multiple nuclei. An attempt is made to explain these divergent trajectories of urbanism by considering the differing site histories of Kalavasos and Maroni during the Late Bronze Age and the place-making strategies by which their respective elites attempted to consolidate their power.

Fisher, Victor (Towson University)

- [141] *Landscape Architects' Embellishments of the Ancestral Pueblo Record: Taking Liberties with the Unknown*

Some southwestern landscape architects have generated minor variations on details of Ancestral Pueblo culture history. Their intriguing suggestions appear to be reflections of their unique professional training and perspectives. In this paper a sample of these creative ideas is critiqued.

Fisher, Christopher [154] see Pezzutti, Florencia

Fisher, Lynn (University of Illinois Springfield), Susan Harris, Corina Knipper (University of Mainz, Germany) and Rainer Schreg (Römisch-Germanisches Zentralmuseum, Germany)

- [246] *A Neolithic Landscape on the Swabian Alb (Germany): Contributions of a Regional Approach*
Building on the Southwest German Regional Archaeological Survey Project initiated by Mike Jochim, a project was launched in 2001 to explore Stone Age land use and settlement on the Swabian Alb limestone plateau, just 40 km north of the Federsee lake. This contrasting geographic area, rich in stone raw material but largely lacking in surface water, is well known to Paleolithic and Mesolithic researchers for its deeply stratified cave and rockshelter deposits in steep-sided valleys cutting into the plateau. The plateau surface itself has seen little archaeological investigation, though dense stone artifact concentrations were reported by avocational archaeologists. Results of archaeological survey, analysis of well-documented private collections, and subsequent remote sensing and test excavation document a rich Neolithic landscape on the plateau, including both settlement and chert-acquisition features dating to Early, Middle and later Neolithic time periods. In this paper we begin to assess contributions of this regional approach to broader understandings of Neolithic settlement in southwestern Germany. We focus on the value of the regional approach for placing a Neolithic chert quarry in a broader context and for exploring geographic diversity in Early Neolithic (LBK) settlement.

Fisher, Jacob (CSU Sacramento)

- [286] *Methodological Considerations for Computing NISP: A Case Study from the White Mountains, California*

The debate regarding the underlying motivations for large game hunting in western North America has ensued in American Antiquity for over a decade. Empirical support for the original argument for costly signaling hunting by Hildebrandt and McGuire largely was derived from a regional synthesis of faunal data from southeastern California that demonstrated a spike in artiodactyl hunting during the Middle Archaic. This spike is primarily driven by the faunal assemblage from a single, high-elevation site in the White Mountains of southeastern California. It was suspected that this anomaly was a reflection of analytical discrepancies in taxonomic identifications arising from different levels of experience among faunal analysts. Contrary to expectations, it was discovered that taxonomic identifications were actually conservative. Instead, the previously reported NISP for artiodactyls was calculated in a manner inconsistent with other analyses in the region. When the corrected values for the measure are used, the regional data show that the pattern of faunal exploitation is consistent with expectations derived from optimal foraging theory.

Fisher, Christopher (Colorado State University)

- [337] *New Perspectives on Mosquitia Prehistory Using Lidar*

The Mosquitia region of Honduras, long known to be an important archaeological region, has seen relatively little archaeological research. Here we present results from a project which has used LiDAR to document the cultural and ecological heritage of three previously undocumented areas within the region. These results include two large urban centers and numerous smaller settlements embedded within a human engineered landscape including terraces, canals, and roads. This record comprises a significant database that provides critical baseline data for modern conservation and preservation efforts.

[337] Chair

Fisher, Chelsea (University of Michigan)

- [341] “The Poorness of the Soil Takes Away Hope”: Resolving Ethnohistoric and Archaeological Evidence for Food Security in the Northern Maya Lowlands

Ethnohistoric accounts written by Spaniards in Yucatán during the 16th and 17th centuries suggest that food security was a major concern, one allegedly shared across ethnicities to include the Spaniards' Maya informants. However, Maya communities had long been successfully producing food in Yucatán's supposedly harsh conditions (and continue to do so). In this paper I offer a critical reading of select ethnohistoric accounts of the Yucatec Maya to make a case that, both overtly and subtly, these narratives indicate that northern Lowland Maya food security was vitally linked to the relationship between houses and gardens. This phenomenon is by no means limited to the post-contact Maya. Archaeological evidence from sites in the region, including Mayapán, Chunchucmil, and Yaxuná, demonstrate that the vital link between house and garden has considerable time depth in the northern Maya Lowlands. Ultimately, this particular reading of ethnohistory and its pairing with archaeological evidence will demonstrate that 1) there is evidence that Maya informants deliberately manipulated Spaniards' preoccupations with drought and famine for political ends, and 2) the relationship between houses and gardens was essential to food security and the success of low-density Maya cities long before the Spanish arrived.

Fitton, Hannah (Colgate University) and Therese Christiansen (Colgate University)

- [172] The Brunk Site: The Public Outreach Efforts of an Oneida Archaeological Site in Central New York

The Brunk Site, a late sixteenth-century Oneida Iroquois village in Central New York State, provides a collaborative archaeological opportunity for Colgate students to learn from regional avocational archaeologists who have relevant experience and knowledge from their years of fieldwork and reporting. This poster details the public outreach efforts that the Brunk Site has facilitated by building relationships with community members and providing educational resources for children. Students are involved in this community archaeology through "Field Methods and Interpretations in Archaeology" led by Professor Jordan Kerber where they acquire first-hand knowledge about proper excavation skills and laboratory techniques. This course strengthens the community-university relationship, and the student research papers are a lasting contribution to the body of knowledge about the Brunk Site and Oneida archaeology. We created an exhibition, to be located on the Brunk Site in the future, introducing elementary-aged children to archaeology and Oneida sites. The exhibition discusses general archaeological practice and recovered materials from the site, as well as an overview of the diet, subsistence, and technological activities of the Oneida. The public outreach of the Brunk Site encompasses numerous members from all age groups through both the archaeological and educational efforts.

Fitts, Mary (University of North Carolina at Chapel Hill)

- [213] The Indian Slave Trade and Archaeologies of Community Relocation: An Investigation of Scale and Motivation in Population Movements

The subject of population movements has received renewed attention from archaeologists in the past few decades after being avoided by mid-twentieth century scholars. These new approaches incorporate ethnographic findings and stress the importance of investigating population movement as a process. Despite the increased sophistication of these models, the attempt to conceive population movement as a generalized phenomenon has, perhaps counter intuitively, limited their utility. After reflecting on a set of variables relevant to studying population movements and their effects, I focus on size of relocating party and motivation for relocation as two variables for differentiating categories of population movement with respect to expected behaviors and associated archaeological patterning. To examine the particular case of community relocation under duress, I consider the ethnohistory and archaeology of the Cheraw during the seventeenth and eighteenth centuries. This polity was one of many in the Southeast to respond to conditions precipitated by the Indian slave trade with mobility and the development of confederations. Comparisons of Cheraw settlement locations, ceramic production, and foodways from towns inhabited before and after multiple relocations in the eighteenth century suggest population movements in response to violent conditions will produce different archaeological patterning than those undertaken for opportunistic purposes.

Fitzgerald, Cassandra

- [13] Retest of a Recently Developed Method of Sex Determination on the Distal Humerus

The research areas of forensic and biological anthropology utilize the study of human remains to answer

questions in a medicolegal or archaeological context. Human remains are studied to reveal the age, sex, stature, and ancestry of an individual. Rogers (1999) created a method to determine the sex of modern-day individuals utilizing the distal end of the humerus, with a 92 percent accuracy rate. To expand Rogers' research, a larger blind test of the method with modern and prehistoric individuals was conducted. It is important to apply blind tests to new methods in order to meet the standards established in Federal Rules of Evidence 702 for scientifically sound and unbiased testimony in a court case. In cases where much of the skeleton is missing or destroyed, it is hoped that this study will confirm another reliable method for determining sex using the bones that may still be available to the archaeology and forensic communities.

Fitzhugh, Ben (University of Washington)

[160] *Settling on the Marginal North Pacific: A Comparative Analysis of Aleutian and Kuril Settlement*
A growing number of studies show how archaeological research can examine the long-term sustainability (and unsustainability) of past human practices, sometimes with implications for modern land-use planning. This paper explores this theme through a comparative analysis of archaeological settlement data from the Kuril and Aleutian Islands of the North Pacific Rim. These islands were occupied by maritime hunter-gatherers throughout the Late Holocene (Early / Middle Holocene in some areas). While the Aleutians were settled by a single cultural tradition that persisted to the 18th century with limited outside influence, the Kurils were occupied by a succession of three groups, separated by large scale depopulation / abandonment before the next wave of settlement. Settlement pattern data from remote areas of both archipelagos reveal similarities and differences in orientation to risky land/sea-scapes that are used to evaluate the hypothesis that geographical and ecological differences led to more and less resilient occupations.

[101] *Discussant*

Fitzhugh, William

[313] *Discussant*

Fitzpatrick, Scott [85] see Thompson, Victor

Fitzpatrick, Scott (University of Oregon)

[85] *Chair*

Fitzsimons, Rodney (Trent University)

[181] *Building a State One Stone at a Time: Architectural Energetics and Early State Formation in the Bronze Age Argolid*

Prior to the appearance of the first palaces at Mycenae in the 15th century B.C., the most impressive architectural manifestation of elite authority in the Argolid was not the palace or the house, but rather the tomb, specifically the shaft grave and the tholos tomb. While the funerary data supplied by these burials have long served as the primary means by which the study of Early Mycenaean state formation has been approached, such studies focus almost exclusively on the grave goods themselves rather than the tombs that housed them. This paper seeks to address this lacuna by applying an energetics approach to the funerary landscape, an approach that posits that the quantity of labor expended upon any particular architectural project correlates with the sociopolitical complexity of the society that produced it. Since one aspect of sociopolitical power is defined by differential access to labor resources, the values thus generated serve as quantifiable and easily comparable measures of the power of those groups responsible for their undertaking. This approach injects a new, yet rarely considered dimension to current discussions of "wealth" and "status" and offers new insight into the nature of the socio-political transformations that transpired during the Early Mycenaean Period.

[181] *Chair*

Fladd, Samantha [7] see Adams, E

Fladd, Samantha (University of Arizona)

[141] *Social Syntax: A Framework for Understanding Community Reorganization at Homol'ovi I*
Understanding internal population dynamics in the Pueblo Southwest requires the concurrent analysis of

architectural and depositional data. This requires the development of a theoretical framework capable of addressing the unique configuration of activities occurring during site reorganization and depopulation. To accomplish this, I combine aspects of spatial syntax, practice theory, and the life history model from behavioral archaeology. The use of three theoretical approaches addresses the weaknesses inherent in any individual framework. Specifically, practice theory and the life history model provide the missing pieces necessary to make extrapolations from the spatial syntax framework tenable. Using this framework, I analyze the internal demographic shifts within the 700s room block of Homol'ovi I, a Pueblo IV period site located in northeastern Arizona. This involves the examination of room use, depositional behavior, and architectural shifts revealing interesting shifts in room use, the utilization of multiple modes of closure, and repeated changes to access patterns. This theoretical and methodological framework produces a clearer understanding of social structure at the community level and highlights the complex reorganization processes occurring in the 700s room block of Homol'ovi I.

[141] Chair

Fladeboe, Randee (University of Florida)

[141] *Macaw Technology in the American Southwest*

Across the ancient American Southwest, imported macaws were material resources requiring a specialized technology. By technology, I mean the knowledge, tools, techniques and material contexts that enabled utilizing macaws for their intended functions, including ritual purposes. This paper deals with aspects of macaw technology, including the transport and care of live birds from the tropical south to a desert environment. The macaw, like all things, is itself an assembly of essential elements. Bones, feathers, appendages, and colors are all critical components of that assemblage. As a living organism, the bird is a dynamic material, always in motion and changing over time and space. As the macaws were moved from place to place, their particular assemblages were influenced by cultural and ecological parameters. Macaw burials and the fragmentation and dispersal of feather artifacts and images of macaws in pottery, murals, and rock art are indexes of the birds, each traveling on a separate itinerary. These factors contribute to understanding the technological practices concerning macaws and related birds.

Flanagan, Kelin (Florida Atlantic University) and Clifford T. Brown (Florida Atlantic University)

[335] *The Topology of Archaeological Site Distributions: Lacunarity and Fractal Dimension.*

We are studying distributions of archaeological sites to evaluate the effectiveness and efficiency of survey methods, among other goals. We use two mathematical measures to describe the topology of site distributions: lacunarity (Λ) and fractal dimension (D_f). Lacunarity is a measure that tells us about the sizes of gaps in a distribution at different scales, which relates directly to the probability that a transect will intersect a site. Although lacunarity was originally developed as a complement to fractal analysis, it is not itself a fractal technique and can be applied to any pattern. We use the gliding box algorithm. Fractal dimension is a parameter of fractal patterns, which are complex patterns exhibiting self-similarity and power-law scaling. We test for fractality and estimate dimension using the box-counting technique. As our test case, we are using maps of archaeological site distributions published for the Valley of Oaxaca, Mexico, because they constitute a very complete and detailed data set that, moreover, has become the canonical data set for the study of site distributions due to its use by Plog (1976) and, subsequently, Orton (2000). To date, we have found the distributions to be fractal with dimensions in the $D_f :: 1.46-150$ range.

Fleisher, Jeffrey (Rice University)

[145] *On the Issue of Scale on the Eastern African Swahili Coast*

This paper critically examines the issue of scale for second-millennium A.D. eastern African Swahili towns. Scale underlies many of the definitions of urban places with an emphasis on settlement size and concomitant implications for the incorporation of a rural hinterland. Medieval Swahili towns have 'big' reputations, renowned for their monumental architecture and long-distance trade even though they tend, in the main, to be quite 'small' places. In general, Swahili towns were extremely compact in size, with most less than 15 ha, and many of the most elaborate less than 10 ha. The small scale of Swahili towns, we argue, troubles the way they fit into classic definitions, especially with regard to the nature of food and craft production and implications of 'smallness' for social relations among town residents. Our current research at Songo Mnara, a 15th-16th century town on the southern Tanzanian coast, will serve as a basis to discuss these issues.

[145] Chair

Fleming, Lacey (University of Alberta)

[53] *Skeletal Tuberculosis Infection of the Hip? A Literature Review and Case Study of a Prehistoric North American Dog from Middle Tennessee*

Close interaction between humans and animals are conducive to the spread of zoonoses, infectious diseases that can be shared among different animal genera and species. Bacterial zoonotic pathogens, including various types of tuberculosis (*Mycobacterium* sp.), can lead to infections affecting an animal's skeleton. This is of interest and utility to researchers given the typical lack of preservation among non-bony bodily tissues in many archaeological contexts. I review the medical, veterinary, and archaeological literature concerning skeletal tuberculosis to provide a basis on which to explore the severe hind limb pathologies exhibited by a Late Archaic period domestic dog from the Fernvale site (40WM51) in middle Tennessee.

[53] Chair

Fleming, Miranda (University of North Carolina Greensboro)

[231] *Spindle Whorls and Spinning Technology as Indications of Ethnic Difference on the Wari-Tiwanaku Frontier, Moquegua, Peru.*

In this poster, I describe spindle whorls from the Wari sites of Cerro Baúl and Cerro Mejía and their technological differences. The two Middle Horizon (500-1000 CE) sites are in a frontier region, located in Moquegua, Peru that the Wari shared with the Tiwanaku polity. Recent research suggests that these two sites may have been composed of multiple groups from different regions and to have interacted with local, as well as, Tiwanaku communities. This study will test this suggestion by looking at spinning technology as a possible indicator of ethnic difference. Since spinning was learned at an early age in a 'community of practice' and the practice relies on unconscious motor skills that would be difficult to change if a person became a member of a different community of practice (such as may be the case with patrilocal marriage). I compare spindle whorls from the two sites to determine if ethnic differences are present and compare these examples to spindle whorls found in the two polities. By combining these methods and applying practice theory to examine ethnic and technological differences in this frontier region, I explore the potential relationship between Wari and Tiwanaku affiliated people in Moquegua.

Flensburg, Gustavo [6] see Martinez, Gustavo

Fletcher, Roland [337] see Evans, Damian

Flood, Jonathan (George Mason University)

[17] *Settlement Continuity and Change on the Mochlos Plain in East Crete*

The Mochlos plain—a series of eight parallel watersheds hemmed in by two horsts, the rugged peaks of the Orno mountains, and the Mediterranean Sea—has a settlement history spanning nearly five thousand years. Despite long- and short-term environmental changes, which include the gradual subsidence of the plain, aridization, eustatic sea-level change, erosion, volcanic ash-fall, declining water resources, earthquakes, drought, Little Ice Age events, and human impacts, settlement location, size, and site function has remained remarkably consistent over millennia. This paper explores the link between societal stability and site location, settlement morphology, and land-use. The overarching goal of this study is to posit and scrutinize the concept of settlement steady-states within spatially defined environments. The paper begins with an overview of the resource potentials and limitations within each of the eight watersheds based on pedology, hydrology, relief, and geochemistry. Then the diachronic trends in settlement systems are discussed for each watershed, beginning with the Early Bronze Age (2900 B.C.E.) inhabitants and continuing to the present. The paper concludes by integrating available paleo- and historical environmental information into the settlement model and then identifies and attempts to explain the consistencies and differences in human spatial behavior.

Flores Ramirez, Rosa Maria [189] see Zavaleta Lucido, Marcos Trinidad

Florey Folan, Lynda [52] see Folan, William

Fogelin, Lars (University of Arizona)

[297] Linga as Stupa: Shaivite/Buddhist Material Syncretism in South Asia in the 1st Millennium C.E.
During the 1st millennium C.E. in South Asia, Shaivites (devotees of the Hindu god Shiva) slowly drew devotees away from Buddhism. In part, this process was facilitated by a gradual shift in the forms of the primary material symbols of Buddhist and Shaivite ritual. At the start of the 1st millennium C.E., Buddhists focused their ritual devotions on stupas, stylized representations of the Buddha's burial mound. Shaivites, on the other hand, focused their ritual devotions on linga, iconic depictions of Shiva in the form of a phallus. Over the course of the 1st millennium C.E., Buddhists slowly transformed their ritual foci into Buddha images. At the same time, Shaivites slowly abstracted the form of linga until, in the 7th century C.E., linga strongly resembled early Buddhist stupas. By gradually appropriating the primary material symbol of early Buddhism, Shaivites drew Buddhist devotees to a new faith. In a broader sense, the material evolution of the Shiva linga in the 1st millennium C.E. serves as an example of material transformations enacting spiritual transformations.

Folan, William (Univ. Autónoma de Campeche), Raymundo Gonzalez Heredia (Univ. Autónoma de Campeche), María del Rosario Domínguez Carrasco (Univ. Autónoma de Campeche), Beniamino Volta (Univ. de California, San Diego) and Lynda Florey Folan (Univ. Autónoma de Campeche)

[52] Calakmul, Oxpemul and Coba: Hydraulic Patterning on the Karstic Meso and Northern Plain of the Peninsula of Yucatan, Mexico

Settlement pattern research during the past 40 years in the Maya area has revealed a similar surface water management pattern in Calakmul and Oxpemul, Campeche and Coba, Quintana Roo, Mexico including a four step process to capture, retain, redistribute and discharge excess amounts of this element essential to their existence.

Foley, Kathleen (University of Wisconsin-Oshkosh)

[306] Preliminary Analysis of the Karow Site Human Remains

The Karow site (A.D. 1300-1450) is located on the western shore of Lake Winnebago at North Asylum Bay in Winnebago Co, Wisconsin, and was excavated by Arthur Kannenberg and L.J. Dartt in 1932, after which the human skeletal remains and associated artifacts were donated to the Milwaukee Public Museum. This paper presents a summary of the initial analysis of those human remains and is part of a larger on-going research project into late prehistory in Wisconsin.

Follensbee, Billie (Missouri State University)

[62] How Essentializing Essentially Leads to the Wrong Conclusions: The Varied Roles of Female Olmec and Olmec-Related Figures

The blocky, apparently sexually ambiguous bodies of large stone, Formative period anthropomorphic sculpture have led many past scholars to assume that Gulf Coast Olmec and Olmec-related figures largely or exclusively represent adult male elites. Over the past two decades, however, systematic studies have increasingly revealed that not only do Olmec sculptures display identifiably sexed and gendered features and accoutrements, but also age-related features that reveal juvenile, adolescent, and elderly individuals. Upon the recognition that some Olmec and Olmec-related images represent female individuals, a number of scholars concluded that such female figures must represent exogamous brides who served to help establish and empower patriarchies. This is a plausible explanation for some figures, as exogamy was a fairly common practice in later Mesoamerica, and a number of these Olmec images show close correlations with conventional depictions of exogamous brides from other Mesoamerican cultures. Nevertheless, analysis of other sculptures illustrates that these female images vary greatly and assume a wide variety of powerful roles that cannot be so summarily explained. This presentation explores these issues, revealing how immediately essentializing all of these representations as depictions of exogamous brides or marriage-related scenes is far too hasty of a conclusion.

[192] Chair

Follensbee, Billie [192] see Rockwell, Rae Ann

Fonseca Ibarra, Enah Montserrat (INAH) and Andrea Guía (INAH)

[163] Hearths and Heated-Rock Cooking Structures: Diet Preferences and Differences in Consumed Foods Processing among the Hunters-Gatherers-Fishers in Baja California

One of the key archaeological elements in the coastal preparation and food consumption camps are hearths. Along the Baja California peninsula, there are different spaces or stone structures whose main

characteristic is the trace left by fire. Its morphology is varied and relative to the specific use/function for the preparation of different foods, for their consumption or the conservation method (salting, smoked or dried) to which they were destined. In this presentation we discuss some relationships between different types of hearths and heated-rock cooking structures as well as malacological and osteological materials associated with them that were found in the northwestern coast of Baja California. Some of the factors analyzed include the design of the hearths and other heated-rock cooking structures, the kind of fuel used, and the trace patterns –cut up, broiling, boiling, incineration, baking- related with the processing of the remains. The final goal is not to create a typology, but an interdisciplinary study of archaeological and biological evidence contrasted with ethnohistoric testimonies that allow us to suggest some diet preferences and differences in food processing among the hunters-gatherers-fishers who occupied the study area during the archaic and the late prehistoric periods.

Fontes, Lisa [246] see Straus, Lawrence

Forbis, Adam [292] see Cortes-Rincon, Marisol

Ford, Ben [80] see Neusius, Sarah

Ford, Ben (Indiana University of Pennsylvania), Timothy Carn (Indiana University of Pennsylvania), Renate Beyer (Indiana University of Pennsylvania) and Casey Campetti (Indiana University of Pennsylvania)

[233] *Preliminary Analysis of the Hanna's Town Legacy Collection: Life in an 18th century Pennsylvania Town*

Four decades of archaeologists, both professional and avocational, have excavated the site of Hanna's Town, Pennsylvania (ca. 1769–1810), resulting in nearly one million artifacts and tens of linear feet of documentation. Since 2010, staff and students of the Indiana University of Pennsylvania Anthropology Department have been working to create a computerized database and GIS of these data. This work is ongoing, but sufficient data have been digitized to allow preliminary analysis. That analysis, presented here, deals with the spatial arrangement of the site, taphonomic and collection patterns, access to goods on the frontier, the presence of specific ethnic groups, and evidence of the Revolutionary War raid that destroyed much of the town. The results of this analysis will lead to hypotheses that can be tested once all of the data are digitized.

Ford, Anabel (UCSB) and Keith Clarke (Geography UCSB)

[337] *Using Cutting-edge LiDAR at El Pilar Belize-Guatemala—There Is Still a Need for Archaeologists!* LiDAR, a remote sensing instrument capable of penetrating vegetation, is creating a shift in Mesoamerican archaeology that will transform research in forested areas worldwide. The Maya Forest Alliance recently received a gift of LiDAR imagery covering the 20 km² El Pilar Archaeological Reserve in Belize and Guatemala. High-resolution data were gathered on the forest canopy and ground surface in a "point cloud." We are identifying features using a new algorithm with superior LiDAR processing results for cultural features. LiDAR results must be interpreted and validated in the field. We are field-validating features to devise a protocol for the production of a topographic and cultural map of El Pilar. Unusual features, such as a "citadel" and a sunken plaza connecting the offset causeways, have been detected that were never recorded before. These discoveries change our understanding of ancient Maya land use and the city of El Pilar, but their existence and scope can only be proven by field validation. Our 2013 field set the stage for our discovery strategy to confirm the nature of features illuminated in LiDAR imagery, setting up a protocol recording the characteristics on the landscapes to share with others working with such imagery.

Forde, Jamie

[83] *Residential Excavations at the Pueblo Viejo of San Miguel Achiutla: Preliminary Results*

This paper presents preliminary results of an excavation project carried out in the "Pueblo Viejo" of San Miguel Achiutla, located in the Mixteca Alta region of Oaxaca. Achiutla was an important religious center during the Postclassic period, and site of considerable conflict with colonial authorities throughout the 16th century. Intensive horizontal excavations were conducted at three residential terraces within the center of the site to investigate indigenous domestic life during these time periods. Further, one sounding unit was placed into a feature associated with an obsidian workshop to examine issues of political economy.

While this paper provides a summary of all the above research, focus is placed most heavily on data recovered from an indigenous elite residence located within the monumental core of the site. Recovered artifacts and construction sequences reveal how native elites occupied this space well into the 16th Century, if not beyond, and simultaneously maintained links with the pre-Hispanic past while appropriating certain aspects of European culture. Data suggest that indigenous authority at the site was retained—perhaps in unexpected ways—amidst dramatic conflict and upheaval during colonial times.

Forest, Marion [21] see Pereira, Gregory

Forest, Marion (University Paris 1 Pantheon Sorbonne / CNRS UMR 8096 Archéologie des Amériques)

[60] *What Is Up There? An Introduction to Common Issues with the Use of Hilltop Settlement Concept in Archaeology*

The term "hilltop settlement" is employed, in archaeology, as a common word to qualify any site located on a natural or artificial elevation. As an introduction to this symposium, we examine, through different examples taken in both Old and New World cultures, the occurrence of this concept in the archaeological literature, and try to analyze how it is employed: as a simple landscape and empirical appreciation and / or for socio-political assumptions. We present the different functions assigned to hilltop sites, from the most common (defense, strategic locations) to the less frequent ones (ideological conceptions, environmental concerns). This review leads us to one clear observation: the variety of functions and their superposition generate a very complex and nebulous field of research. In this situation, what alternatives are offered to archaeologists? If a standardization of study methodologies and classifications is quite ambitious, an epistemological approach is accessible. We suggest that future work conducted on hilltop sites consider more systematically their multiple dimensions, as well as the potential and limits of these dimensions.

[60] *Chair*

Forman, Steven [186] see Wright, David

Forné, Mélanie [21] see Arnauld, Charlotte

Forringer-Beal, Anna (University of Michigan), Polina Hristova (University of Michigan), Samantha Grabowska (University of Michigan), Cameron Gokee and Jason De León (University of Michigan)

[230] *Hiding in Plain Sight: Gendered Strategies of Survival and Subterfuge along the Migrant Trail*
Over the last decade, the number of undocumented female migrants crossing from Mexico into the United States through the southern Arizona desert has dramatically increased. Still, little anthropological research has explicitly focused on the experiences of these women or the influence that gender has on how people prepare for desert border crossings. Since 2009, the Undocumented Migration Project has drawn on the fields of archaeology, ethnography, and forensic science to explore the varied experiences of different sub-populations of migrants and to highlight the many forms of violence that characterize the crossing process. In this poster we discuss the role of gender in the migration process and the unique material culture that women often employ as they attempt to cross the border, evade Border Patrol, and survive the desert. We juxtapose our analysis of gendered artifacts with border crossing narratives collected from women and men over the last five years. We argue that gender identity and certain female strategies of desert survival are not easily recovered in the archaeological record. We also discuss the implications of these findings and their relevance to archaeological studies of women in historic and prehistoric migrations.

Forte, Maurizio (Duke University)

[107] *New Perspectives in Cyber-Archaeology: Simulation and Immersive Environments*

The paper wants to explore new ways of virtual representation and 3D interaction with archaeological data captured during archaeological excavations. The broad use of 3D systems and technologies of data capturing (computer vision, laser scanning, 3D photogrammetry, remote sensing) has substantially increased quantity and quality of 3D archaeological data.

Nevertheless, a very important and quite unexplored research field is represented by immersive and semi-immersive visualization systems, such as CAVEs (Cave Automatic Virtual Environment), holographic

displays, head mounted displays associated with virtual reality applications. Duke University started a new research program aimed at experimenting new forms of visual immersive interaction with multiple devices such as Z-Space, Oculus VR, DiVE (Duke Immersive Visualization System) in archaeology but sharing a common software platform. The first tests have been with the archaeological stratigraphy of the Neolithic site of Catalhoyuk.

[65] *Discussant*

Foster, David [218] see Chilton, Elizabeth

Fournier, Patricia [72] see Zavala, Bridget

Fournier, Patricia (Escuela Nacional de Antropología e Historia), Cynthia L. Otis Charlton (Independent scholar) and Alejandro Pastrana (Instituto Nacional de Antropología e Historia)

[72] *Postconquest Technological Innovation and Outcomes in Ceramic Traditions in Central Mesoamerica*

Indigenous ceramic traditions experienced differing changes in the aftermath of the Spanish Conquest of Mesoamerica. In the Mexican central highlands, we draw information from several well documented case studies: the cities of Tenochtitlan-Tlatelolco, the Otumba area, and two neighboring sites in the contemporary state of Hidalgo. Our studies contribute to a better understanding of hybridization processes resulting in innovations, and consequences of technological processes on ceramic wares. We propose that transformations and stability are related to a new economic scenario, resulting from changes in workshops and market networks after the conquest, and the persistence of preconquest consumption trends among marginal indigenous communities.

Fowler, Catherine (University of Nevada)

[202] *They Also Dug: Early Women Archaeologists in Northern New Mexico*

Linda Cordell had a lifelong interest in the careers of women in archaeology and especially those early pioneers who preceded her in working in northern New Mexico. She felt that their work was often overlooked at the time, as were their overall contributions to Southwest prehistory. We review the careers of several early women archaeologists, including Ethel Nelson, Lucy Wilson, Bertha Dutton, Margorie Lambert and Agnes Simms, noting some of the sites/projects in which they were involved, the difficulties they encountered, their successes, and the overall impacts of their collected efforts on the Southwest prehistory of their times as well as today.

[22] *Discussant*

Fowler, Don (University of Nevada Reno)

[239] *Colorado River Archaeological Projects, 1956 to 1985: From Salvage to CRM*

The Colorado River is the most controlled river in the United States. Major and minor dams and related facilities provide irrigation and municipal water and electricity to forty million people in the American West. Congressional authorization of four major dams triggered large-scale salvage projects between 1956 and 1985—Flaming Gorge, Glen Canyon, Navajo Reservoir and McFee (Dolores Project). The first three were supported by Bureau of Reclamation (BOR) funds channeled through the National Park Service; the fourth was funded directly by the BOR. An overview history of the projects is provided together with a discussion of the legacy of the projects for subsequent American and foreign (especially Egyptian and Nubian) archaeological practices.

[151] *Discussant*

Fowler, Jonathan [157] see McNeill, James

Fowler, William (Vanderbilt University)

[190] *You Call It Nequepio, We Call It Cuscatlan: A Sixteenth-Century Parallel for Precolumbian Interaction in Southeastern Mesoamerica*

The relationships between early sixteenth-century bands of Spanish conquistadors in southeastern Mesoamerica have received little attention from historians and virtually none from archaeologists. The historically documented interactions between these groups operating in El Salvador, Honduras, and Nicaragua in the 1520s provide some clues for modeling routes of communication, networks of

interaction, and levels of interconnections in earlier times. Some degree of Precolumbian interaction throughout the southeastern Mesoamerican region has long been suggested by exotic portable objects and mutual influences in art styles and architecture. A close look at early conquistador interaction in the region reveals a number of parameters and possibilities with regard to routes of communication and interaction. A case study is provided by Hernando de Soto's invasion in early 1525 of the Pipil center of Cuscatlan, central El Salvador, from León, Nicaragua. Cuscatlan, known as Nequepio to the Chorotegas in Nicaragua, at this time marked the southeastern frontier of Pedro de Alvarado's extension of the conquest of Mexico. The Lenca territory of eastern El Salvador, between the Lempa River and the Gulf of Fonseca, formed the corridor between Nicaragua and Cuscatlan-Nequepio and a conduit to the Choluteca region of Honduras.

Fowles, Severin [159] see Alberti, Benjamin

Fowles, Severin (Barnard College, Columbia University)

[333] *Discussant*

Fox, Sherry [28] see Marklein, Kathryn

Fox, Keri (Wichita State University) and Lisa Overholtzer (Wichita State University)

[179] *An Experimental Project of Mud Men-and-Women, Ceramic Figurines Common in Household Production: Made Locally by the Household or a Specialist?*

Crude, minimally-human, poorly fired figurines appear as a widespread conventionalized form in central Mexico in the Postclassic period. Called mud men-and-women at Xaltocan and ghosts in Morelos, they were used in households. Based on their appearance, one would not imagine these were made by a specialist's tools or firing facilities, but rather were homemade and fired in a hearth. Several hypotheses surround their purpose, ranging from serving as representations of earth beings and indexing a connection between the community and the land to the importance of the embodied experience of making the figurines. Chemical provenance analyses indicate that Xaltocan mud men-and-women are made from local clay, and they are often recovered in complete form sometimes in hearth contexts, lending support to household production. Yet could these figurines have been properly fired in a household hearth? In this paper, we report the results of an experimental archaeology project designed to replicate the household production of mud men-and-women. Our conclusions have important implication for the interpretation of the production and consumption of this poorly studied ceramic type.

Fox, Mathew

[297] *Micromorphology and Site Formation at Yangguanzhai: A Preliminary Analysis of the Composition and Formation of a Yangshao Moat Deposit*

In order to gain further understanding of Neolithic midden activity and site formation in North-Central China, a micromorphological investigation was developed within a large refuse-filled anthropogenic trench surrounding a Miaodigou phase (6000-5500 cal. yrs B.P.) village in the Wei River Valley, Shaanxi, China. The study consists of the detailed mapping of stratigraphy and localized sampling in the most representative portion of the deposit. Currently, a majority of local archaeologists refer to this feature as a "moat" and have interpreted this as either a defensive or symbolic feature that, once relict, was intentionally filled with refuse by secondary waste activity. Since the deposit contains dozens, if not hundreds, of discrete sedimentary units, it is clear that this feature had an extremely complex depositional history that cannot be fully understood by traditional excavations and in-field interpretations. Therefore, the aim of the research is twofold: (I) to identify the components of the deposit and their spatial relationships, and (II) provide a preliminary site formation model of the deposit that can be tested by further excavation and sampling.

Fox, Kara (East Carolina University)

[307] *From Ship Model to Site Formation Model: Using Historical, Archaeological, and Environmental Data to Model Shipwreck Deterioration*

The waters of the North Atlantic are littered with a variety of World War II shipwrecks. The merchant vessels, which supplied the Allied frontlines of World War II while keeping America fed during Germany's guerre de course, comprise the majority of these sunken watercraft. This study considers the potential of

using archival sources (in particular ship builder's plans) to create virtual ship models, and using three-dimensional remote sensing datasets collected by NOAA's Battle of the Atlantic Expedition between 2008 and 2013 in order to create individual multi-stage deterioration images to sample North Carolina's World War II merchantmen wreck sites. This interdisciplinary research considers both historical and geospatial data, as well as environmental processes. It is hoped that an integrated predictive model designed to visualize cumulative site formation data will inform management actions regarding long-term stewardship of these wreck sites.

Fox, Amy (University at Albany, SUNY)

- [342] *The Versatile Triangle: Exploring Intra-Type Variability of Projectile Points Using Geometric Morphometrics*

Borrowed from the field of biology, geometric morphometric analysis has been recently applied to lithic assemblages with great success. This paper discusses the results of a 2D morphometric analysis of triangle points from the Mohawk Valley, New York, the staple point form of the late pre-contact period. This morphometric approach, which uses outline data extracted from high-resolution photos of the projectile points, leverages multivariate statistical analysis to visualize intra-type variation present in the collection. Change in shape (via length-width ratios) has been previously documented for this collection, but this new application of morphometrics results is a more nuanced look into the nature of change through time than that provided by traditional caliper-based methods. The result is a high-resolution examination of morphological and thus technological variability and an example of an alternative technique that offsets the inherent drawbacks of course-grained typological approaches to projectile point characterization.

- [342] *Chair*

Frachetti, Michael (Washington University in St. Louis)

- [296] *Archaeology Should Be Futuristic: Because Civilization Depends on It*

For the past century, archaeologists have been the shepherds of the civilization concept, which has effectively coalesced the concept with ancient statecraft, territorial "cultural-coherence", and hegemonic political economies. Theoretical turns throughout the 20th century, from World Systems to Practice theory, have chipped at the canonical model of complexity underpinning the concept of civilization. Yet the essential paradigm linking emergent civilization to large-scale production and political power has been merely reclothed with little shift in the seminal civilization = state equation that defined core theoretical tools throughout the last century. The 21st century abruptly ushered in a stark recognition that the contours of civilization were not solely the terrain of states; dislocated and rogue forces shook the towers of western economy, ideology, and politics and cast the modern civilization apparatus into turbid waters. Today, in an era of unprecedented mobility, fluidity of identity, and non-Cartesian power networks, archaeology must radically transform its understanding of its core concepts and question whether the terrain of civilization that we see today was present also in the past. In a very real sense, archaeology must look to the future to interrogate the past if we hope to better explain the human condition over the longue duree. [296] *Chair*

Frachetti, Michael [301] see Bullion, Elissa

Frahm, Ellery (University of Sheffield)

- [249] *Where Obsidian Sourcing Isn't Long-Distance Trade: Landscapes, Provisioning Strategies, and Organization of Space*

The terms "obsidian sourcing" and "long-distance trade" often seem considered virtually synonymous. For example, recent work to develop obsidian sourcing at the quarry level (using magnetic parameters) drew criticism from a reviewer: obsidian sourcing is devoted to reconstructing long-distance trade routes, and identifying different quarries is irrelevant to that end. Such a view is extremely limited. Research in the world's most obsidian-rich natural and cultural landscapes, including the South Caucasus and the Pacific Northwest of North America, allows obsidian sourcing to be used in different interpretive frameworks. Sourcing artifacts at sites literally in the shadow of an obsidian-bearing volcano yields few, if any, insights regarding long-distance trade. In such contexts, though, obsidian sourcing can instead reveal behaviors linked to mobility, subsistence, land-use, and other social phenomena. Additionally, new insights are possible with new techniques. For example, portable X-ray fluorescence (pXRF) can bring traditionally lab-based studies to the field, enabling on-site collaborations, novel research designs, and source data for many more artifacts than previously possible. Furthermore, magnetic studies can be

useful to isolate overlapping occupation levels, identify diachronic changes in lithic technology, and study the organization of living space at Paleolithic sites.

Franchetti, Fernando and Nuria Sugrañes (Conicet- Argentina)**[11] Pots in Northern Patagonia: Design Characteristics, Functionality, and Variability**

Many studies have attempted to establish the relationship between form and function in the ceramics of different times and places. For example, these efforts have helped to explain how ceramic technology has been used by highly mobile human foragers. The sample presented here provides data from three different museum collections. Technological and design characteristics reveal a wide range of form and style, distinguishing these assemblages from those recovered through archaeological investigation. These data reveal the complexity of technological developments over a 2000 period, and from this complexity new problems arise: we see differences in spatial distribution and density, and we see change in both the use and exchange of pots. Such complexity demands further investigation. While some vessel forms (like cooking or storage pots) might be well-suited to locations organized around collection, production and caching, other forms (like plates and jars) were recovered showing broader uses of ceramics. Finally, the diversity of non-local styles reveals that pots were exchanged through highland corridors, between disparate groups on either side of the Andes.

Franco, Nora (CONICET-UBA) and Pablo Ambrústolo (CONICET-UNLP)**[69] Raw Material Transport and Early Designs at the Southern End of the Deseado Massif (Patagonia, Argentina)**

Early human occupations at the southernmost end of the Deseado Massif -La Gruta area- date from the Pleistocene/Holocene transition and are, according to the available evidence discontinuous in time. A little bit after that time, the presence of Mylodontidae and guanaco has been recorded at the area, although not clear evidence of strict contemporaneity in time and space between extinct fauna and humans have been found. Here we will discuss stratigraphic and surface evidences related to this early presence. Human inhabitants were transporting not only obsidian—from distances of ca. 175 km to the northwest—but also translucent chalcedony, available at distance of 25 km to the north. Preforms of projectile points recovered on surface and made on chalcedony, seem to have similarities in design, in one case, with an early point recovered at the south of the Magellan Strait, more than 400 km to the south. In other cases, they can probably be related to the range of variation of fish-tail projectile points, recovered in Patagonia, suggesting the existence of more than an early design of projectile points.

Frank, Sirocko [201] see Gronenborn, Detlef

Franklin, Kathryn (University of Chicago)**[20] A Cosmopolitanism of In-Betweens: Archaeology of Medieval Trade and Politics in Armenia**

Medieval social life in Armenia and surrounding Transcaucasia has been multiply marginalized within historical discourses, imagined both as the periphery of cultural and political worlds centered elsewhere, and through the lens of emergent modern, capitalist subjectivity. Lost within these totalizing conversations are the experiences of subjects who were particular both to their region and their time. This paper summarizes the data and arguments of my doctoral research in the Kasakh Valley of Armenia, and reviews my investigations of late medieval (A.D. 1200-1400) trade and political practice. My research asks: How did actors differentially situated in medieval society undertake particular and locally-situated projects while simultaneously imagining their place in larger worlds linked by movement along the highways of the Silk Road? I explore this question using landscape survey results, epigraphic and historical evidence, and from my excavations at the Arai-Bazarjugh caravanserai, which was an assembly point for mobile subjects, localized political projects of architectural endowment, and circulating regimes of taste in cuisine and material culture. I draw on the concept of cosmopolitanism, defined as a make-do practice of working between totalities—a practice which unifies both my imagination of medieval subjects and my multiscalar methodological approach to medieval social life.

[20] Chair

Franklin, Jay [216] see Dennison, Meagan

Frappier, Amy (Skidmore College - Geosciences), Aurora Pinkey-Drobnis (GeoCorps, formerly Skidmore College - Geosciences), Sarah Turner (Skidmore College - Geosciences) and James

Pyburn (Exxon-Mobil)

- [158] *Mud and the Maya "Megadroughts": 2200 Years of Hydroclimate and Multiple Hazards from Northern Yucatan Stalagmite Records*

The so-called "collapse" of the high civilization in the Maya lowlands during the Terminal Classic Period (TCP) is associated with severe and persistent megadroughts in the Yucatan. Previous work on the Chaac speleothem indicated that TCP climate included 8 severe droughts lasting 3-18 years from 800-950 C.E., alleviated by brief moist periods characterized by low oxygen isotope values. New data from a nearby annually layered multiproxy stalagmite record (CH-1) that was deposited between -200 B.C.E. and 2007 C.E. shows that the TCP in the northern Yucatan was plagued not only by drought, but also by multiple extreme climatic hazards. The calcite CH-1 stalagmite contains embedded mud layers during years when severe hurricane-induced cave flooding occurred. All 20th century flooding events CH-1 are associated with years of local hurricane rain events. The threshold for CH-1 mud layer emplacement varies with pre-existing hydrologic conditions; i.e., mud layers are less likely to be emplaced, even by severe storms, when persistent drought lowered the pre-existing water table (e.g., 1988s Hurricane Gilbert). CH-1 multiproxy data provide new evidence of multiple overlapping hazards during the TCP. Furthermore, the newly-recognized tropical cyclone masking effect has created a wet bias in the Chaac isotope-based paleo-rainfall proxy reconstruction. Implications are discussed.

Frederick, Charles [14] see Barrett, Jason

Freeland, Nicholas [284] see Larson, Mary Lou

Freeland, Travis (Simon Fraser University, Department of Archaeology)

- [298] *Geochemical "Mass Sampling" of Ceramics by pXRF: Or, What to Do with All Those Sherds?*

Rapid and cost-efficient mass sampling of archaeological ceramics using portable x-ray fluorescence (pXRF) spectrometry has potential to reveal compositional differences within and between ceramic assemblages that would otherwise be unclear in a limited program of individual analyses. A greater understanding of the total compositional variability of a ceramic assemblage is essential in order to study aspects of ceramic production, distribution, and the social systems involved in these processes. This poster presents the results of a pilot program of geochemical inventory, or mass sampling, of ceramic sherds from the midsequence deposits at the Sigatoka Sand Dunes, on the island of Viti Levu, Fiji. XRF analysis of all Fijian Plainware (2300-1500 cal B.P.) and Navatu (1500-1000 cal B.P.) sherds from individual excavation units reveals compositional similarities and differences that enhance our understanding of the technological shifts that occurred at the juncture of these time periods. As a research strategy, this differs from the focus in lithic studies on fine-grained elemental quantification; the ability of pXRF to "average" elemental concentrations within artifacts, and to generalize patterns within and between assemblages, allows for acquisition of large datasets more suitable for anthropological inquiry of ceramics.

Freeman, Andrea (University of Calgary)

- [117] *Lessons from (the) Desert: Applying Geoarchaeology on Canadian Soil*

My work at Desert Archaeology and as a consulting geoarchaeologist in Tucson during the period 1994-1997 gave me the tools to actively integrate my academic research into applied contexts using geoarchaeology. When I came to Calgary in 1997, and particularly when I was fortunate enough to purchase a large piece of coring equipment, I felt that the process would be easy. In this paper, I compare geoarchaeology and consulting archaeology in both contexts in an effort to demonstrate the differences in context, policy, and economics that hinder geoarchaeology in Alberta from being as actively accepted as it was in Tucson. I draw on both my own experience and the experience of my former students, and offer suggestions that may help to integrate geoarchaeology in CRM contexts in other parts of the world.

Freeman, Allyse (University of Wisconsin - Milwaukee)

- [140] *Investigating Social Differentiation at the Formative Site Amalucan, Puebla, Mexico*

Previous research directed by Melvin Fowler at Amalucan—a Formative (2500 B.C.- A.D. 200) site located in the Valley of Puebla, Mexico—documented a large water management system that operated from approximately 700 to 200 B.C., with numerous canals and two large impoundment areas. This system represents one of the most complex pre-urban water management systems in Mesoamerica.

While Fowler's research provided a timeline of occupation and interpretation the water management systems, further work is needed to place Amalucan within a larger regional framework. The primary goal of the current study was to infer the degree of social differentiation at Amalucan, by using ceramics as markers for nascent class distinctions. Sherds collected in the 1960s were analyzed in order to assess the level of differentiation during the Middle-Late Formative. This research enhances our understanding of how Amalucan was related to other sites in the Puebla-Tlaxcala Valley in terms of both ceramic typologies and sociopolitical complexity.

Freeman, Jeremy [199] see Munoz, Victoria

Freeman, Jeremy (Shumla Archaeological Research & Education Center) and Vicky Munoz (Shumla Archaeological Research & Education Center)

[248] *Retelling an Ancient Story through Modern Technology: The Rock Art of Eagle Nest Canyon*
The rock art of Eagle Nest Canyon in Val Verde County near Langtry, Texas consists primarily of Pecos River Style pictographs that were documented by Kirkland as early as 1935. During the 2013 joint Texas State University/Shumla Archaeological Research & Education Center field school, the pictographs were reexamined using new techniques and technologies. Students learned to apply these technologies in rock art research. These technologies included: a total station to record the provenience of the various figures, a tablet to record field observations in a database, a digital microscope (dino-lite) to examine stratigraphic relationships of the various figures and pigments, D-stretch to filter the colors of the pictograph pigments, Wacom Cintiques to produce digital illustrations of the figures, and Agisoft Professional Photoscan to produce three dimensional renderings of the rock art panels and shelters. This technology has enabled a detailed look at the panels that were not previously available.

Freidel, David (Washington University in St. Louis)

[128] *Frontier Centers and Salient Centers in the Late Preclassic Maya Lowlands*

Interior frontiers and routes linking territories, both within the lowlands and beyond them, defined the political geography of the region from the Preclassic. Salient communities represented polities at a distance beyond their frontiers and were situated on such routes to facilitate trade in key commodities. The Central Karstic Uplands were the geographical heartland of the Preclassic lowlands and home to El Mirador and a constellation of related sites, probably the earliest lowland state. El Achiotal in northwestern Petén was a Frontier center of the Mirador state, between the Mirador uplands and the swampy riverine country to the west. Cerros was a Salient port on the Caribbean for the Mirador state, and Yaxuna was another Salient in north central Yucatan. All of these centers were on strategic trade routes linking the interior to the periphery. We outline the evidence supporting these arguments.

[128] *Discussant*

[128] *Chair*

Freiwald, Carolyn [21] see Hoggarth, Julie

Freiwald, Carolyn (University of Wisconsin), Katherine Miller (Arizona State University), T. Douglas Price (University of Wisconsin - Madison), James H. Burton (University of Wisconsin - Madison) and Paul Fullagar (The University of North Carolina at Chapel Hill)

[21] *Reconsidering Ancient Population Movement in Mesoamerica: New Strontium and Oxygen Isotopes Values in Western Honduras*

Strontium and oxygen isotope ratios in human tooth enamel indicate widespread population movement among the Classic period Maya, including migration into rural communities as well as large centers. Identifying migrants—and where they came from—requires an in-depth understanding of the isotopic variability in both the individual's new residence and his or her homeland. This is particularly important for studies of sites like Copan, which is the major Maya urban center located at the interface between the Maya region and upper Central America. We present new strontium and oxygen isotope data for western Honduras that identify additional possible homelands for non-local individuals buried at Maya sites. Equally important is the potential for exploring migration patterns among diverse indigenous populations in Honduras, such as the Jicaque and Lenca. Thirty-four modern plant and animal samples from western Honduras have values similar to those identified in the Maya region, ranging from 0.704290 to 0.713519 $^{87}\text{Sr}/^{86}\text{Sr}$. Four geologic regions have distinct average values, with additional baseline data available from six oxygen isotope values collected from rivers and streams. We reconsider migration in published

studies from Copan, the Maya Mountains, and northwestern Honduras to demonstrate the cultural implications of these new values.

French, Kirk (Pennsylvania State University), Timothy Murtha (Pennsylvania State University), David Webster (Pennsylvania State University), Christopher Duffy (Pennsylvania State University) and Claire Ebert (Pennsylvania State University)

[52] Leveraging Water and Power at Tikal?

Our paper presents the results of applying the hydroarchaeological method to the central precinct of Tikal, Guatemala. This approach utilizes simulated daily paleoclimatic data, watershed modeling, and traditional archaeology to explore the functionality of Tikal's well-known reservoir system. Previous studies at Palenque revealed great potential for spatially-distributed watershed modeling in developing plausible scenarios of water use and supply, and the effect of extreme conditions (flood and drought).

The hydroarchaeological method produced simulated daily water levels for the reservoirs by calculating input (rainfall and runoff) versus output (usage, evaporation, and infiltration). Plausible answers to complex environmental questions often require tools (e.g., watershed modeling software) designed to study current and/or future impacts on landscapes. What quantities of water did the reservoirs maintain during periods of climatic normalcy? How did the reservoirs of Tikal respond to decadal drought? Answers to these and similar questions offer insight into broader questions, such as, what effect did fluctuations in water levels have on social organization and the elite power structure? The research presented here aims to provide a better understanding of the environmental and social impacts that Maya water manipulation strategies had on urban development at Tikal.

French, Katherine (New York University)

[241] Interspecies Cremations in Anglo-Saxon Paganism: Local Practice or Multiregional Trend?

Martin Carver has recently argued that early medieval pagan ideology and practice, including mortuary ritual, were adapted to local conditions across northwest Europe. This paper will interrogate this hypothesis by analyzing regional variation in the practice of human and animal co-cremation burials in the Early Saxon period in England (ca. A.D. 450-650). By drawing on newly collected data from cemeteries and individual cremation burials in the Midlands in comparison to previously published contemporary cemeteries in other regions, this paper reviews all available evidence for interspecies cremation rituals. The new data presented will indicate that, while variation in corpse treatment and burial are indeed present, there are many more similarities in interspecies cremations across the landscape than has been previously argued. Finally, consideration will be given to the historical and archaeological evidence highlighting the importance of various animal species in the practice of early medieval paganism.

[241] Chair

French, Charles [264] see Nanavati, William

Freund, Kyle (McMaster University)

[249] Obsidian Consumption, Social Dynamics, and Contrasting Value Regimes in the Prehistoric West Mediterranean

This presentation focuses on prehistoric obsidian circulation in the West Mediterranean from the 6th to 2nd millennia B.C. Since the field of study was inaugurated by Cann and Renfrew in 1964, scholars have generated a large amount of data on the character and use of the various obsidian sources. However, until now there have been few attempts to use these data to return to the broad archaeological questions that motivated the field's initial scholars. In contrast, this paper views obsidian as a means to an end, a way to contextualize larger arenas of interaction, social dynamics, and contrasting value regimes. As such, this paper presents a diachronic overview of the history of obsidian use in the West Mediterranean, highlighting key issues surrounding the recognition of various exchange mechanisms in the archaeological record as well as the circumstances behind the development of large-scale obsidian exchange networks with the introduction of the first farmers to the area, and the contraction of these networks at the time of the first metalworking. The role of exchange in the maintenance of social relations across space is highlighted as well as the role of redistribution in the establishment and reification of elite power.

Frey, Serita [330] see Harrison-Buck, Eleanor

Fridberg, Diana (Washington University in St. Louis)**[312] *The Big Role of Small Game in the Maya Lowlands***

The ancient Maya exploited a full range of animals for food and ideological inspiration. Zooarchaeological data demonstrates that diverse mammalian and non-mammalian taxa were used in subsistence. However, the iconographic corpus of mammalian taxa is heavily weighted toward larger animals. This paper discusses the role of small animals in elite subsistence at the sites of El Perú-Waka' and La Corona, Guatemala as revealed by recent zooarchaeological analyses. Elite structures at these sites demonstrate an abundance of small and medium (under 10 kg) mammals such as rodents and opossums. It is argued that the representations of deer prevalent in Maya iconography across the Lowlands is not reflective of everyday reality and instead demonstrates idealized food preference. In fact, the diversity of small taxa is conspicuous in its relative iconographic absence. This offers insight into ancient perceptions of value ascribed to particular animals and adds to the discussion of human-animal interactions.

Frie, Adrienne (University of Wisconsin-Milwaukee)**[20] *Attitudes towards Animals: Connections between Eurasian Animal Style art and the Representation of Animals in Southeastern Slovenia***

The archaeological perspective on the transmission of knowledge may be subtly influenced by modern geopolitical relationships and boundaries. This has been the case in the Eastern Hallstatt culture, where meaningful connections with Central Europe as well as the Mediterranean are frequently sought. This is not to deny the existence of such connections in the Early Iron Age, however too often connections with more eastern regions, especially the steppes, are overlooked except as a source of invasion and social unrest. This reductionist perspective ignores the reality that weapon styles, horse gear, and horses themselves were being actively imported from the east. I examine steppe animal art and representations of animals from the Dolenjska Hallstatt culture of southeastern Slovenia to determine whether there may have been some shared modes of representation, and possibly conceptions of animals, circulating in the Early Iron Age that have been overlooked. I situate this examination with a discussion of the treatment of animals in the two areas to shed light on the tension between representation and practice.

Fries, Eric [138] see Thompson, Amy

Friesen, Kelsey (University of Calgary) and Geoffrey McCafferty (University of Calgary)**[153] *Recent Research Concerning the X-Ray Diffraction of Nicaraguan Ceramic Composition***

In the past, reconstruction of the social identity of pre-Columbian Pacific Nicaragua has largely drawn from ethnohistoric sources, which suggest an aggressive indigenous population replacement by the Oto-Manguean language family (Chorotega) as they moved south into Nicaragua. While it may be stated with relative certainty that the migration of the Chorotegan speakers did in fact occur, recent archaeological research coupled with x-ray diffraction analysis of several pottery traditions from the region contend against the rapid replacement of the native population. The results of such research suggest that the gradual substitution of the existing indigenous red wares with a white-slipped polychrome variety was an internal development. It is the endeavor of further research concerning the x-ray diffraction of Nicaraguan ceramic composition to broaden the understanding of the intra-regional exchange and its consequences for social identity.

Friesen, Max [201] see DAndrea, William

Frink, Liam (University of Nevada Las Vegas)**[143] *Intersections of Age and Gender during the Indigenous Western Alaskan Bow and Arrow War Days***

The Bow and Arrow War Days was a period of regional unrest in indigenous western Alaska. The tribal period of conflict may have started several hundred years ago, and it ended near the beginning of indigenous-colonial interactions in the early 1800s. Much of what we know about this intense time of warring comes from archaeological, ethnohistoric, and oral historic data. Yup'ik Eskimo villagers devoted substantial resources to preparing for enemy siege (a primary raiding tactic) and to sending parties out to attack other communities. Boys were trained in the arts of battle, and villages were organized to resist and outlast sieges. This paper will explore the roles and intersections of age and gender during this

period of conflict.

Frink, Liam [160] see Giordano, Celeste

Fritz, Gayle (Washington University in St Louis), Kelsey Nordine (Washington University in St. Louis) and Jocelyn Turner (Indiana University-Bloomington)

[30] *"In Short, They Gave Us What They Had" (Henri Joutel, 1687): Plant Remains from the Wallace Bottom Site, Southeast Arkansas*

Among his many achievements and contributions as Director of the Arkansas Archaeological Society, Tom Green facilitated both paleoethnobotanical and historical archaeological research. Having benefited from his efforts and in appreciation of his legacy, we report on archaeological plant remains from the Wallace Bottom site (3AR179) in southeastern Arkansas, a good candidate for the location of the late seventeenth-century Quapaw village of Osotouy and the first French Arkansas Post. We examine intra-site variability that might shed light on changing relationships and shifting economic strategies between native people and French traders through time. We focus on how plant food remains can reflect the roles and statuses of Quapaw women during the critical early decades when trade and general accommodations between these two societies and among others in the Mississippi Valley were being negotiated. The Wallace Bottom archaeobotanical assemblage is compared to those from other historic sites in the Mississippi Valley and U.S. Southeast in order to broaden perspectives on foodways and European-American Indian interactions during the colonial era.

Frost, R. Jeffrey (California State University-Stanislaus)

[311] *Chiriquí Mortuary Ritual at the Rivas-Panteón de la Reina Complex, Costa Rica*

Chiriquí Period (A.D. 700-1500) cemeteries have been a subject of archaeological inquiry for more than a century. However, the activities associated with the preparation, burial, and maintenance of the deceased have been inferred only through the use of ethnographic and ethnohistoric accounts from the region. Excavations at the Chiriquí residential-mortuary complex of Rivas-Panteón de la Reina (A.D. 900-1300) revealed a series of spatially discrete architectural features including steps, causeways, pavements, and fire installations positioned sequentially between the village and the site's cemeteries. The spatial organization and material patterning of the Rivas-La Reina complex provides compelling evidence for highly structured ritual activities that included the display of the deceased, processing of bodies, secondary burial, and grave visitation. These patterns closely resemble those described in 17th through early 20th century documentary accounts of Talamancan mortuary events.

[311] *Chair*

Fruhlinger, Jake (Idaho Army National Guard)

[54] *Discussant*

Fry, Matthew [206] see Wolverton, Steve

Fuehr, Stephanie (Mississippi State University), Nicholas Herrmann (Mississippi State University), Kathryn Kulhavy (University of Tennessee) and Anthi Batziou (Greek Ministry of Culture, 15th Ephorate of Prehistoric and Classical Antiquities)

[102] *Osteological Analysis and Regional Comparison of a Mycenaean Burial from the site of Pefkakia near Volos, Greece*

The site of Pefkakia on the southwestern shore of the Bay of Volos in Greece is an important settlement dating from the Neolithic to the Late Bronze Age. Current excavations have documented an expanding Mycenaean settlement beyond the limits of the Magoula-Pefkakia during the LHIIIA. Since 2010, new excavations have revealed multiple late Mycenaean architectural remains, as well as three well-constructed tabular stone cists. The first two cists excavated in 2010 revealed only burnt faunal remains. In 2013, a single extended human burial was recovered from the third cist below and possibly predating a series of LHIIIA2 architectural features. The skeleton is an older adult female without any grave offerings. While the basic biological profile provides insight into the individual's status and life history, it is the various traumatic and pathological lesions on the skeleton that are unique and provide a rare glimpse of Mycenaean life at Pefkakia. Although the recent investigations produced only one burial, a comparison of this individual to remains from the adjacent Magoula-Pefkakia, as well as Dimini and other burial samples in the Volos region, will help us better understand the context and importance of this Late Bronze Age woman.

Fugate, Dody (Museum of New Mexico), Sheila Goff (History Colorado) and Leigh Kuwanwisiwma (Hopi Cultural Preservation Office)

[202] *Toward a Better Understanding of NAGPRA: Contributions by Linda Cordell*

The Native American Graves Protection and Repatriation Act has had a profound impact on the relationship between archaeologists and American Indian tribes. NAGPRA required both to strive to understand in particular the meaning of "cultural affiliation," which is still under discussion 23 years after the passage of the Act. Linda Cordell lent her expertise to the understanding of this and other concepts related to NAGPRA as well as their application. This paper will explore her contributions to NAGPRA implementation with contributions from agencies, institutions, and tribes that she worked with.

Fulkerson, Tiffany (Washington State University), Jerry R. Galm (Department of Geography and Anthropology, Eastern Washington University), Stan Gough (Department of Geography and Anthropology, Eastern Washington University) and Fred Nials (Desert Archaeology, Inc.)

[117] *CRM and Geoarchaeology at the Sentinel Gap site (45KT1362)*

The inability to define on a broad scale landscapes with sediment sequences of appropriate age has severely limited purposeful surveys for Paleoindian archaeology. The recurring need to evaluate the chronostratigraphy of landforms on a case-by-case basis has made the search for the earliest Americans a time consuming and costly process across the American West. In the Pacific Northwest CRM-driven projects are responsible for most finds of early-dating sites. This paper examines the discovery of the Late Paleoindian Sentinel Gap site (45KT1362) and the resulting definition of one of the most complete and informative Late Pleistocene-early Holocene stratigraphic sequences in this region. Stratigraphic Profile 1 illustrates the potential of "accidental" finds and their ability to contribute important new information on landscape development at the Pleistocene-Holocene Boundary.

Fullagar, Paul [21] see Freiwald, Carolyn

Fullagar, Richard (University of Wollongong, Australia), Lynley Wallis (1: School of Geography, Planning and Environmental) and Heidi Pitman (School of Geography, Planning and Environmental Ma)

[22] *Aboriginal Grinding Grounds, Stone Tools and Other Archaeological Evidence for Fiber Processing in Australia*

There is abundant contemporary and ethnographic evidence for Aboriginal processing of fibers to make string, baskets, nets and cordage. Direct archaeological evidence of fiber processing is sparse. Recent studies suggest a range of microscopic techniques for assessing the function of utilized tool edges and grinding surfaces that are likely to be linked with the acquisition of fibers for craft objects. We present case studies that suggest processing of particular plant taxa, including spinifex grasses, in the past.

Fuller, Heidi [95] see Galindo, Mary

Fulton, Kara (University of South Florida), E. Christian Wells (University of South Florida) and David W. Mixter (Washington University in Saint Louis)

[137] *A Chemical Comparison of Plaster Surfaces from Actuncan, Belize*

This poster presents the results of the chemical residue analysis of four plaster surfaces from two buildings at Actuncan Belize. These surfaces represent two overlaying floors from each building providing an ideal opportunity to compare activity patterning between distinct spaces as well as over time. Recent advances in geoarchaeological research on pedogenesis in cultural settings have demonstrated that soil science has powerful analytical potential for archaeological reconstructions of human activities and land use practices. By analyzing the chemical residues of different activities in anthroposols (soils that have been modified by human activity), activity patterns can be studied in primary contexts even when little or no visible material evidence persists. Additionally, due to its high surface tension from small pore sizes, lime-based (calcium carbonate) plastered surfaces trap and preserve a variety of chemical compounds in a similar manner as soil, and can thus be examined using the same geoarchaeological methods.

Funk, Caroline [160] see Fitzhugh, Ben

Funk, Caroline (SUNY at Buffalo)

[173] Aleut Travel Paths in the Waters of the Rat Islands, Western Aleutians, Alaska

The prehistoric Aleut cultural landscape included terrestrial space and sea space. Aleut kayaking and navigation skills are legendary and Russian era ethnohistories tell us that Aleut men spent as much time on the sea as on land. In fact, all Aleuts traversed their landscape on sea pathways as often on terrestrial trails. Raw material acquisition, trade, and social negotiations all would have been subject to a seafarer's ability to navigate the tides and currents. The territory of an Aleut lineage may have included non-terrestrial spaces such as coastal, inland, and marine sea regions and may have encompassed non-adjoining terrestrial spaces on one or more islands. Rather than terrestrial proximity, settlements may have been placed for ease or safety of movement in the complex currents caused by deep sea passes between the Pacific Ocean and the Bering Sea. The shortest distance between two places may not have been a straight line. Using geospatial approaches, potential travel paths of more or less difficulty are identified in the waters of the Rat Islands, Alaska. These will be incorporated into forthcoming research about Rat Islands Aleut relationships with their environment and each other.

Fux, Peter (Museum Rietberg Zurich) and Martin Schaich (ArcTron 3D)**[154] Chavín-Peru: Combined 3D Technologies for Documenting and Visualizing a UNESCO World Heritage Site for World's First Chavín Exhibition in the Museum Rietberg Zurich, Switzerland**

In 2012, the Museum Rietberg Zurich opened the first major exhibition about Chavín, a temple complex in Peru, in collaboration with researchers from Stanford University. The exhibition aimed to promote early Andean cultural history in Europe, and to support local site improvements in Chavín. Key to these goals was the 3D documentation of Chavín architecture and sculptures. The large-scale 3D documentation of Chavín was realized in 2012 by ArcTron 3D, commissioned by the Museum Rietberg. High-resolution structured light scanning was combined with terrestrial laser scanning and photogrammetry. Aside from ground-based procedures, different airborne technologies were deployed. The result is a full record of the temple complex with high accuracy. Single objects like the Tello Obelisk or the Lanzón cult image were even documented with sub-millimeter accuracies. The virtual core of the 3D documentation is its management and analysis in ArcTron's 3D GIS system aSPECT3D. Apart from sophisticated interfaces for different scanning technologies, the software offers a PostgreSQL database for structuring and managing large amounts of data. Complementing the model presentation in the exhibition, the 3D documentation forms the basis for scientific analysis and planning conservative interventions.

Gabbert, Sara (California State University, San Bernardino), Danielle M. Romero (University of Nevada, Las Vegas) and Barbara Roth (University of Nevada, Las Vegas)**[43] Ceramic Tools and Other Worked Sherds from the Harris Site, NM**

Numerous ceramics are recovered from archaeological excavations in the Southwest, and those classified as decorated and redware are thoroughly studied for their contribution to stylistic differences and as references for dating sites. Ceramics classified as tools and worked sherds have often not received the same amount of attention and have been limited in the depth to which they are discussed in site reports. The ceramic assemblage discussed in this poster was recovered during the excavation of 20 pithouses and other features at the Harris Site in Mimbres, New Mexico during the 2008-2013 field seasons. The majority of the assemblage is represented by complete and preform spindle whorls of various sizes. In addition to the spindle whorls, the worked ceramics were analyzed to interpret their prehistoric potential use as jar covers, scoops, scrapers, figurines, gaming pieces, and traded items. This poster will also discuss the distribution of the worked sherds across the site and the contexts within the pithouses in which they were recovered to examine possible differences between households at the site.

Gabe, Caroline (University of New Mexico)**[309] Situational Frames of 17th Century New Mexico: Examining the Built Environment of Spanish Households**

Archaeological research of identity often focuses on material culture, but the built environment within which identity is enacted and how changes in a setting can influence the ability of a group to mimic an ideal identity are also relevant. The situational frame is an architectural concept that predicts the built environment and changes in that environment will lead to variations in the activities conducted there. It implies that a physical setting has certain relational expectations and links patterns of human social interactions to a particular built environment, implying that patterns are ingrained in a situational spatial dialect. Therefore, new social settings can develop a unique built environment, and thus behaviors within it as well. In practice, 17th century New Mexican Spanish settlements can be divided into at least four separate situational frames, or categories, based on size and likely purpose. These include the initial settlement at Yunque, the concentrated government center at Santa Fe, medium size households

(estancia/haciendas), and small settlements (villas). This presentation discusses these four categories and how they represent variations in the situational frames of 17th c. New Mexican secular households, as well as possible variations in institutional and social constraints tied to identity.

[309] Chair

Gaffney, Chris [157] see Harris, J. Chrys

Gagnon, Celeste (Wagner College), Nicholas Richardson (Wagner College), Fred Andrus (University of Alabama) and Jennifer Ida (University of Colorado at Boulder)

[219] *Experimental Chicha Brewing: Implications for Interpreting Skeletal $\delta^{18}\text{O}$ Values in the Andes*
Increasingly, $\delta^{18}\text{O}$ has become part of the standard battery of stable light isotope values measured in samples of human skeletal and dental remains. Because the $\delta^{18}\text{O}$ value of water is affected by evaporation and condensation, meteoric water values increase with increasing temperature, as well as with decreasing altitude, latitude, and distance from the coast, thus water carries a signature of its spatial and temporal source. When imbibed, the oxygen is incorporated into human bones and teeth, which suggests that $\delta^{18}\text{O}$ values of these tissues have the potential to provide us with a record of where a person was raised and if that person migrated in the years before her death. However, boiling and open storage also increase evaporation, and these sources of heavy oxygen enrichment must be considered when interpreting human $\delta^{18}\text{O}$ values. This may be especially important in the context of the Andes where canals, pukios, and chicha were common sources of water. In this study we experimentally produced chicha de mafz in the lab, as well as sampled the brew of a Moche valley chichera to begin to estimate the magnitude of heavy oxygen enrichment that may have resulted from chicha consumption.

Gahr, D. (Southern Illinois University at Carbondale)

[290] *Emancipating Pacific Northwest Archaeobotany from Ethnography while Benefiting from Its Largesse*

The agenda of this symposium is to encourage archaeologists to move beyond uncritical reliance on the wealth of our regional ethnographic record in order to build more robust explanatory models and enriched theoretical frameworks. Archaeobotanical research is one of the areas of Pacific Northwest archaeology most impacted by and dependent upon ethnographies and contemporary ethnobotanical research to interpret results. Despite being uniquely poised to study significant questions regarding long term dynamics in society and ecology, this facile reliance on ethnobotanical data has hampered archaeobotanists' contributions to this research. The growing archaeobotanical record from the Lower Columbia River region reveals increasing incongruities between evidence from archaeological plant remains and the data regarding plant use from the ethnographic and historic records. The challenge set by this symposium led me to re-enter the texts of the oral traditions, ethnographies, and historical documents. I used qualitative research methods to build a contextually, more nuanced, interpretive framework that integrates the archaeobotanical data. Critical points I consider in this paper are the impacts of the regional demographic devastation and colonial contacts on labor organization, including gender roles, dissemination of cultural knowledge, critical resource procurement and processing, and concurrent ecological changes.

Galaty, Michael (Mississippi State University), Lorenc Bejko (University of Tirana), James Harris (Millsaps College), Stanley Galicki (Millsaps College) and Sylvia Deska (Michigan State University)

[89] *The 2013 Field Season of the Projekti Arkeologjikë i Shkodrës (PASH), Northern Albania*

The Projekti Arkeologjikë i Shkodrës (PASH), a regional archaeological survey focused on the hinterlands of the northern Albanian city of Shkodër, conducted a fourth season of fieldwork May-June 2013. Survey was extended into new territories, geoarchaeological work was expanded, and a badly damaged burial mound was subjected to geophysical analysis and excavation. Results point to a vibrant, well-populated prehistoric landscape, dominated by large hill forts. Programs of radiocarbon dating and strontium isotope analysis are helping to define the timing, nature, and further development of this landscape beginning in the Bronze Age and through the Iron Age.

Galaty, Michael [332] see Pullen, Daniel

Galeazzi, Fabrizio (University of California Merced) and Stefan Lindgren (Lund University)

[277] *Digital Archaeology at Las Cuevas: Comparison of Laser Scanning and Dense Stereo Matching*

Techniques for 3D Intra-site Documentation.

In the last decades the use of 3D technologies for the documentation and reconstruction of cultural heritage has changed the way to approach the archaeological survey. 3D technologies give the opportunity to digitally preserve the information collected on site through time. In this way archaeology can be revisited over the long-term and, thanks to the following of new discoveries, analyzed by multiple experts and subjected to new analytical techniques. The 3D documentation of the archaeological site of Las Cuevas represented a unique opportunity to test and compare 3D laser scanners and photogrammetric methods in extreme and diverse environmental conditions. This paper presents the results of the 2011 and 2012 fieldwork campaign. Laser scanning and dense stereo matching techniques were used for the 3D data acquisition of three different areas of the site, characterized by diverse environmental conditions and light exposures (cave's entrance chamber; temple and ballcourt). Quantitative comparisons were conducted between the 3D models coming from the different techniques showing how technologies can be integrated for the optimal recording of the excavation process. The research presented in this paper helps define best 3D practices for the documentation, analysis and interpretation of archaeological sites.

Galeev, Philipp [195] see Novelo Rincon, Gustavo

Galeta, Patrik [102] see Kubátová, Ilona

Galicki, Stanley [89] see Galaty, Michael

Galindo, Mary (SWCA Environmental Consultants), Jimmy Arterberry (Comanche Nation), Heidi Fuller (SWCA Environmental Consultants), Matthew Carter (SWCA Environmental Consultants) and Alamea Young (SWCA Environmental Consultants)

[95] Traditional Cultural Property Study at Camp Bowie: A Comanche Perspective

Camp Bowie, near the headwaters of the Colorado River in Brownwood County, Texas, is surrounded by what the Spanish referred to as "Comanchería," or Comanche Country. SWCA conducted a Traditional Cultural Properties survey of Camp Bowie on behalf of the Texas Army National Guard, Adjutant General's Department/Texas Military Forces, in compliance with Sections 106 and 110 of the National Historic Preservation Act, with the objective of managing and preserving TCP resources, while upholding its training mission at Camp Bowie. The Comanche Nation's Tribal Historic Preservation Officer and five members of the Elder Council participated in two phases of fieldwork in 2013 and identified six TCP locales. Additionally, historic Comanche components were identified for about 40 previously recorded sites. The methodology developed for the Comanche fieldwork and the results of this study are the focus of the presentation.

Galke, Laura (George Washington Foundation)

[233] Mother Washington: Complicating a Significant Narrative Performer

In existing biographies of George Washington's, accounts about his mother's role in his life have rarely been neutral. These stories form broad patterns that reflect popular ideologies of motherhood, women, masculinity, and the nature of success. Archaeological investigations at George Washington's boyhood home in Fredericksburg, Virginia (c. 1738-1774) complicate these stories. The resilience of popular narratives in the face of contrary historical and material culture evidence is the focus of this presentation.

Gallaga, Emiliano (UNACH, University of Arizona) and Terry G. Powis (Department of Geography and Anthropology, Kennesaw)

[170] Early Chili Peppers Evidence at the Site of Chiapa de Corzo, Chiapas, Mexico

Peppers or fruits of Capsicum species have rarely been identified in the paleoethnobotanical record in either Meso- or South America. We report here confirmation of Capsicum sp. residues from pottery samples excavated at Chiapa de Corzo in southern Mexico dated from Middle to Late Preclassic periods (400 B.C.E. to 300 C.E.). Residues from 13 different pottery types were collected and extracted using standard techniques. Presence of Capsicum was confirmed by ultra-performance liquid chromatography (UPLC)/MS-MS Analysis in five pottery types. Results of the chemical extractions provide conclusive evidence for Capsicum use at Chiapas de Corzo during a 700 year period (400 B.C.E. – 300 C.E.). Presence of Capsicum in different types of culinary-associated pottery raises questions about how chili pepper was used during this early time period. As each vessel that tested positive for Capsicum had a

culinary use we suggest here the possibility that chili residues from the Chiapas de Corzo pottery samples reflect either paste or beverage preparations for religious, festival, or every day culinary use. Alternatively, some vessels that tested positive could have merely been used to store peppers.

[253] Chair

Gallaga, Emiliano [253] see Lowe, Lynneth

Gallagher, Daphne (University of Oregon)

[171] *The Archaeology of Indigo Dyeing in Burkina Faso, West Africa*

Indigo dyeing is a complex process that has been practiced in West Africa for at least 1000 years. Indigo cloth production is well-documented in historic and ethnographic accounts, where textiles are frequently described as valued items used in a variety of secular and religious contexts. While the degree of specialization and intensity of production varies/d greatly throughout the region (as do gendered associations of various components of the production process), in general indigo cloth is well-established as having been a major trade commodity in regional systems. Archaeologically, the majority of research to date has focused on the rare finds of preserved textiles and production of the cloth itself. This poster explores the archaeological signatures of indigo dyeing in southeastern Burkina Faso, including the infrastructure (plastered dye pits), material culture (pots), and waste products (ash) associated with the indigo dyeing process, and presents results from regional survey south of the Gobnangou escarpment, an area associated with the pre-colonial Gulmance kingdom. The survey identified specialized production areas indicating intensive manufacture of indigo cloth in the late second millennium CE. These remains provide an important line of evidence to contextualize ethno-historical accounts of the role of local polities in long distance exchange.

Gallant, Thomas (University of California, San Diego)

[127] *An Historical Archaeology of Everyday Life on a Greek Island: Andros, 16th-19th Centuries CE*

This paper contributes to the historical archaeology of everyday life by presenting the preliminary results of the first two fieldwork sessions of KASHAP [the Kefallenia and Andros Social History and Archaeology Project]. The project brings together historians, archaeologists, natural scientists, big data graphics specialists and others to track the human and environmental histories of the islands. It explores the social and economic systems as well as the material culture of these two island populations. One of the main themes of the project is to explore how being integrated as peripheries into major premodern empires, in this case the Venetian Empire and the Ottoman Empire, shaped the contours of everyday life and how the transition from empire to nation-state impacted society and economy. The first phase of the project has focused on the northern region of the island of Andros, concentrating on the collection of environmental data, the mapping of agricultural field systems, plotting the road network, analyses of terrace walls, the excavation of two farmhouses that were occupied from the late 17th to the late 19 centuries, and the collection of archival materials (land leases, sales agreements, dowry contracts, and wills, for example).

Gallareta Negron, Tomas [31] see Ringle, William

Galle, Jillian [232] see Bates, Lynsey

Gallenstein, Gwenn (National Park Service)

[165] *Head in the Clouds: Can Lofty Partnership Ideas Become Real?*

In 2011, the Flagstaff Area National Monuments (Sunset Crater Volcano, Walnut Canyon, and Wupatki National Monuments near Flagstaff, Arizona), a unit of the National Park Service, signed a unique, non-monetary agreement with the private Museum of Northern Arizona (MNA) also located in Flagstaff. The agreement allowed the National Park Service (NPS) to move their museum collections, including archaeological, natural history, and archival collections, and a curator to the MNA research and collections facilities. In exchange, the NPS curator works 15% of her time for the MNA collections department with other federal collections housed at MNA. This PowerPoint presentation will explain the circumstances of how the partnership came into being and highlight the ground-proofed benefits and challenges of federal- private partnerships.

[165] Chair

Gallivan, Martin (William & Mary)**[159] Place-Making in the Algonquian Chesapeake**

A 17th century origin story from the Algonquian Chesapeake describes the benevolent god Ahone and sacred winds blowing across a world without people. After giants killed and sacrificed the first deer in this world, Ahone released the people from his bag to place them in different areas. Formerly a landscape of water and fish, the Chesapeake became a circular disc centered on the Powhatan. This account may be read as a narrative of place-making, the process of creating a meaningful place-world through stories of "what happened here". Taking this colonial-era story as a point of departure, this paper outlines a deep history of place-making in the Algonquian Chesapeake. The precolonial arrival of Algonquian speakers in the region—estuarine-oriented fishing communities—coincided with the creation of places of interaction with deer-hunting foragers long-resident in the area. During the following centuries Native communities established riverine settlements, centering some on circular enclosures surrounding ritualized spaces. Even after English colonists seized their lands, Native groups returned to these locations to sacrifice animals and to inter objects of social importance. Such pilgrimages and performances contradict a narrative of abandonment and disappearance, highlighting the enduring power of place in the Algonquian Chesapeake.

Gallivan, Martin [338] see Shephard, Christopher

Galm, Jerry R. [117] see Fulkerson, Tiffany

Galvan, Melissa (Universidad de las Americas)**[195] Stucco Façades in the Puuc Region: Interpretation of a Dismantled Stucco Gaçade Found in a Deposit at Kiuic, Yucatan**

In the Puuc site of Kiuic, a destroyed modeled stucco façade was identified in 2009. This talk centers on the research that was conducted on this deposit and the materials found within it. The research focused on the stucco remains and the possible purposefully deposited nature for its interpretation. The importance of this deposit lies in the sociopolitical implications of the destruction of the building and its decorated façade; linking this event with the spatial, social, and political history of Kiuic. The research was mainly based on developing a typology that allowed for a morphological analysis of the stucco fragments. This was complemented with the information of an analysis of the associated ceramics and lithic in order to contextualize the stucco and the deposit in its entirety.

Gamble, Lynn (University of California, Santa Barbara)**[85] Social and Ritual Transformations in Coastal Hunter/Gatherer Communities in the Santa Barbara Channel Region**

Exchange and resource variability has traditionally played a prominent role in discussions of island/coastal mainland interactions and the emergence of sociopolitical complexity in the Santa Barbara Channel area, a region with no major population replacements for at least the last 10,000 years. Although these economic explanations are significant, ritual and political transformations are also integral to the emergence of permanent inequality. Sacred and symbolic coastal landscapes, ritual performances and accompanying paraphernalia, gift giving, shifting alliances and entanglements, and political integration contributed to the complex hunter-gatherer Chumash society that was documented at the time of European contact in the region. I examine these variables from the lens of historical contingency using multiple scales of analysis to better understand emergent polities in southern California.

Gamboa Velasquez, Jorge (Proyecto Pañamarca y Universidad Nacional Santiago Antunez de Mayolo)**[27] The Enclosed Public Space: Moche Plazas as Places of Social Encounter**

The complexities of Moche sociopolitical organization have been recently re-evaluated through theoretical approaches and historical reconstructions. Nevertheless, the spatial, functional, and symbolic characteristics of Moche ceremonial plazas have not been subjected to similar scrutiny. Our knowledge of the materiality of Moche plazas is limited by the small number of extensive excavations in this type of architectural space. However, relevant data is available on the design and functionality of plazas from Huacas de Moche, El Brujo, Galindo, and Dos Cabezas among other sites. The Moche ceremonial plazas appear as extensive walled spaces, decorated with murals that emphasized representations of gods, warfare, and sacrifice, and used for massive audiences and private events of political negotiation, authority and consecration. A symposium dedicated to examining our current knowledge on Andean

plazas becomes the appropriate means to assess both how our understanding of Moche plazas has advanced and to orient future study of these major public buildings.

Gandy, Jennifer (Gault School of Archaeological Research and Texas State University)

[318] *Defining Older-than-Clovis at the Gault Site through the Statistical Analysis of the Lithic Debitage*
In 2002 and 2007, testing at the Gault Site in Central Texas revealed intact archaeological deposits below Clovis. Since then, ongoing investigations at Area 15 have focused on the earliest intact deposits, particularly the Clovis and Older-than-Clovis (OTC) components. Twelve 1-m-x-1-m units were excavated below Clovis as 5 cm levels. The OTC deposits are now known to be approximately 80 cm thick, and a number of cultural materials have been recovered from these deposits, the majority of which was lithic debitage. This analysis was conducted to define the OTC debitage and to compare and contrast it with that of Clovis. Since knapping behaviors can be inferred primarily from the striking platforms of flakes, the main criterion for choosing flakes for analysis was the presence of identifiable platforms or platform remnants. A 100 percent sample of flakes meeting this criterion was chosen from six of the twelve OTC units, totaling 2,395 flakes. Statistical analyses of flake and platform attributes were performed as a means of characterizing these flakes and the technology or technologies they may represent.

Gandy, Jennifer [318] see Velchoff, Nancy

Garber, James (Texas State University) and Kathryn Brown

[31] *Preclassic Architecture and Ritual at the Site of Blackman Eddy, Belize*
Our understanding of the early Maya has increased dramatically over the past forty years. In many respects, the discoveries at Cuello opened the door for new questions about the origins of Maya civilization, pushing back the established time-line for the earliest settled villages. Following on the heels of Cuello, new discoveries in the Belize River Valley added significantly to our knowledge of this important and dynamic period. Investigations at the site of Blackman Eddy revealed a developmental sequence of Middle Preclassic public architecture and associated ritual deposits. Detailed analysis of materials from these ritual deposits suggests that communal feasting was an important component of early ritual behavior. The Preclassic architectural sequence culminated in the pyramidal form of architecture decorated with deity masks. In this paper we revisit the data collected at Blackman Eddy and present our current interpretations in light of new Preclassic discoveries in the Maya lowlands.

Garber, James [188] see Elverson, Matthew

Garcea, Elena (University of Cassino and southern Latium)

[198] *The Southern Periphery of Egypt in the Predynastic Period: Nubia in the 5th and 4th Millennium B.C.*

From an economic viewpoint, ancient Nubia was the southern periphery for Egypt. Their relationship was not strictly reciprocal as Egypt was not the northern periphery for Nubia; and Egypt depended more on Nubia than Nubia dependent on Egypt. The higher independence of Nubia could be related to the fact that sedentary settlements were not a successful form of adaptation in the Nubian landscape. Conversely, mobility allowed Nubian populations to avoid the needs for a greater dependence on large quantities of resources, human labor, and political relations. Nomadism was also more successful because of the different physical landscapes in the Egyptian Nile valley and in the Nubian valley: while the former features a vast alluvial plain, the latter is intersected by a series of rocky outcrops, which form cataracts affecting the extent of flooding and impeding navigability. Therefore, two opposite, but complementary, systems were established: agriculture with sedentism in Egypt, and pastoralism with nomadism in Nubia. Consequently, as the Egyptian dynastic kingdom developed, Nubia remained a peripheral, but never 'marginal' political landscape. In fact, it was able to sustain alternative pathways to power, which reached its peak with the rise of the Kerma civilization ca. 2500 B.C.

García, Juan Luis [69] see Méndez Melgar, César

García Paz, Carlos Andrés [192] see Götz, Christopher

Garcia-Des Lauriers, Claudia (California State Polytechnic University, Pomona)

[130] Beyond the Strategic: Cerro Bernal and Los Horcones as a Sacred Landscape

Since 2005, the Proyecto Arqueológico Los Horcones (PALH) has been investigating the site of Los Horcones located in the municipality of Tonalá, Chiapas, largely looking at its role as an important interaction node in the region during the Early Classic (A.D. 250-650). Archaeological research conducted by earlier scholars and more recently by me has focused on the strategic location of Los Horcones as an important factor for understanding its relations with Teotihuacan, the Maya region, and the Gulf Coast. While conducting research there, local residents shared with me stories of the importance of Cerro Bernal and its natural features as ideologically potent elements of the landscape. I recently went back and interviewed several long-time residents of Cerro Bernal and in this paper I will combine information from these interviews, research on Mesoamerican sacred landscapes, and the archaeology of Los Horcones to present this site and Cerro Bernal as more than just a strategic landscape—it was also a deeply meaningful sacred location.

Garcia-Herbst, Arleen (ECORP Consulting)

[246] Hunter-Gatherer Land Use and Landscape in Late Holocene Southern Patagonia, Argentina
Landscape studies try to explain how specific places or spaces in the natural environment were used or manipulated by humans in an attempt to codify their economic practices, socio-political organization and ideological beliefs. This paper will explore the relationship between the prehistoric and ethnographic native peoples and cold, arid environment of Southern Patagonia and Tierra del Fuego, focusing primarily on the portion of land or areas falling east of the Andean mountain chain, within the country of Argentina, and between Parallel 49 S and 55 degrees South.

García-Moreno, Alejandro [278] see Hutson, Jarod

García-Moreno, Cristina (Arizona State University/Centro INAH Sonora)

[339] Cultural Interactions in Ónava Valley, Sonora, México

Recent research in southeastern Sonora, México, particularly in the valley of Onavas, has provided valuable information on cultural practices of the ancient inhabitants of this region. Through the recovered skeletal remains of a burial site we have uncovered the funerary practices of the group occupying the valley between A.D. 943 and 1481. From the presence and characteristics of cranial and dental modifications of some of the skeletons (cultural practices that have not been reported in any other region of the state), we suggest that this population had a greater affinity with populations of Sinaloa and northern Nayarit; however, we have not found other attributes of the cultural traditions of the Mexican west coast. Despite this, we believe that the valley of Onavas is part of the cultural corridor of the West-Northwest/Southwest.

Garcia-Putnam, Alex (East Carolina University Department of Anthropology) and Megan Perry (East Carolina University Department of Anthropology)

[283] An Investigation of the Taphonomic Effects of Animal Scavenging

Numerous environmental and human-induced variables that affect decomposition can cloud accurate estimations of the postmortem interval (PMI). For instance, scavenging animals can remove soft tissue and disarticulate and scatter remains, resulting in faster-than-expected decomposition. This study investigates the impacts of animal scavenging on decomposition rates and estimations of the PMI in eastern North Carolina using pigs (*Sus scrofa*) ($n = 4$) as analogs for human remains. Systematic observation over a five-month period documented which scavengers affected the death scenes, the decompositional changes of each subject, and the scattering patterns of the skeletal elements to determine whether or not scatter patterns over time can be predictive of the postmortem interval. One specimen enclosed in a wire cage served as a control. Motion sensing cameras were positioned at the three exposed sites to capture images of scavenging animals. Vultures and canid scavengers produced the most pronounced scattering events. The exposed remains reached full skeletonization and disarticulation by day 8, while the control reached a skeletal state by day 23. Scatter patterns, however, are not strongly predictive of the time since death.

García-Vásquez, Ramiro [153] see Brown, Clifford

Gardiner, Julie (Oxbow Books), Mark Lynott (National Park Service, Nebraska) and Peter Topping (University of Newcastle upon Tyne)

[82] American Landscapes: Archaeology, Anthropology, Landscape History, and Environmental Diversity

American Landscapes is a publication project created and funded by Oxbow Books/David Brown Book Company that is designed to present a series of lavishly illustrated volumes exploring the landscape history of the North American continent. Each volume will provide a comprehensive and accessible narrative aimed at the informed reader, presenting an up-to-date review of the latest research from archaeology, anthropology, historical studies and the environmental sciences, which will also provide a guide to the detailed literature. The aim is to produce an expert overview—from a holistic landscape perspective—of the history and changing land-use of particular areas/regions or archaeological/historical themes across a wide timeframe in the United States and Canada. This poster presents the major themes and subject areas we are exploring and highlights future contributions to the series that are not represented in contributing posters to the session in order to demonstrate the range and breadth of the project.

Gardner, Jeff [117] see Cyr, Howard

Gardner, Karen (California State University, Chico), Antoinette Martinez (California State University, Chico), Eric Bartelink (California State University, Chico), Alan Leventhal (San Jose State University) and Rosemary Cambra (Chairwoman of the Muwekma Ohlone)

[306] (Dis)ability in California Prehistory: Interpreting Social Roles of Individuals with Disabilities from CA-SCL-38 through Mortuary Context and Stable Isotope Analysis

The Yukisma Mound (CA-SCL-38) in Santa Clara County, California, was a ceremonial and mortuary site used by the ancestral Ohlone from at least 780 until 230 BP. Osteological analysis of the burial population revealed that 24 individuals (10% of the 248 recovered) exhibited evidence of some condition that would have significantly influenced their participation in life activities. These included congenital or developmental defects, traumatic injuries resulting in prolonged infections or compromised limb function, chronic infectious disease, and cranial trauma associated with neurological disorders. This study examines the social roles of these individuals within the community, including status, wealth, and ritual specialization. While associated artifacts provided clues about social adaptations and accommodations, these individuals were ultimately as likely to have evidence of wealth or ritual roles as others in the population. Variation in dietary patterns fell within the range for able-bodied individuals. Mean $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values of bone collagen and $\delta^{13}\text{C}$ values of bone apatite for this group were all within 0.10‰ of the population means. This integrated analysis suggests that individuals with disabilities were well regarded and cared for by the ancestral Ohlone, but that they did not receive special recognition or status because of their conditions.

Gardner, William

[313] Discussant

Gardner, A. Dudley (Western Wyoming College) and William Gardner (Yale University)

[324] Food-Way Changes during the Formative Period in Northwestern Colorado

Excavated rock shelters in northwestern Colorado contain extensive data sets that are increasing our understanding of Formative Period (2000-500 B.P.) diets. As a result we are gaining insights into the relationship between cultivated and gathered plant resources in the region. In this paper we will look at the significance of maize, xeric grasses, piñon nuts, and chenopodium in the diet of the Formative groups in the region. We will offer some tentative suggestions about which plants were cultivated and which plants were gathered. This paper provides a brief summary of what we have learned in our excavations over the last ten years and offers a cautious proposal regarding plants that may have been cultivated along with maize in northwestern Colorado during the Formative Period.

[324] Chair

Gardner-O'Kearny, William (Portland State University)

[160] Household Population Dynamics from the Ground Up: Preliminary Results from a New Agent Based Computer Simulation

The internal demographic structure of Pacific Northwest Precontact households is largely a black box to archaeologists. Demographic reconstruction must rely on growth equations, extrapolation from recovered human remains, and ethnography. A new computer simulation conceived as tool to explore population

dynamics hypotheses is described here. The simulation takes individual agents grouped into households as its basic units. Agents' life histories move from birth through marriage to having children and ultimately death. These events across generations define a household's lifecycle from founding to dissolution. Stochastic factors such as fluctuating food production and catastrophes with variable effects are incorporated. Complete records of life events for all agents are produced allowing the reconstruction of individual life histories. Initial results suggest that slight, culturally controlled variables, such as a shift of as little as one year in the age at which female agents start having children, have significant impacts on household lifecycles. Mean age of household members seems to gravitate toward 20-22 years old, with slight increases associated with rapid population decline. Although the simulation is designed with a specific geographical area and time period in mind, it is flexible enough to allow demographic modeling beyond the Pacific Northwest.

Garduño Ambriz, Mauricio (Instituto Nacional de Antropología e Historia/Centro INAH Nayarit)

[339] *San Felipe Aztatán: New Data on Iconography of the Aztatlán Culture (A.D. 850/900-1350 A.D.) of the Northwestern Lowlands of Nayarit*

After a long process of institutional delay, in early 2013 it was possible to recover an elaborately decorated polychrome vessel pertaining to the Aztatlán cultural complex (A.D. 850/900-1350) of the northern Mesoamerican coast, whose core area of development took place in the fertile alluvial lowlands of northern Nayarit and southern Sinaloa. The finding of this vessel took place in a fortuitous manner over twenty years ago at a site located within the urban area of San Felipe Aztatán on a level surface atop a platform located at a distance of 130 meters westward from the Loma de la Cruz. This mound is the main ceremonial edifice located within the architectural core of San Felipe Aztatán and is astronomically oriented on an east-west axis and ritually linked with sun worship. The vessel in question is decorated within the pictorial tradition known as "codex style". Grouped into two main scenes related to upper levels of social status are a total of 24 characters, which covers practically the entire outer surface of the vessel, including its base. Themes to be discussed include the depiction of ritual sacrifice of a person by heart extraction, a decapitated individual, and a cremation burial rite.

Garfin, Timothy (California State University Long Beach) and Hector Neff (CSULB)

[174] *Exploring Settlement Patterns in the Littoral Zone of the Soconusco Coast*

The goal of this poster is to explore the preliminary results of recent survey work done in the Soconusco Coast region and to combine this with an older corpus of data. The key sources of data come from the NSF funded Proyecto Arqueológico Costa Del Soconusco (PACS) and survey data from Coe and Flannery, Shook, and Love. The key methodological issue is evaluating how older types of survey methods can interact with more technologically sophisticated techniques. Many of the sites were identified deep within the coastal mangrove swamps using LiDAR which presents archaeologists with a set of data options that are much more flexible and rapidly deployable than pedestrian survey. By combining these data sources it should be possible to create a more accurate and dynamic picture of the archaeological landscape in the region and map how site utilization and distribution changed over time.

Garfin, Timothy [250] see Neff, Hector

Garfinkel, Alan P. [287] see Binning, Jeanne

Garland, Jr., Theodore [16] see Wallace, Ian

Garrard, Andrew [236] see Byrd, Brian

Garraty, Christopher (Statistical Research, Inc.)

[321] *Exploring Production Sources and Technologies for Hohokam Brown-Paste Decorated Pottery in the Lower Salt River Valley: New Evidence from La Ciudad, Phoenix, Arizona*

Throughout the Hohokam Pre-Classic period (A.D. 650–1150), decorated pottery vessels in the lower Salt River valley almost exclusively consisted of imported Red-on-buff wares from the adjacent middle Gila River valley to the south. For a brief span during the Gila Butte phase (A.D. 750–900), however, low-level production of brown-paste decorated pottery in the lower Salt valley supplemented Red-on-buff imports from middle Gila region, which accounted for about 15 to 40 percent of decorated sherds from sites along the lower Salt River. The brown-paste, red-painted pottery closely mimicked the decorative

design and vessel forms of the middle Gila Red-on-buff wares, but inspection of paste and surface attributes indicates crucial differences in production technologies and raw materials. Based on an analysis of ceramics from recent excavations at the site of La Ciudad in downtown Phoenix, I consider multiple lines of evidence to explore potential production sources in the lower Salt valley and the technological choices employed by manufacturers of the brown-paste pottery. I conclude by proposing several hypotheses for the development of a local decorated pottery tradition during the Gila Butte phase.

Garrett, Zenobie (New York University)

- [41] *Transitional sites in the Post-Roman World: Sites Survey Analysis of the Roman and Early Medieval Periods in the Vézère Valley (Dordogne, France)*

The end of the Roman Empire was an unprecedented moment of cultural contact and change. Although a much cited example of classic societal collapse and regeneration models, research over the past 20 years suggests a more complicated picture of continuity and change during the early medieval period in Europe. In France, the subsequent rise of the Frankish Kingdom during this time represents the earliest coalescence of political control in post-Roman Europe. While archaeologists have long recognized the importance of the Frankish kingdom for exploring questions of continuity and cultural change, studies of post-Roman France have focused exclusively on the northern and eastern regions. Thus, the as underexplored region of Aquitaine in the southwest is a crucial missing piece in the puzzle of early medieval Europe. This paper presents the preliminary results of site survey in the Vézère river valley, in the Dordogne department of southwestern France. In addition to introducing the underexplored medieval archaeological potential of this region, the analysis presents methodological strategies to combine multiple, disparate data sets and analyses this key transformation in societal organization.

Garrett, Stephen (Gault School of Archaeological Research and Texas State University) and Sergio Ayala (Gault School of Archaeological Research and Texas)

- [318] *Depositional Integrity of Area 15 at the Gault Site - Utility of Geomagnetic Analysis and Diagnostic Notching Flakes*

This report demonstrates the utility of diagnostic Andice notching flakes and geomagnetic analysis of one of the several burned rock features (F18-10) at the Gault site, to provide depositional integrity values. At approximately 8,000 years old, this hearth is potentially significant for understanding the early part of the long time interval known as the Archaic (from roughly 9,000 to 1,000 BP). In addition, its placement directly above the Paleoindian materials makes its proper interpretation of utmost importance.

Demonstrating that the feature is intact, or virtually unmoved since its construction, supports the notion that materials underneath are similarly intact.

Garrison, Thomas (University of Southern California), Mary Clarke (Boston University), Stephen Houston (Brown University), Katie Simon (University of Arkansas) and Vance Green (University of Arkansas)

- [154] *"We may have to call someone": 3D Technologies in the Context of Lowland Maya Field Archaeology*

This paper examines the pros and cons of integrating 3D technologies into a field project in the Maya lowlands. Since 2006, the Proyecto Arqueológico El Zotz in northern Guatemala has implemented a variety of digital 3D methods over the course of eight seasons of fieldwork. From close range photogrammetry and laser scanning for monument documentation to the use of software such as Google SketchUp and Maya for architectural visualization, 3D technologies have been a part of the day-to-day field operations on site. These applications have had mixed results when compared to more traditional archaeological field methods. This talk will highlight the experiences PAEZ members have had as jungle archaeology continues into the 21st century. It highlights both successes and failures while making recommendations for the future.

Garrison, Ervan, Timothy Anderson (University of Grenoble) and Kent Schneider (University of Georgia)

- [157] *Architectural Inference from Ground Penetrating Radar (GPR) Surveys of an Unexcavated Roman Country Villa, Châtillon-La Vuarda, Switzerland*

In 2004, a ground radar study based on earlier surface collections and aerial photos confirmed the presence of a Roman-style villa near the modern Swiss village of Châtillon-La Vuarda. Our subsequent re-analysis of the radar data in 2012-13 clearly indicated architectural details consistent with those of a pars urbana or domiciliary portion of a villa complex. This conjecture is based on a careful re-analysis of the radar data that resolved key architectural details not seen in the original analyses done shortly after

the field surveys in 2004. In the 1990s, Denis Ramseyer conducted mechanical trenching northwest of the villa proper, where geophysical features had appeared on an earlier resistivity survey's results. A second series of trial trenches were carried out, systematically, by co-author Anderson in the same parcel as the first set of trenches. Anderson's study confirmed that the building does not stretch to that parcel. Combining the geophysical, preliminary excavation data and archaeological information obtained from recent, contemporaneous excavations of villa sites in the Germania Superior of the Swiss Plateau, allows us to interpret these data with greater confidence and support our conjectures regarding spatial and architectural details of villa complex.

Garrow, Patrick (Cultural Resource Analysts, Inc.)**[86]** *Discussant*

Gasco, Janine [72] see Castillo, Mario

Gasco, Janine (CSU-Dominguez Hills)**[284]** *Ecology, Economy, and Cacao Cultivation in Soconusco, Chiapas, Mexico*

For almost four millennia, cacao has been cultivated in the Soconusco region of Chiapas, Mexico. In this paper I explore the relationships among local ecological systems, economic change, and the cultivation of cacao in Soconusco from late Prehispanic times to the present. As a highly desired and relatively scarce commodity, cacao has long been an important export crop produced in Soconusco's tropical forests, yet ecological features, economic forces, and cultivation practices have changed considerably over time. Here I compare the nature of these changes for the Late Postclassic, Colonial, Post-colonial, and contemporary periods to better understand the complex interplay among ecological and economic factors and local cultivation strategies. I also consider the broader implications of these changes for local cacao farmers, how they are manifested in material culture and the archaeological record, and likely trends for the future.

Gastaldi, Marcos [19] see Bertolino, Silvana Raquel Alina

Gates-Foster, Jennifer (University of North Carolina at Chapel Hill)**[194]** *Abundance and Innovation in the Production of Roman Tablewares*

The widespread distribution of certain Roman tablewares from Italy, the Gallic region, and North Africa is a well-documented aspect of the economy of the Roman era. These glossy red fine wares, known as terra sigillata, can be found in abundant quantities throughout the empire, second only in quantity to the amphora with which they were often paired in transport. Some of these products were distributed practically empire-wide, while others had a more limited distribution alongside locally-produced fine wares that were cheaper and in many cases imitated popular imported sigillata forms. The visual experience of large quantities of pottery of this type both in households and in the environment, where discarded fragments of sigillatta formed a large component of household debris, undoubtedly shaped ideas about the desirability of particular styles and shapes, as well as the values attached to these objects. This paper will focus on the role of abundance in the consumption of Roman sigillatas, as well as the way that changes in vessel form and decoration may be understood as a response to quantity as a visual and empirical experience. Particular attention will be paid to the pace of stylistic change in production centers in Europe and North Africa.

Gatto, Maria (The Aswan-Kom Ombo Archaeological Project; Yale University) and Kimball Banks (Combined Prehistoric Expedition Foundation and the)**[88]** *Archaeology in Egypt during The Arab Spring*

The Egyptian Revolution in 2011 has affected how archaeology is now conducted in Egypt. The revolution has also affected how Egyptians themselves feel about their country's heritage and the archaeologists exploring that heritage. Although pharaonic archaeology has suffered the most, prehistoric archaeology has also been impacted. With the overthrow of President Morsi, archaeology and archaeological sites also have become a political issue. In this regard, what is happening in Egypt is emblematic of issues facing other countries that have experienced the Arab Spring. To a large extent, the politicization and degradation of archaeology can be viewed as reflecting the Islamist worldview: 'There is no god but God'.

Gaude', Dana (Louisiana State University) and Heather McKillop (Louisiana State University)

[233] *3D Imaging and 3D Printing of Coffin Handles from St. Thomas Anglican Churchyard, Belleville, Canada*

The use of 3D imaging and printing in Archaeology is a burgeoning field that provides researchers and the public an opportunity to preserve and engage with the past. Nineteenth century Victorian attitudes towards death and burial are shown in motifs on gravestones, funeral art, and garden cemeteries. Decorated coffin handles from St. Thomas Anglican Churchyard show similar motifs, as well as the change from using furniture handles to coffin handles with the rise of the funeral industry. We carried out 3D imaging of coffin handles for archival and research purposes, with 3D printing for display and educational purposes. Scans were conducted using the NextEngine 3D Scanner and edited with ScanStudio and Rhinoceros software in the LSU Digital Imagining and Visualizations in Archaeology (DIVA) lab.

Gaudzinski-Windheuser, Sabine [278] see Hutson, Jarod

Gauthier, Gilles [211] see Lothrop, Jonathan

Gavua, Kodzo Bright [108] see Gblerkpor, William

Gayó, Eugenia [23] see Capriles, Jose

Gblerkpor, William (University of Ghana/University of Texas at Austin) and Kodzo Bright Gavua (University of Ghana, Legon)

[108] *Fortress of Power and Resilience: Krobo Hill, Ghana*

Fortress of Power and Resilience: Krobo Hill, Ghana

Anthropologists and historians have over decades studied political and social transformation among the Krobo of southeastern Ghana during and after the colonial period. Despite this, the fundamental issues have not been thoroughly addressed: the chronology of Krobo culture history is unknown, the organization and use of settlement, and the interaction between the inhabitants and their unique environment are yet to be well-understood. Also, Krobo material culture, especially the archaeological signatures regarding anti-colonial identity formation, has also not been examined. This is due, in part, to the fact that Klowem, the Krobo ancestral settlements on the Krobo Hill, has never been examined archaeologically. Our ongoing archaeological survey and excavation at the site has produced new data and material culture that promises to improve our knowledge of Krobo power structures, social relations, and social identity. The presentation will explore production, exchange and consumption of prestige goods; the rites of passage before and during European settlement and activities in the region. We will highlight how the Krobo tamed the environment, using terracing, sophisticated water management strategies and religious rituals to create and sustain a unique identity amid increasing European influence between ca. 1600 and 1900.

Gear, W. Michael

[314] *Discussant*

Gebhard, Rupert [13] see Wagner, Ursel

Geiger, Brian [110] see Wilson, Gregory

Geller, Pamela (University of Miami)

[296] *Archaeology Should Be an Introduction*

As an introduction of sorts, this talk's intent is twofold. My exordium provides a brief overview of the session's inception, concerns, and aims. I also use this forum to deliberate about pedagogical practice in introductory archaeology courses. Few undergraduates who enter into these courses will become professional anthropologists. Of late, news media's characterization of archaeology and anthropology as two of the most useless undergraduate majors may inform this decision. Unemployment rates and earnings of recent university graduates are cited as evidence. This talk, however, is not a defense of the

discipline. Rather, my concern is assessing how students see lessons about the past as connected to the contemporary sociopolitical world in which they live. What do students take from introductory courses as they pursue professions not in anthropology, but are ever more concerned with administration and management? Does a window into the distant past offer an escape from a dystopic present? Or, do introductory courses provide a springboard for students to re-imagine their futures—to explore other, more sustainable ways to be human? To begin formulating answers to these queries, I assess the content of syllabi for introductory courses, as well as students' qualitative comments on teaching evaluations and surveys.

[296] Chair

Gelliot, Eric (CEMCA)

[161] *Archaeological Sites and Cultural Dynamics in the Area of Lempira, Honduras*

In 2011 and 2012 in Honduras, the collaboration project Lempira allowed us to complete the archaeological map of the south of the area of the same name, near the Salvadorian border. We focused on two research axes: the settlement of indigenous sites during the Contact Period and the study of local rock art traditions. Concerning the Contact Period, we conducted a survey of the hill sites of Periol de Cerquin, El Higuate and Cerro Coyocutena, which are linked to the 1537 indigenous rebellion against the conquistadors. For rock art, the sites of the Cueva Pintada de San Antonio Montaria and the Cueva del Duende Susuma could be recorded, and the Cueva Pintada de San Francisco, whose rich polychrome paintings show clear Mexican influences, could be studied. Samples of pigments have been analyzed by the French Research Laboratory of Historical Monuments (Paris). Numerous data throw a new light on the comparative approach of the sites and highlight the rich cultural dynamics of indigenous groups who inhabited this mountainous region of southeastern Mesoamerica. This project was supervised by the French Centre for Mexican and Central American Studies (CEMCA) and the Honduran Institute of Anthropology and History (IHAH).

Gelliot, Eric [191] see Costa, Philippe

Gentil, Bianca (The Pennsylvania State University) and Brandon Lewis (Santa Monica College)

[319] *Struggles for Power: Identifying Political Change between Large and Periphery Sites in the Eastern Petén*

Whether used for oppression, rebellion, or social solidarity, religious and political ideologies inevitably change over time. Although considerable research has been conducted on the various functions of religion, a systematic approach is needed to examine which aspects of the identifiable ideological social structure change as a response to each of the aforementioned goals. The political decline of La Milpa during the Terminal Classic period may have inspired smaller local sites to rebel and achieve political autonomy. This paper proposes a preliminary methodology that allows for a relatively quantitative analysis of religious and ritual change during political decline. This methodology compares the architecture, monumentality, political-religious markers, burials, and artifacts of Dos Barbaras with that of La Milpa during the Late to Terminal Classic period of the ancient Maya. By systematically analyzing these variables we can identify shifts in religious and political trends across local sites, examine the correlation between shifting power relations and religious material expression, and identify which variables are altered, highlighted or forgotten within social memory.

George, Richard

[163] *Obsidian Provenance, Use, and Interaction at CA-ORA-64 during the Early and Middle Holocene*

Environmental and cultural transitions in southern California during the Early and Middle Holocene resulted in population movements, long distance interaction, and the development of extensive exchange networks connecting the Channel Islands and the northwestern Great Basin. This paper integrates two analytical chemical techniques to examine and define patterns in obsidian procurement and use at CA-ORA-64, a multicomponent coastal shell midden with an occupation beginning in the Early Holocene and Middle Holocene. The recovery of 761 obsidian artifacts included a variety of exhausted and broken tools and maintenance debitage. The results of the analysis emphasize the importance of Laser Ablation-Time of Flight-Inductively Coupled Plasma-Mass (LA-TOF-ICP-MS) and X-ray fluorescence (XRF) analyses to identify spatial and temporal patterns in interregional interaction and exchange networks of coastal hunter-gatherers in southern California.

Gernez, Guillaume (Université Paris 1 Panthéon-Sorbonne) and Jessica Giraud (French Institute

for the Near East)**[67] The Graveyards of Adam, Oman**

This paper will present the new results of the excavations and surveys at Adam, Central Oman. The funerary landscape of the Early Bronze Age (3rd millennium B.C.) is characterized by collective burials in tower-tombs located on the crests and then large collective multi-compartment graves. From the beginning of the Middle Bronze Age (2nd millennium B.C.), a complete change is observed: the Wadi Suq graveyards show an important concentration of single burials in new forms of tombs (cists and cairns), all located on the plain. Taking the example of the graveyards of Adam, we will compare these two practices in order to understand the evolution, continuity, and change of settlement patterns, material culture and society in the "longue durée."

Gero, Joan (American University)**[27] Yutopian's Plaza**

The presence of formally prepared spaces to stage aggregational events is familiar from many parts and time periods of the central Andes. In fact, open plazas are essential central features of the earliest monumental constructions in the central Andes. In the Argentinean Andes, however, ceremonial plazas rarely occur at Early Formative sites, represented only by incongruously monumental features such as carved stone "menhirs" or circularly-arranged earthen mounds around a circular open area. The few examples of "plazas" in Northwest Argentina are not directly associated with residential clusters. Excavations at the Early Formative site of Yutopian revealed a "plaza" without ceremonial features. Set apart from the living areas and positioned dramatically at the extreme northern end of the ridgeline site was a unique non-residential area, flat and circular and defined by a perimeter of upright, loosely spaced and partially dressed stones. Are such discrete "plazas" present at other Early Formative sites, and what role/s might such a plaza have played at Yutopian?

Gerstenblith, Patty**[273] Prohibiting Trafficking in Cultural Objects from Areas of Armed Conflict and Occupied Territory: International Legal Instruments and Customary Law**

The First and Second Protocols to the 1954 Hague Convention on the Protection of Cultural Property during Armed Conflict prohibit the illegal removal of cultural objects from areas of armed conflict and occupation. Yet the number of nations that have ratified one or both of these instruments is relatively small and many major market nations, such as the United States and the United Kingdom, are among those that have failed to do so. However, based on the precedent of the U.N. Security Council Resolution adopted in May 2003 prohibiting international trade in cultural objects illegally removed from Iraq, which resulted in the widespread adoption of measures by many of the market nations to prohibit such trade, and on other aspects of international law, as well as customary state practice, this paper will argue that customary international law now prohibits the international trafficking in such objects. With the goal of preserving archaeological sites as well as other cultural monuments and repositories by reducing the marketability of artifacts removed under such circumstances, this approach would have universal applicability and would be relevant in situations of emergency conditions which preclude the implementation of other mechanisms that have similar goals.

Geurds, Alexander (Leiden University - University of Colorado Boulder) and Vlaskamp Roosmarie (Leiden University)**[153] The Cuapa Phase: Notes on the Last Prehispanic Ceramic Period in Central Nicaragua**

The ceramic sequence for Central Nicaragua was defined in the late 1980s, and currently still remains the main point of reference for archaeological research in that region. The backbone of this sequence rests on test excavations executed at four sites in the surroundings of the modern town of Juigalpa. Recently, studies in the Pacific region have produced a series of radiocarbon dates associated with the Ometepe phase (A.D. 1350-1550), the results of which are now putting into question the validity of locating some of the most well-known ceramic diagnostic types in this Ometepe phase, instead pointing to a Late Sapoá phase signature (A.D. 1000-1350). Effectively, this has reassigned a substantial proportion of the Ometepe phase diagnostics pottery types to the preceding Sapoá time period, currently leaving the chronological sequence unbalanced for Pacific Nicaragua. A possible source of information as to how this discrepancy is to be understood is neighboring Central Nicaragua and its ceramic sequence. Coeval to the Ometepe phase in that region is the Cuapa phase. This paper summarizes the certainties and uncertainties surrounding the Cuapa phase, and includes propositions how to improve our understanding of the last Prehispanic period in Central Nicaragua.

Ghazal, Royal (University of Chicago)

- [329] *Finding the Signal in the Noise: Reevaluating Intra-Regional Compositional Variability of Uruk Period Ceramics from the Susiana Plain, Iran*

In 2004, Instrumental Neutron Activation Analysis (INAA) was conducted at the University of Missouri Research Reactor (MURR) on Uruk period (ca. 3500-3100 B.C.) pottery sherds from the sites of Chogha Mish, Tepe Sharafabad, and Abu Fanduweh on the Upper Susiana Plain, Iran (Ghazal et al 2008). Previous INAA research in the Susiana Plain (Berman 1986, 1987) concluded that clay sources were too homogenous to be analytically useful in reconstructing compositional groups. Later statistical reanalysis of Berman's data (Kouchoukos 1998; Ghazal et al 2008), however, revealed that more compositional diversity existed than was previously indicated. Subtle but real differences in geochemistry could be seen in all three of our principle sites. Firstly, this paper will present the results of our trace-element analysis. Secondly, we will reexamine preliminary conclusions regarding the organization of ceramic production in the Susiana (c.f. Wright and Johnson's (1975) popular "centralization hypothesis"). Finally, this paper will explore the utility of further INAA research in the Susiana Plain in light of the results from Leah Minc's (forthcoming) multi-regional synthesis of Uruk-related trace-element data.

Ghezzi, Iván [19] see Makowski, Krzysztof

Giambastiani, Mark

- [90] *Inferences from the Spatial Distributions and Composition of Rock Art Sites in West-Central Lincoln County, Nevada*

An ongoing archaeological inventory of more than 33,000 acres in Nevada, funded by the BLM's Lincoln County Archaeological Initiative (LCAI), has identified and has examined more than 100 rock art sites in three Areas of Environmental Concern (ACECs) – Mt. Irish, Shooting Gallery, and Pahroc Rock Art. Basic data from this effort show clear patterns in site location and content (both rock art and archaeological) that have important implications for site function and local land-use practices that differ from those normally attributed to rock art sites.

Giambastiani, Dayna and Andrea Catacora (ASM Affiliates, Inc.)

- [334] *A Comparative Study of Incised Stones from Eastern, Central, and Southern Nevada*

Incised stone artifacts are fairly common at archaeological sites throughout Eastern, Central, and Southern Nevada; however the data are not consistently recorded or readily available for analysis. In addition to pieces recently identified at surface sites in the Northern Monitor Range, several incised stone collections and individual artifacts from sites across the state are currently housed in regional and university museum repositories (e.g., Tonopah, Carson City, U.C. Davis). The first goal of this study is to compile a cumulative dataset of incised stones from these disparate sources. Thorough recordation and analyses of these collections will facilitate a comparative study and make the data easily accessible to the archaeological community. The second goal of this study is to assess whether patterns of regional trends in design styles, engraving techniques, and/or patterns in use/reuse can be demonstrated.

Giardina, Miguel [23] see Neme, Gustavo

Giardino, Marco (CNR-IBAM) and Nicola Masini (CNR-IBAM)

- [295] *Remote Sensing of Vegetation as a Proxy for the Discovery and Delineation of Archaeological Sites*

When archaeological remains are not directly identifiable in remotely sensed data, other aspects of the local plant physiology often serve as proxy for their presence. Three principal aspects of the relationships between vegetation and archaeological sites are addressed: first, many archaeological sites contain unique assemblages of vegetation. Secondly, subsurface conditions influence the physiology of plants growing on archaeological sites. Thirdly, the heterogeneity of plant species might be higher on archaeological sites than on non-sites. These phytoarchaeological objectives are addressed through the use of remote sensing data collected from prehistoric sites located along the Gulf of Mexico. Among the findings we note that plants growing over hard substrates such as shell middens have "non-healthy" spectral response curves due to less efficient photosynthetic processes when compared to plants growing over highly organic substrates. Specific segments of the EM are used to characterize the vigor or

stress of plant communities and their relationship to archaeological sites. Elevation data collected from active remote sensing systems assist in the location and prediction of archaeological site location in coastal environments. There exists the possibility that a “vegetation heterogeneity index” can be computed from remote sensing data that would identify areas of high probability for archaeological sites.

Gibaja, Juan [116] see Marreiros, Joao

Gibb, James [155] see Lawrence, Scott

Gibbs, Tim (Texas Parks and Wildlife Department) and Tim Roberts (Texas Parks and Wildlife Department)

[87] *TPWD Trail Surveys on Big Bend Ranch – More Questions than Answers*

In 2004, the Texas Parks and Wildlife Department (TPWD) initiated an extensive program of multi-use trail development at Big Bend Ranch State Park (BBRSP) in far southwest Texas. As a step towards protecting the cultural resources at BBRSP during the development and subsequent use of these trail corridors, reconnaissance- and survey-level archaeological assessments were conducted during the 2004 through 2010 field seasons. In the course of this project, well over 200 archaeological sites were recorded across roughly 7500 acres of rugged Chihuahuan Desert. Almost 900 cultural artifacts were collected, spanning the Paleo-Indian occupation to the modern ranching and mining period. Where possible, site and artifact analysis was structured to complement existing regional archaeological research frameworks developed for the Trans-Pecos region of Texas. This presentation is an effort to evaluate the results of this project, as well as to discuss some new research opportunities that were inevitably born of this process.

Giblin, Julia I. [222] see Paja, Laszlo

Giblin, Julia (Quinnipiac University)

[222] *Social Variability during the European Bronze Age: Isotope Results from Cremains and Inhumations from Békés Jégvermi-kert, a Middle Bronze Age Cemetery in Eastern Hungary*

Research by the Bronze Age Körös Off-Tell Archaeology (BAKOTA) Project has identified a large cemetery and settlement in eastern Hungary dated to the Middle Bronze Age (2000-1500 B.C.). Data from surface collection, remote sensing, and excavation at the Békés Jégvermi-kert site indicates that the cemetery is very large (at least 3 hectares) and that multiple funerary rituals were practiced, including cremations and inhumations. The Békés Jégvermi-kert site represents the only Middle Bronze Age cemetery in the region and provides an important source of information for understanding regional characteristics of social organization, mobility, and trade during the European Bronze Age. In order to reconstruct social variability at this site, the BAKOTA project has taken a multidisciplinary approach that integrates data from funerary customs, skeletal variability, isotopic patterns, and chemical and petrographic composition of ceramics. This paper presents the isotopic subset of those data. Radiogenic strontium isotope ratios ($^{87}\text{Sr}/^{86}\text{Sr}$) from five cremation burials and two inhumation burials (not-burned), as well as archaeological faunal specimens collected from the site will be discussed.

[222] *Chair*

Gibson, Rebecca [111] see VanderVeen, James

Gidding, Aaron (University of California, San Diego)

[65] *Parsing the Data: The Development and Utilization of ArchaeoSTOR for Ceramic Analysis*

Effective data management has increasingly become an important part of archaeological excavations as more and more disparate techniques have become a common part of regular archaeological research. This is apparent at the site Khirbat Hamra Ifdan, which was excavated over the course of four different seasons as a part of the Edom Lowlands Regional Archaeology Project. This site offers unique challenges because its excavations occurred with large gaps between seasons, with significant developments in the kinds of data that could be recorded and in the methods used for data collection. Over the course of those seasons, tens-of-thousands of ceramic sherds were excavated and have since been stored at the University of California, San Diego. This material has presented a data management nightmare in sheer physical volume of the information and complications integrating new digital technologies into the data structure. The complexities of managing the increased complexity of our data

in physical and digital forms necessitated a new way of organization. The web application ArchaeoSTOR was developed to meet the challenges for proper curation and the goals of analysis. This paper will demonstrate how ArchaeoSTOR has been used in both the field and the lab to analyze ceramic data.

[65] Chair

Gidding, Aaron [301] see Huggins, Kathleen

Giersz, Milosz

[203] *Wari Imperial Mausoleum at El Castillo de Huarmey*

Between August 2012 and September 2013 the Polish-Peruvian team led by Dr. Milosz Giersz of the University of Warsaw has discovered and excavated an intact burial chamber under an imperial mausoleum at El Castillo de Huarmey site, north coast of Peru. This discovery exceeds in both number and quality any other previous find related to the Wari and Tiahuanaco cultures. 57 female individuals, originally seated and wrapped in textiles, were accompanied with human sacrifices and exceptionally valuable artifacts, as more than 100 ear ornaments, pectorals and necklaces, pendants, tupu-pins, rings, kero cups, rattles, knives, chisels, axes, spearheads, containers, as well as many objects related to weaving, together with the great mosaic of pottery. All offerings stand out for their finish and the materials used, such as gold, silver, copper and its alloys. The discovery of the first ever Wari noblewomen's tomb, surprisingly located away from the supposed Wari capital in Ayacucho, is a new topic for discussion of the presence of the southern empire in the Peruvian north coast. This paper shows that this tomb was part of a planned imperial elite mausoleum and that the overlying monumental building served as the physical focus of Wari's ancestor worship.

Giessler, Kalena (University of Southern California), Daniella Newman (University of Southern California), Ruchika Tanna (University of Southern California), Vahan Bedelian (University of Southern California) and Lynn Dodd (University of Southern California)

[228] *ARC Smart: Promoting Archaeology through Educational Outreach with Robust Longitudinal Assessment*

This paper seeks to analyze the long-term effectiveness of the University of Southern California's ARC Smart, an outreach program designed to educate sixth grade students from the Los Angeles Unified School District about the field of archaeology. In sessions that include artifact handling, simulated excavations, and virtual tours of archaeological sites, USC undergraduate volunteers provide students with the opportunity to explore ancient civilizations throughout the world and to further their critical thinking skills. These interactive sessions allow students to understand the importance of conservation by comparing modern societies to those of the past. ARC Smart also serves as a curriculum enrichment program for the California Content Standards Exam in Social Studies. Results from immediately after the program show significant growth in learning and interest in the subject matter. The effectiveness of this program is visible in the differential in test scores on the State of California Grade Eight standardized test between students who participated in ARC Smart during 6th grade and their peers who did not. This paper discusses the ways in which hands-on activities with archaeological material can enhance students' understanding of ancient civilizations.

Giesso, Martin (Northeastern Illinois University, Department of Anthropology), Valeria Cortegoso (CONICET and Laboratorio de Geoarqueología, Univer), Victor Duran (CONICET and Laboratorio de Geoarqueología, Univers), Gustavo Neme (CONICET and Museo de Historia Natural de San Rafael) and Ramiro Barberena (CONICET and Laboratorio de Geoarqueología, Univers)

[287] *Obsidian Studies in Mendoza (Argentina): A Sinuous Way to Do the Things without Following the Rules*

In this paper we present a synthesis on the changing view of obsidian use in west-central Argentina and central Chile over the past 15 years. When this obsidian-sourcing program started, there was limited information about the number of sources, their locations, usage, and accessibility. In a region of approximately 200,000 square kilometers, information was limited to that coming from El Maule source located on the international border between Argentina and Chile. In 1998, Michael Glascock and colleagues described a series of steps to follow when starting an obsidian sourcing study in a new region - steps that were not taken into consideration when we began our work. Due to the size of the area and the inductive approach we followed, there were a number of misunderstandings, over-interpretations and shifting views about the locations, circulation, and number of obsidian sources in the region. Building on this experience, we describe what we have learned during the research process and our current views.

Finally, we reflect on how we can improve our knowledge during the next few years.

Gifford-Gonzalez, Diane**[40] Structured Deposition: An Idea Whose Time Has Come in Africanist Archaeology**

In the 1980s Moore, Hodder, Thomas, and others exhorted archaeologists to view refuse disposal as a culturally structured act. Since then, numerous studies in Europe and North America have developed theoretical and practical tools for implementing the study of such practices. Most Africanists have been slower to engage with archaeological deposits as both culturally structured in their content and, in many cases, strictly controlled their spatial placement. Because refuse deposits are also produced by acts that define links between household and community, they merit a new perspective. Building upon recent theoretical work by Ann Stahl, I offer what I believe is a productive approach to these products of everyday life. To illustrate their potential, I explore a remarkable divergence between ethnographically documented patterns of refuse disposal practices among recent East African pastoral groups and those documented archaeologically for pastoralists in the same area two to three millennia ago, discussing its possible implications.

[314] Discussant

Gil, Adolfo [23] see Neme, Gustavo

Gilead, Isaac [65] see Winter-Livneh, Rona

Giles, Bretton (CEMML, Colorado State University), Eric Skov (CEMML) and Shannon Koerner (Louisiana Division of Archaeology)**[220] Exploring the Variability of Upland Prehistoric Sites in the Central Plains**

A common perceptual model among researchers on the Central Plains is that upland sites represent mostly limited sets of activities, manifesting as small specialized camps, quarries, isolated finds or the occasional small mortuary mound. However, the DB site at Fort Leavenworth, KS and other similar occupations indicate that more substantial, multi-component habitations can also be present in certain upland settings. A review of prehistoric sites on the Fort Riley Military Installation, focusing on several sites that have been part of recent NRHP evaluations, explores the variability and research value of upland cultural resources. In particular, we explore the variability in the lithic debitage assemblages from these sites as well as other types of artifacts, such as lithic tools and prehistoric pottery. The diversity of the assemblages is measured using standard diversity indices, but this variability is broken down further with a discussion of the types of artifacts and attributes of artifacts comprising each assemblage.

Gilheany, Emma [214] see Santiago, Emilio

Gillam, Christopher (University of South Carolina (SRARP-SCIAA))**[225] Advances in Archaeological Geographic Information Science: A Perspective from South Carolina**

Archaeological applications of Geographic Information Science have witnessed many recent advances as archaeological datasets have become more and more automated and available online. With this burgeoning availability of data, models of cultures and their associated landscapes are being developed using increasingly complex methods and environmental datasets. As archaeological site samples increase and multivariate analyses take hold, existing models need to be tested with independent site samples and compared directly to new models employing advanced multivariate techniques. Methods for testing extant models, detecting changes in land-use through time, and for developing time-sliced and adaptation-based landscape models are demonstrated using data from South Carolina.

[225] Chair**Gillenwater, Collin (SUNY Albany)****[188] Agency at Hacienda Pancota: Early Colonial Daily Consumption of a Contested Age and Material Culture**

During the early colonial period in western El Salvador (A.D. 1580-1650), residents' production and consumption patterns at Hacienda Pancota demonstrated agency during a politically and socially volatile period. Agency is defined in this study as the set of practices by which household members incorporated new cultural and material lifeways, but selected which parts to include and which parts to reject within the

household. Residents' formal alteration of their doxa is evident archaeologically from an incorporation of new pottery types, vessel forms, and an increasing number of specialized activity areas within the household. Through spatial and typological analysis of Hacienda Pancota's archaeological remains, the reinforcement of past traditions and use of new European technologies is archaeologically apparent. The resulting data generated from these analyses demonstrates that the household scale of analysis is a satisfactory method for understanding small changes in daily life that later become routinely emphasized and that alter the way residents perform household activities.

Gillespie, Susan (University of Florida)**[204] The Commoditization of Jade at La Venta**

Objects made of "jade" (jadeite and serpentine) were premier symbols of wealth and status in Mesoamerica. With the exception of beads, they typically comprised quintessential inalienable possessions: exotic, rare, finely crafted, and unique artifacts endowed with personhood that were gifted and curated across generations. Surprisingly, the occurrence of jade objects at La Venta contradicts this conventional scenario. This is all the more significant because, as the principal Olmec capital in the Middle Formative (ca. 800-400 B.C.), La Venta has long been considered the dominant symbolic center that innovated the meanings and uses of jade in other parts of Mesoamerica for the next two millennia. Although the La Venta excavations yielded thousands of jadeite and serpentine objects, the vast majority of them were made in two standardized forms: celts and rectangular blocks. They appear to have been commoditized in the sense of common, repetitive, and exchangeable goods, rather than incomparable, unique or singular possessions. Furthermore, the serpentine blocks were incorporated into La Venta's above- and below-ground architecture as both building material and medium of wealth. This paper examines the juxtaposition of commoditized and individuated forms of social jade at La Venta, a phenomenon massive in scale and never repeated elsewhere.

Gilliland, Krista (Western Heritage), Elizabeth Robertson (University of Saskatchewan), Terrance Gibson (Western Heritage), Peggy McKeand (Western Heritage) and Jim Finnigan (Western Heritage)**[117] Keeping the "Truth" in Ground-Truthing: The Roles of Stratigraphy and Near-Surface Geophysics in Detecting Buried Earthworks at the Fort Denison Site Near Humboldt, Saskatchewan**

Near-surface geophysical surveys at Fort Denison document several semi-circular and linear anomalies surrounding a sandy elevated landform that constitutes a low-relief topographic high within the surrounding prairie landscape. These anomalies are consistent with military texts and homestead-era oral histories, which describe the construction of defensive structures around the 1885-era fort using earth materials. However, ongoing archaeological excavations have until recently exposed only ambiguous evidence for these earthworks in the form of undulating and obliquely-oriented clay-rich layers.

A key geoarchaeological question is whether these clay-rich layers actually represent defensive structures. We investigate this question using multiple techniques, including high-resolution topographic mapping, detailed stratigraphic analysis, micromorphology, bulk sediment characterization, and luminescence profiling. The results of these analyses indicate that the majority of the clay-rich layers represent naturally deposited relict aeolian dunes. Nonetheless, a 5.5-meter long anomalous feature recorded during the 2013 field season is interpreted as cultural in origin, likely representing infilled fortifications that were originally stabilized using clayey sediments. The broader implications of our work include the importance of establishing an understanding of the depositional environment of archaeological sites prior to interpreting and ground-truthing remote sensing data.

Gillis, Nichole [172] see Doucette, Dianna

Gilman, Patricia (University of Oklahoma)**[66] Maintaining Social Cohesion in Classic Mimbres Pueblos**

The Mimbres Foundation focused on large Classic (A.D. 1000-1130) Mimbres pueblos to contextualize the spectacular Classic Mimbres painted pottery and to provide modern excavated samples that would address questions about site and social organization. Building on Mimbres Foundation data, we now know that Classic period sites were diversely organized as seen in site and room block layouts and in the presence or absence of ceramic work groups. We also have a rich data base with which we are examining social differences and similarities in an "egalitarian" society, that is, a society without elites

and a strong centralized authority. In the face of the organization diversity that the architecture suggests, individuals with special roles, perhaps using the ideological unity that the Mimbres painted pottery designs suggest, may have helped maintain community cohesion and social integration.

[66] Chair

Gilmer, Anastasia and Charles Frederick

[318] *Geologic Context of the Older-than-Clovis Archaeological Material in Area 15 at the Gault Site (41BL323)*

The Gault site is a stratified, multi-component prehistoric site located northwest of Austin, TX. The site was repeatedly, and at times intensely, occupied in all major periods of the prehistoric era in Central Texas. The current excavation block, Area 15, has yielded evidence of an older-than-Clovis component. Standard sediment and soil analyses as well as soil micromorphological observations were used to analytically examine sedimentary processes, pedogenic qualities of the soil, and effects of post-depositional processes on the sediment. The sand- and gravel-rich deposits containing the older-than-Clovis archaeological material stratigraphically underlie the fine-grained sediment containing the Clovis-aged component. The results of this study support the preserved context of the older-than-Clovis archaeological material.

Gilmer, Anna [318] see Heisinger, Bryan

Gilmore, Zackary (University of Florida)

[308] *The Social Geography of Florida's Late Archaic Shell Mound Gatherings*

In the middle St. Johns River valley, the adoption of pottery technology corresponded with the construction of Florida's largest shell mounds during the Late Archaic Orange Period (4600-3600 cal BP). Radiocarbon data indicate that pottery use in this region was initially restricted to these mound contexts and involved the deposition of large, elaborately incised vessels within mounded shell deposits and into the water alongside them. At the same time, there was an apparent steep decline in the consumption of rare, nonlocal objects such as bannerstones and groundstone beads, which formed prominent constituents of multiple late preceramic mortuary mounds. In this paper, I combine chemical (NAA), mineralogical (petrographic) and techno-stylistic data from Orange sherds to argue that pottery entered into the region as an important exchange medium and quickly supplanted these other materials as the primary social technology for maintaining extraregional interaction networks. I further contend that Orange shell mounds constituted major nodes within these networks, functioning as large-scale gathering places that connected Late Archaic communities from across Florida.

Gilmore, Kevin (ERO Resources, Inc.), Sean Larmore (ERO Resources Corporation), Clive Briggs (ERO Resources Corporation), Jonathan Hedland (ERO Resources Corporation) and Jenny Engleman-Rhodes (ERO Resources Corporation)

[343] *Re-examination of an Ancient Game Drive Using Modern Technology: A GIS Analysis of the Flattop Mountain (5LR6) Site, Rocky Mountain National Park, Colorado*

The National Park Service contracted with ERO Resources to resurvey and map one of the iconic archaeological sites in Colorado and the Southern Rocky Mountains—the Flattop Mountain Game Drive system (5LR6). Situated in an alpine environment above tree-line, the system was first recognized many decades ago, although it wasn't until the pioneering work of James B. Benedict in the early 1990s that the game drive system was fully documented using a combination of pedestrian survey and aerial photography to map the site. During field work in the summer of 2013, ERO added new features and confirmed the accuracy of Benedict's original map. Incorporating this information into GIS, we examine how the intricate system of walls, blinds, and cairns constructed through time was used in conjunction with topography, prevailing wind direction, and the knowledge of animal behavior to hunt large ungulates from the Early Archaic through the Late Prehistoric periods.

Gilpin, Dennis (PaleoWest Archaeology)

[18] *Family, Community, and Regional Social Interaction among the Diné of the Tohlakai Area*

Archaeological and ethnographic studies in the Tohlakai area for the Navajo-Gallup Water Supply Project have elicited data on Diné social interaction ranging in time from the return from Bosque Redondo in 1868 and ranging geographically from the San Juan Basin of New Mexico to the Kaibito Plateau in northeastern Arizona, more than 200 km away. The Tohlakai area was an important farming area during the early Reservation period, and it drew numerous seasonal farmers with fairly distant kin ties to the

Tohlakai community. At the same time, one individual from the community (John Daw) was influential in re-establishing a Diné presence on the Kaibito Plateau, even as he and his descendants maintained ties with relatives in Tohlakai who established prominent lineages manifest in archaeological sites and residential complexes in the southwest San Juan Basin. The social history of the Tohlakai area is a significant case study in the dynamic social organization of the Diné during the Reservation period.

Gilpin, Jennifer [125] see Hughes, Susan

Gilstrap, William (University of Sheffield), Noémi S. Müller (Fitch Laboratory, British School of Archaeology), Elina Kardamaki (Heidelberg University, Germany), Christina Marabea (University of Ioannina, Greece) and Peter M. Day (University of Sheffield, UK)

[332] Consumer Reports: A Comparative Study of Cooking Pottery from Late Bronze Age Greece
Cooking pottery is a broadly distributed commodity in Bronze Age Greece. At the end of the Late Bronze Age (ca. 1200-1100 B.C.E.), there are a number of cooking pottery manufacturers, but none are more prominent in the archaeological record of central Greece than those from the island of Aegina in the center of the Saronic Gulf. Recently, cooking pottery of Aeginetan origin was uncovered at the site of Kontopigado on the western coastal area of Attica. Kontopigado is a pottery manufacturing center with its own distinct cooking vessel production tradition. The presence of used Aeginetan cookware at a site where cookware is produced elicits numerous concerns about consumer choices in antiquity. In this paper we compare the cookware sets from Kontopigado to the Aeginetan variety. Employing an integrated multi-technique methodology, we aim to compare and contrast cookware in form, fabric and technology from both production traditions. In an attempt to identify, characterize and understand the technological choices potters make during production, we strive further to observe and interpret the actions of the consumer when presented with the burden of choice.

Gingerich, Joseph (Smithsonian Institution/NC State University)

[133] Understanding the Role of Standardization in Flake Tool Production and Use

As stone tools are often the most common remnant of prehistoric behavior, understanding their use and mode of production is important for interpreting past lifeways. Examining when and how people organize technology in mobile societies has led to a tremendous body of literature. While design, portability, and mobility strategies are major themes in most technological studies of hunter-gatherers, aspects of tool design, and specifically the role of standardization, has played a smaller role. In this paper, I examine variation in Paleoindian tool assemblages from eastern North America to explore the conditions under which the standardized manufacture and selection of tool blanks occur.

Giomi, Evan (University of Arizona)

[231] Potential for Piro History along the Lower Rio Grande at Tiffany Pueblo

Research on the history of the late pre-contact and early Colonial periods along the lower Rio Grande in New Mexico is in an impoverished state, perhaps due in part to the abandonment of the region by Pueblo peoples after the 1680 Pueblo Revolt. However, a descendent population of the Piro people who occupied the region exists in the present. I argue that further archaeological study of the Piro region is necessary not only to better understand this component of history, but also to better recognize the persistence of indigenous cultures. Additionally, current archaeological interest in the 1680 Pueblo Revolt can be aided by this research, which is a relevant component in understanding the historical moment of the Revolt as well as the totality of colonial and indigenous relationships in the Revolt period. I aim to identify key issues in the study Piro history, in part through an examination of artifacts obtained by surface collection at the site of Tiffany Pueblo. In particular, better articulation of Piro ceramic chronology is a necessary starting point for many of the most relevant archaeological questions, especially considerations of changes in demography and organization of labor due to Spanish colonialism.

Giordano, Celeste (University of Nevada Las Vegas) and Liam Frink (University of Nevada Las Vegas)

[160] The Effects of the Traditional Yup'ik Seal Poke Storage System on the Safety of Seal Oil Consumption

Only a handful of studies have systematically investigated food storage and processing techniques in Alaska where many of these practices continue to be critical today. The seal was a mainstay in the Arctic economy and ideology. Its bones were used as tools, meat provided sustenance, and rendered oil was used as fuel for lamps, as an essential condiment, and a common medicine. And the skin served another

critical purpose, as a storage and rendering device—a use commonly overlooked. Today, the traditional seal poke storage system is being replaced by plastic, airtight buckets, not designed for food storage. There are numerous examples of serious health consequences when local traditional food processing techniques that have developed over many years are ignored, such as scurvy and pellagra associated with major vitamin deficiencies. In Alaska, the majority of attention paid toward traditional food processing techniques so far has been cursory and largely negative, citing numerous food safety concerns. Here we present the results of an ongoing investigation of this particularly complex and interesting storage system that, until now, we have known little about - the seal poke storage system.

Giovas, Christina [113] see LeFebvre, Michelle

Giovas, Christina (URS Canada, Inc.)

[286] *A Big Fish Tale? Assessing the Impact of Restricted Element Analysis in Archaeological Fish Studies*

Archaeological fish studies in the tropical Pacific and New Zealand have commonly relied on a methodological approach that restricts analysis to a set of five paired cranial elements, plus so-called "special bones". This method has been critiqued for reducing taxonomic richness and altering relative abundances as compared to approaches incorporating most or all diagnostic elements in the skeleton, with consequences for reconstructions of diet, ecology, fishing strategies, and more. Here, I assess whether these issues hold true for a Caribbean fish assemblage from the prehistoric site of Sabazan (AD 400-1400), Carriacou, Grenada. I compare analytic results obtained using the restricted element method to those based on analysis of all potentially diagnostic bones, including elements of the pelvic and pectoral girdles and the vertebral column. The latter, inclusive approach resulted in the identification of > 40 discrete elements from 34 mutually exclusive taxa within 23 bony fish (Actinopterygii) families. I build on previous critiques of the restricted element method by evaluating its analytic impact for different screen-size fractions (6.4 mm and 1.6 mm). In addition, I consider the implications for the detection of tuna (Scombridae) and small, net-caught taxa (e.g., Clupeidae, Carangidae) in the assemblage, as well as the identification of fishing zones exploited.

[286] Chair

Giraldo, Santiago (Global Heritage Fund and FIAAT)

[197] *A View from the South: Some Comparative Notes on Guayabo, Rivas, and the Sierra Nevada de Santa Marta*

For more than 50 years, Tairona architecture and society have been compared offhandedly to similar architectural and sociocultural patterns occurring at archaeological sites such as Guayabo and Rivas. Despite these frequently cited similarities, very little effort has been put in towards establishing more rigorous, and perhaps more interesting, comparative analyses. On the basis of recent research in the Sierra Nevada de Santa Marta, I examine a few areas of inquiry and comparison between Northern South America and Central America that may move the discussion towards more productive analytical lines.

Giraldo Tenorio, Hernando (University of Pittsburgh)

[311] *Religion, Wealth Accumulation and the Development of Social Inequalities in the Prehistoric Colombian Southwest*

Archaeological research in northern South America has established that religion, rather than economic control, was the principal mechanism by which social inequalities were created and maintained in a number of regions. However, Malagana, the largest known prehispanic village site in the flat valley of the Cauca River of southern Colombia, stands out as a possible exception to such a pattern. Clear differences in wealth in the burial contexts during the Early El Bolo Period (400 B.C.-A.D. 800) support this view. This paper discusses household differences in wealth consumption and their connection with the production of luxury and utilitarian goods as a mechanism for creating and maintaining social inequalities.

Graud, Jessica [67] see Gernez, Guillaume

Giron-Ábreo, Mario [70] see Medina, Paulo

Gísladóttir, Guðrún Alda [29] see Woollett, Jim

Glascock, Michael [11] see Wallis, Neill

Glascock, Michael (University of Missouri)

[287] *Reflections on Obsidian Studies and Their Contribution to Mesoamerican Archaeology*

Despite the fact that the sources of obsidian in Mesoamerica are geographically restricted, the use of obsidian in pre-Columbian Mesoamerica was widespread. Obsidian played an integral role in the daily lives of the Mesoamerican people and in many of their religious practices. Obsidian was used to produce sharp-edged cutting tools, scrapers, weapons, figurines, jewelry, mirrors, and many other objects. The abundance and variety of uses for obsidian were likely to have been a contributing factor in the near absence of metallurgical development prior to the arrival of the Spanish. Studies of obsidian have helped archaeologists reconstruct many aspects of pre-Columbian life, including technological development, long-distance trade, ritual customs, and sociocultural structure. This presentation will reflect on the history of obsidian studies and their contribution toward our current understanding of archaeology in pre-Columbian Mesoamerica.

Glassow, Michael [246] see Joslin, Terry

Gleason, Matthew [335] see Watson, Adam

Glover, Jeffrey (Georgia State University) and Dominique Rissolo (Waitt Institute)

[85] *The Maritime Maya: Ambivalence, Ambition, and Adaptation across Millennia*

Coastal communities in the Maya lowlands played a myriad of roles in the ebb and flow of political, economic, and social formations over the past 3000 years, yet these roles have remained along the periphery of Maya studies. While often small in size when compared to their inland neighbors, Maya coastal sites were integral to the early development of complex polities in the Formative period, provided refuge following the Classic Maya “collapse” in the 9th century A.D., and were home to cosmopolitan residents engaged in long-distance trade on the eve of Spanish contact. Though ever present, Maya coastal sites were atypical – perhaps even idiosyncratic – in terms of how they were imagined and lived-in by the Maya. Both social and environmental factors conditioned human-coastal relations, as dynamic markets, political forces, and ecosystems required constant negotiation. While our research is based along the north coast of the Yucatán Peninsula (at the sites of Vista Alegre and Conil), this paper uses our research as a point of departure to discuss more broadly the challenges faced, and opportunities pursued, by the maritime Maya as they adapted to their changing coastal landscapes over the millennia.

Glover, Jeffrey B. [192] see Götz, Christopher

Glowacki, Donna [289] see Schwindt, Dylan

Glowacki, Donna (University of Notre Dame), J. Michael Bremer (United States Forest Service), Scott Ortman (University of Colorado - Boulder), Grant Coffey (Crow Canyon Archaeological Center) and Rory Gauthier (National Park Service)

[289] *Population Aggregation and Community Center Organization: Comparing the VEP North and South Study Areas*

Over the course of centuries, Pueblo settlement organization, for a variety of reasons, became increasingly aggregated and villages became larger, especially after the turn of the fourteenth century. This process was historically rooted in local dynamics, but also was influenced by immigration, religious (sociopolitical) reorganization, and demography. This paper compares the scale of aggregation, changes in roomblock arrangements, and the role of public architecture in the largest villages and towns in the two VEP study areas. In the VEP north study area, aggregation was episodic and the size of community centers ranged between 50–600 rooms. In the VEP south study area, aggregation increased in scale more continuously over time with the largest Pueblo towns reaching a size of about 2,500 rooms. Public architecture informs on village and religious (sociopolitical) organization since it is influenced by ritual practice, demography, and economy as well as other factors. We pay particular attention to village organization and size during the pre-migration period in both study areas to assess the extent to which settlement and organization in the south study area may have been influenced by immigration in the

subsequent period.

Gnivecki, Perry

- [269] *From Ecofact to Artifact: Wooden Artifacts from the Dead Man's Reef Site, Grand Bahama, Bahamas*

In the late 1990s, Lucayan wooden artifacts were recovered during excavations of the Deadman's Reef Site, a fifteenth century site located on Grand Bahama, Commonwealth of the Bahamas. The finds offer insights into the use of wooden objects in northern Lucayan domestic and religious life; Lucayan artistic and symbolic expression; Lucayan perceptions of the animal world; patterns of wood selection for different kinds of objects; techniques of prehistoric wood carving; and preservation conditions allowing for wooden artifact survival in an open-air depositional environment.

Go, Matthew (Simon Fraser University)

- [103] *The Backbone of Moche Society: Spinal Degenerative Joint Disease and Its Utility in Reconstructing Prehistoric Moche Stratification*

This investigation seeks to explore variation in the quality of life among Late Moche individuals at San Jose de Moro, Peru, as reflected in the severity of spinal degenerative joint disease (SDJD). The sample includes 67 individuals excavated from 1995 to 2013. The vertebral elements were examined at several spinal joints for lesions indicative of SDJD, including marginal osteophytes, lippling, surface pitting, sclerotic new bone formation, eburnation and Schmorl's nodes. Specific vertebral articulations analyzed were individual zygapophyseal facets, intervertebral symphyses, and articulations with the costal elements. Severity was visually assessed through an ordinal scale of 0 to 3. Data collection was limited to adult remains from confirmed Late Moche contexts, and individuals were categorized by age and sex in order to control for these variables. The relationship between spinal health, social status and sex is explored. Preliminary analysis suggests higher levels of stress in the cervical and lumbar spine of lower class individuals than in those of middle and elite social status.

Goble, Ronald [265] see Greiman, Nora

Godfrey, Kipp (Pacific Lutheran University) and Bradford Andrews (Pacific Lutheran University)

- [160] *Berkeley Rockshelter Lithics: Inferences about the Prehistoric Use of the Mount Rainier Area*
- Throughout human prehistory, hunting and gathering has been the predominant subsistence strategy. These societies can be conceptualized using the theoretical forager-collector continuum developed by Lewis Binford. In the Pacific Northwest, this continuum has been applied to model the temporal dynamics of prehistoric occupation of this region. It has been suggested that groups in this area shifted from foraging to increasingly more intensive collector systems beginning around 5000 B.P. Deposits at the Berkeley Rockshelter in Mount Rainier National Park post-date 2000 B.P. Therefore, assuming the people who used the site were collectors, its artifacts were analyzed to try and determine its possible function as part of such a subsistence strategy. According to Binford's collector site types, the Berkeley Rockshelter appears most consistent with a seasonal field camp. The lithic debitage and stone tool data suggest occupation by specialized task groups likely focused on seasonal subalpine to alpine upland hunting. The evidence for this interpretation can be found in the lithic debitage that heavily reflects late stage flaking typically associated with finalizing implements for use. The projectile point artifacts recovered are also consistent with late stage flaking indicating retooling and refurbishing.

Godoy, Renata (PhD, University of Florida)

- [331] *Archaeotourism in the Brazilian Amazon: How and Why Have Communities Been Involved?*

Recently it has become more difficult to ignore archaeologist's responsibilities to the public, particularly as they relate to ethics, values, economy, politics, and ideology. Archaeological tourism plays a major role in this debate, especially where local communities are actively invested stakeholders. It is well known that notable archaeological heritages around the world are often adapted to tourism without any sort of planning. Because of the potential irreversible impacts that may occur, understanding long term effects of tourism on cultural heritage is urgent. On the other hand many agree that despite its sometimes negative and destructive nature, conscious and collaboratively planned heritage tourism can provide not only

financial support for heritage preservation, but also help improve public awareness.

The research presented in this symposium seeks to identify effects of archaeological tourism on local communities as well as on the cultural remains by contrasting rapid ethnographic assessment data collected at two sites—one with planning in place and the other without any formal planning—in the state of Para in northern Brazil. Is previous planned archaeotourism less harmful? Are local communities active stakeholders? How and why have communities been included in these processes?

[86] *Discussant*

Goebel, Ted (Texas A&M University)

[24] *A Sundance Retrospective—Of Students, Shelters, and Sponsored Research in the Great Basin,* From 2000 through 2007 I had the good fortune to manage the Sundance Archaeological Research Fund at the University of Nevada Reno. Endowed by Joe and Ruth Cramer, the focus of Sundance was Great Basin Paleoindian archaeology. In this paper I review some of our program outcomes during those years, highlighting MA and PhD student accomplishments as well as Sundance-sponsored interdisciplinary research conducted at Bonneville Estates Rockshelter, Nevada.

Goepfert, Nicolas (CNRS), Philippe Béarez (CNRS-Muséum national d'Histoire Naturelle de Paris), Aurélien Christol (LGP-Laboratoire de Géographie Physique) and Belkys Gutiérrez (Universidad Nacional de Trujillo)

[245] *Subsistence Economies in Marginal Areas with Natural Constraints: Interactions between Social Dynamics, Resource Management and Paleoenvironment in the Sechura Desert, Peru*

The study of subsistence economies is fundamental to understanding social dynamics and economic interactions between prehispanic complex societies, particularly maritime communities. It also helps us understand how humans have adapted to constrained environments and how landscape changes could have affected subsistence. The Sechura Desert, located in the far north of Peru, is a strategic area that presents a composite geomorphology. It is also located at the transition between warm and cold water currents. Situated at the interface between environments and societies, this research aims to define the spatio-temporal relationships between human activities and environmental changes over the last two millennia and to reconstruct climatic changes which may explain the variability, in time and space, of human settlements and resources. The methodological approach of this study is multidisciplinary, multi-scalar, spatialized and diachronic. In this paper, we present the preliminary results of this research drawing on archaeological excavations of a fishing site dating from the Early Intermediate Period. These data allow us to study the impact of landscape modifications on the territorial organization of sedentary populations occupying marginal areas, who were closely dependent on the natural environment.

Goff, Sheila

[68] *Collaborative Relationships and Amazing Museum Collections Combine to Bring Archaeology to Broader Audiences*

The History Colorado Center is tasked with bringing an understanding and appreciation of Colorado's past to our visitors. This paper discusses the development of our most recent exhibition to that end. The exhibition focuses on the interaction between the natural environment and the people who have lived in Colorado, while asking visitors to consider how the choices they make for the future can be informed by choices others made in the past. The exhibition demonstrates the relevance of archaeology to broad audiences and funders by elaborating the story of ancestral Pueblo people, who for centuries successfully faced the challenges presented by the natural environment in the Mesa Verde region. We collaborated with archaeologists and Pueblo cultural preservationists from New Mexico and Arizona to present cutting edge research interpreted from multiple perspectives to our target audience-families with children. The exhibition is supported by artifacts from two of the four major Mesa Verde archaeological collections. The collaborative effort to ask our visitors to ponder Colorado's history through an environmental lens at a time when we are facing environmental challenges today has attracted considerable support from private and public funders. Other institutions may benefit from learning about our experiences.

Goff, Sheila [202] see Fugate, Dody

Gokee, Cameron [230] see Forringer-Beal, Anna

Gokulraman, Savitha

[35] *Megalithic Symbolic Burials: A Regional Perspective from Tamilnadu, Southern India*

The Megalithic burial tradition of Southern India (1000 B.C–A.D. 300) was a widespread practice with many regional variations in its architectural features. The Symbolic or Commemorative burials (the regional terms used for burials with no skeletal remains) were part of a common practice in the megalithic landscape of southern India. In this paper I will focus on a regional analysis from Tamilnadu to better understand the ritual significance of this burial tradition by looking at the “symbolic burials.” Previous studies have focused on the socio-economic conditions of megalithic remains by analyzing the prestige or high status goods and concluded that the burials of early historic period in southern India showed signs of hierarchical social organization. However, I would like to present a different perspective. There were numerous burials in which the only types of grave goods were basic burial pots. Even in cases where interments of high status grave goods are present, the signature pottery interned was similar in most of these burials. Thus the symbolism of this mortuary ritual must have been more important to the society than its usage as an arena for portraying social status.

[35] *Chair*

Goldberg, Kelly [58] see Rousseau, Vincent

Goldberg, Kelly (University of South Carolina)

[108] *Applications of Metal Detection in Analysis of Illegal Slave Trade Sites in Nineteenth Century Guinea*

For centuries, European traders have influenced and altered the African landscape, playing a major role in identity formation, group memory, and trade relations. To enhance our understanding of the relationship between European traders and local citizens through occupation of space, experimental metal detection was employed at three sites located along the Rio Pongo in Guinea. Situated in an isolated region of West Africa, these clandestine sites were active throughout the illegal slave trade of the nineteenth century, further complicating issues of cultural entanglement. Through the identification of high-density metal deposition zones, we are better able to examine the spatial organization of these multicultural interactions. By integrating these preliminary data with GIS mapping we developed a clearer understanding of the relationship of these disparate groups as reflected through occupation of space.

Golden, Charles [128] see Scherer, Andrew

Golden, Charles (Brandeis University) and Matthew Liebmann (Harvard University)

[296] *Archaeology Should Be Engaging*

Is archaeology only interesting to the public when it involves tombs, temples, or superlative claims of extraordinary discoveries? Should archaeologists only be rewarded in academia for publishing in elite journals or theory-laden books disseminated to a limited academic audience? In this paper the authors wrestle with the reality that most archaeology takes place in small-scale sites and with discoveries that consist of little more than lithic debris and smashed pottery. In many places such sites may be seen as impediments to development, a resource to be mined for construction fill or the acquisition of personal knickknacks, or an untouchable component of local history. Moreover, when we disseminate our research we are typically driven by the realities of academia and its reward system to publish in academic journals and books, media that are typically of limited interest to the many publics we serve. How can archaeologists explain to academics, the wider public, and the communities where we work our interest in such sites and discoveries? Given a reality that there is limited time for research, writing, and publication, how can we balance professional development and issues of engagement with many publics?

Goldsmith, Paul [68] see Johnson, John

Goldstein, Paul (UC San Diego) and Matthew Sitek (UC San Diego)

[27] Liminal Plazas and Processional Paths in Tiwanaku Temples: Divergence, Convergence, and the Rule of Three at Omo M10

Reconstructing liturgical movement from plaza architecture can illuminate social processes within Andean expansive states. Extensive excavations in the uniquely preserved Omo M10 Tiwanaku temple shed new light on room function and access patterns to different parts of the temple. On one hand, the Omo excavations confirm an axial series of seven doorways leading from public plazas to the sunken court, presided over by stelae and audiencia structures. This supports Conklin's characterization of an elite "Doorway cult", funneling access from increasingly restricted public plazas to an exclusive inner sanctum. However, passage along the central axis was interwoven with separate bilateral pathways which connect to a series of independent walled patio groups that may have functioned as chapels for separate sacrifice and cultic activities. Plaza access alternated between single and triple entryways, suggesting that plazas were liminal places where the central and two lateral groups converged and diverged as they progressed through the structure. Implications for Tiwanaku social structure are considered in light of other examples of triple entryways in Tiwanaku architecture, Kolata's suggestion of "Taypi" as structural amalgam of center and complementary halves, as well as implications of gender, moiety, and other bilateral complementarity within Tiwanaku.

Goldstein, Paul [53] see Wylde, Michael

Goldstein, Lynne (Michigan State University)

[184] Discussant

Goldstein, Amy (University of South Carolina)

[263] Locating a Household in Time: Temporal Difference in Architectural Types at the Etowah Site
During the summer of 2013, a field school under the direction of Dr. Adam King completed the first excavations at the Etowah site in nearly two decades. Etowah had multiple occupation periods spanning from A.D. 1000 into the early historic period. Interestingly, this occupation was not continuous, with two distinct abandonments around A.D. 1200 and 1400. One of the main goals of the 2013 excavations was to examine two different house construction types shown in a gradiometer survey: single-set post houses and wall-trench houses. Different forms of house architecture and the arrangement of those houses is one aspect of material culture that helps us understand how communities and households were organized during each period of Etowah's occupation. In the research presented here, ceramic assemblages recovered during the 2013 excavations are used to assess temporal differences in architectural types. Specifically, these data are used to test the assumption that wall trench buildings date to the earliest phase of Etowah's occupation while single-set post buildings date to the later two occupation periods. Besides giving approximate dates for the structures, the spatial and temporal patterning of these ceramics within specific architectural types can yield insights into community formation throughout Etowah's multiple occupations.

Golitko, Mark [19] see Piscitelli, Matthew

Goman, Michelle [83] see Hedgepeth Balkin, Jessica

Gomez, Esteban (The Colorado College)

[198] Colonial Legacies and the Historical Marginalization of Eastern El Salvador

In thinking about colonial entanglements and the colonial legacies that take place thereafter, landscape and place become useful terms and necessary concepts for understanding how people experienced and actively participated in different colonial settings. The research that forms the basis of this paper involves the historical documentation and archaeological excavation of Conchagua Vieja, a Lenca settlement on the island of Conchaguita, in the Gulf of Fonseca. Landscape and place are used in this paper in order to explore the complexities that characterized the colonial situation in eastern El Salvador, as well as to better understand the connection between El Salvador's colonial past and its present condition.

Gómez, Oswaldo [303] see Chinchilla, Oswaldo

Gómez Zúñiga, Pastor

[161] Los Cacicazgos Lencas de Honduras durante la Época de Contacto 1502-1550)

Las investigaciones sobre las sociedades ubicadas al sur del Área Maya son tan escasas que actualmente es difícil analizar su relación con la conocida como Región Sureste de Mesoamérica. Esta situación es particularmente deficitaria en el campo de la etnohistoria, donde hay pocos trabajos acerca de la geografía política de la Región Central de Centroamérica, un espacio hoy día repartido entre los estados de Honduras y El Salvador, y que al momento de la conquista lo ocupaban, principalmente, poblaciones de filiación Lenca. El desconocimiento de los grupos allí asentados es tan marcado que el arqueólogo George Hasemann, en la década de 1990, propuso clasificar a la Región Central de Centroamérica provisionalmente como una región independiente, a la espera de nuevos datos que permitieran evaluar su relación con Mesoamérica y el Área Intermedia. El presente trabajo, basado en una revisión sistemática de documentación del siglo XVI del Archivo General de Indias de Sevilla, estudia las unidades políticas Lencas del centro y occidente de Honduras, y tiene como objetivo principal aportar nuevos datos que contribuyan a debatir la relación entre la Región Central de Centroamérica y la Región Sureste de Mesoamérica.

Goncalves, Celia (Universidade do Algarve - Portugal), Joao Cascalheira (Universidade do Algarve - Portugal), Rita Dias (Universidade do Algarve - Portugal), Patricia Monteiro (Universidade do Algarve - Portugal) and Eduardo Paixao (Universidade do Algarve - Portugal)

[116] Piece by Piece: GIS Spatial Analysis at Cabeço da Amoreira, a Mesolithic Shellmidden in Central Portugal

Archaeological work carried out since 2008 in the Mesolithic shellmidden of Cabeco da Amoreira has provided very relevant data on site formation processes, function, and even insight into the social aspects of the last hunter-gatherer communities of Central Portugal. This paper will focus on the analysis of spatial distributions of different categories of artifacts from the top layers of the shellmidden. The use of GIS software is essential for the analysis of quantitative and qualitative data, allowing the establishment of intrasite spatial relationships. Artifact distributions and correlations provide insight into the use and organization of space that, in turn, assist in the identification of different functional areas and in the interpretation of significant site formation processes.

Gonçalves, Célia [116] see Umbelino, Cláudia

Gonciar, Andre [102] see Riegert, Dorothy

Gonlin, Nancy [21] see Dixon, Christine

Gonzalez, Juan (University of Texas Pan American), Bobbie Lovett (Department of Sociology and Anthropology, University of Texas Pan American) and Russell Skowronek (Department of History and Philosophy, University of Texas Pan American)

[14] Deflation Troughs, Water, and Prehistoric Occupation of the South Texas Sand Sheet

Within the South Texas Plains, the area broadly defined by the Rio Grande to the South and the Nueces River to the North, a distance of >150 km, evidence of open human occupation is remarkably abundant. Because it is predominantly a region of loose, sandy soils and active and relict sand dunes where wind processes dominate, the area is known as the South Texas sand sheet (STSS). There is no running water within the STSS; all streams are ephemeral occupying small-incised valleys. Existing drainage systems are small, localized and not integrated, carrying water only for a few days and up to two weeks, after the passage of a storm. The lack of running water makes human occupation on this semi-arid area even more remarkable. The intervening wind deflated areas between sand dunes of the STSS, are populated by hundreds of small and shallow elongated deflation troughs. Most of these poorly drained swales retain seasonal fresh-water that sustain high-moisture plants and are ephemeral wetlands, a small percentage of them hold water year round. Here we make the case that the long history of human occupation of the STSS was possible due to the presence of the deflation troughs.

Gonzalez, Erika (UNICAMP) and Gerson Levi Lazzaris (DOCUMENTO Ltda)

[57] The Research, Protection and Repatriation of Human And Sacred Remains of Native People in Archaeological Research: Brazilian Strategies and Case Studies

This exposition aims to analyze archaeological research developed in the Brazilian Amazon throughout indigenous territories. Such studies resulted in symbolic re-appropriation of traditional spaces and legal protection of sacred landscapes through detailed material and symbolic characterization. Since the

1940s, Brazilian authorities have forced indigenous communities to live on reservations, causing dozens of ethnic groups to leave their original territory where there remains an important heritage formed by old villages, cemeteries, rock art and other ethnic markers. Specific features in the landscape constitute the home of spiritual, demiurgic and shamanic entities, responsible for keeping a spiritual order of cultural systems. In such case, the challenge for archaeology is not only to identify human markers of an ancient presence but also symbolic remains embedded in such sacred sites. The case studies introduced here exemplify how ethnoarchaeology contributed legal and political agreements between indigenous populations and Brazilian authorities. Initially we focus on how the Brazilian government recognized sacred spaces as national heritage in 2009. Since 2011 systematic development of normative tools culminated in a regular obligation of detailed ethnoarchaeological studies on indigenous lands, resulting in a new phase of duties led by researchers, indigenous communities and the government.

Gonzalez, Toni [70] see Verdugo, Cristina

Gonzalez, Toni (California State University, Los Angeles) and Helen Haines (Trent University)

[70] *Bats, Bones, and Bells: Towards a Greater Understanding of Ancient Maya Chultun Use at Ka'Kabish, Belize*

Over the last two seasons the Ka'Kabish Archaeological Research Project has carried out a program investigating chultuns. During the 2012 field season a chultun in Group B was excavated which contained the burials of two individuals. This last season, a chultun near Group C yielded the remains of at least four individuals. The most important discovery was the burial of an individual with 33 copper bells and 8 copper rings along with jade and shell beads. Not only does the copper indicate a Terminal or Post Classic date, but also indicates the presence of an elite individual. This is significant because Puleston in particular promoted the idea that chultuns only occur in residential areas as opposed to public space. He reasoned that this indicated that chultuns must have a utilitarian function associated with commoners. Our data, as discussed here, supports the idea that chultuns are associated with all strata and the function of these features is still very open.

Gonzalez, Sara (Carleton College)

[135] *Moderator*

Gonzalez, Gabriela (University of Texas San Antonio) and Robert J. Hard (University of Texas San Antonio)

[207] *Maize Processing and Grinding Technology at Cerro Juanaqueña, Chihuahua, Mexico*

Preparing dried maize during the Early Agricultural period (2100 B.C.–A.D. 200) presents a number of technological challenges that are not well understood. Processing dried maize is extremely labor intensive, particularly in the absence of ceramic cooking vessels. Models of human behavioral ecology suggest that maize-processing technology must be efficient in order for maize to be added to the diet. At Cerro Juanaqueña (1300 B.C.–1100 B.C.), early farmers integrated substantial amounts of maize into the diet along with wild foods. Cerro Juanaqueña mano and metate sets have particular morphological characteristics that appear to be well suited for processing substantial amounts of dried maize. The massive, deep basin metates represent a form that is transitional between traditional Archaic period basin metates and later trough metates. The complimentary manos are large, one-hand forms. It is likely that at this early time period that maize endosperm tended to be more flinty than floury, which would have been more difficult to grind. We describe maize processing experiments that attempt to evaluate the efficacy of this technology.

Gonzalez, Lourdes (Centro INAH Nayarit) and José Carlos Beltrán (Centro INAH Nayarit)

[339] *Nuevas Evidencias de Prácticas Funerarias en Nayarit durante el Postclásico*

En este trabajo presentamos los resultados de las excavaciones de contextos funerarios efectuadas en el altiplano meridional de Nayarit. Se describen los procesos metodológicos empleados en dichas actividades, los cuales son asimismo analizados a la luz de los procesos naturales y culturales que intervinieron en la formación de dicho registro. Sobre la base de la información aquí presentada, haremos una serie de observaciones sobre el ritual funerario en el sitio La Pitayera durante el Postclásico. Los resultados de esta investigación proceden del proyecto de salvamento arqueológico de la autopista Jala-Puerto Vallarta llevado a cabo en el 2012.

Gonzalez Heredia, Raymundo [52] see Folan, William

González López, Angel (UC Riverside)

[293] *Las Mesas Rituales de Piedra de Estilo Azteca: tres ejemplos poco conocidos*

La escultura de estilo azteca floreció en el centro de México pocas décadas antes de la llegada de los españoles. Su impresionante desarrollo se ve demostrado por la diversidad de formas, ya que en este arte es bastante común observar humanos y animales. Además de ello no es extraño que se encuentren plasmados en piedra instrumentos indispensables para la liturgia; en este trabajo queremos concentrarnos en tres ejemplos particulares y la iconografía que muestran. Hablando de manera general se trata de cubos de piedra de baja altura, que fueron utilizadas como mesas rituales, sobre los que se colocaban los preciados dones para diferentes seres. Los tres ejemplos que aquí se examinarán provienen de diferentes lugares de la Cuenca de México, aparentemente del mismo periodo y estilo. Se trata de imágenes que representan a diferentes deidades realizando múltiples actividades. Allí podemos observar seres específicos como a Xiuhtecuhtli, dios del fuego; Itzpapálotl, una diosa guerrera; además una interesante escena que muestra a cinco deidades alrededor de una bola de heno. Destaquemos que dos de estas interesantes esculturas no han sido publicadas hasta el momento.

Gonzalez-Morales, Manuel, Igor Gutiérrez-Zugasti (Instituto Internacional de Investigaciones Prehist) and David Cuenca-Solana (Centre de Recherche en Archéologie Archéosciences)

[71] *The Asturian after Geoff Clark: New Perspectives, New Evidence*

Geoff Clark's doctoral dissertation and the fieldwork previous to it, in the late 60's, meant a new direction for Mesolithic research in Northern Spain. Based on a limited series of sites and materials, he showed the power of a well-defined theoretical framework to elucidate the main problems posed by former research on this intriguing "culture". More than four decades later, new theoretical approaches and new and better-preserved shell midden sites allow us to follow and develop the main lines of his seminal investigations. In this direction, the frequency of human burials, the value of shells as high resolution climatic indicators, the use of shells as instruments, and the problems linked with the transition to Neolithic arise as new challenges in current research.

Gonzalez-Morales, Manuel [246] see Straus, Lawrence

Goodale, Nathan [10] see Lin, Ying

Goodale, Nathan (Hamilton College), Alissa Nauman (Hamilton College) and Curtis Osterhoudt (University of Alaska Anchorage)

[290] *Paleodemography of the Upper Columbia: Detecting Regional Population Trends in the Interior Pacific Northwest*

The first evidence of human settlement into pithouses and aggregated villages in the Upper Columbia region of the interior Pacific Northwest occurs ca. 3,800 cal B.P. Subsequently, over the period of time from 3,800 cal B.P. to contact, population levels appear to have peaked twice, with a depopulation event at approximately 2,000 years ago. In this paper, we explore radiocarbon and archaeological datasets from the Upper Columbia to analyze statistically the trends for indications of rising and falling populations, and give a measure of the probability of seeing truly separate peaks in population, given imperfect data. We also examine the potential reasons for a large scale depopulation of the Upper Columbia River system at ca. 2000 cal B.P.

Goodman, Reed (The Pennsylvania State University) and Carrie Hritz (The Pennsylvania State University)

[301] *Patterns of Surface Salinization and the Identification of Subsurface Features at Girsu, Dhi Qar Governorate, Iraq*

High concentrations of salts on the Mesopotamian floodplains, synonymous with the collapse of early complex societies, still threaten agricultural productivity today. But a recent site visit to the ancient city of Girsu (modern Telloh) in southern Iraq suggests that patterns of surface salinization also present opportunities for remote sensing and future archaeological survey. Following periods of heavy rain, subsurface mudbrick, a principal building material in antiquity, shrinks and swells from moisture, ultimately fracturing. Because of capillary action, salts drawn into and out of these fractures are differentially driven to the soil's surface, leaving silhouettes of ancient architecture above ground. Inspection of Girsu after torrential rains made this apparent, as possible features presented distinct

arrangements in unexcavated areas of the tell, most notably what might have been a city wall. While our poster considers this phenomenon's ability to help archaeologists selectively target excavations on the ground, it focuses on the potential for remote sensing to reveal subsurface architectural features through the recognition of patterned salinity on satellite imagery, an especially promising contribution to a region where fieldwork remains untenable. Observations recorded at the site are compared to multi-seasonal imagery to assess pattern consistency.

Goodmaster, Christopher [199] see Helton, Erin

Goodmaster, Christopher (Versar/GMI), Erin Helton (Versar/GMI) and Mark Willis (Mark Willis Archaeological Consulting)

[248] *Ancient Sites in 21st-Century Environments: Three-Dimensional Digital Documentation of Panther Cave*

Recent digital documentation efforts at Panther Cave (41VV83) have yielded a detailed record of current site conditions and provide a wealth of geospatial data pertinent to the prehistoric art preserved at the site. Three-dimensional laser scanning (LiDAR) and photogrammetry were integrated to record a highly accurate digital model of the rockshelter and its immediate environment. The resultant digital models provide not only a detailed record of Panther Cave, but will also serve as a basis for the spatial analysis of the site and its associated rock art. This documentation effort provides a robust corpus of data for use in the digital visualization, analysis, and management of the site. Potential research questions will be discussed and a framework for applying these data in geospatial analysis, site management, and public education will be presented.

Goodwin, Whitney (Southern Methodist University)

[190] *New Lines of Evidence for Examining Identity Expression among Prehispanic Coastal Populations of Northeastern Honduras*

Recent research in coastal northeastern Honduras, including the Bay Islands, has started to disentangle how indigenous populations expressed cultural affiliation, highlighting the existence of widely dispersed populations connected through enduring social and political networks. Broad cultural affiliations persisted from at least the Early Selin Period (A.D. 300-600) through contact, uninterrupted but not unchanged. The direction and nature of contact and influence among these populations and other groups to the north and south have been traced mainly through changes in ceramic traditions. These studies have aptly emphasized local developments over externally imposed changes and recognized the fluid nature of boundaries both spatially and temporally. Adding to that discussion, this paper presents data from the initial stages of a regionally focused project, with new information from the island of Roatán and related mainland coastal sites. Current research seeks to explore varied lines of evidence, including analyses of soils, adding more fine-grained data to highlight subregional diversity and change over time. In the present, Roatán and the coast are connected by parallels in recent growth in the tourism industry and, consequently, archaeological resources are under immediate threat of development in both cases, underscoring the urgency of research here.

[190] *Chair*

Goodwin, R. Christopher [308] see Pevny, Charlotte

Gopnik, Hilary (Emory University) and Clemens Reichel (University of Toronto)

[329] *The Godin VI Oval and Uruk's Sphere of Influence*

Excavations at Godin Tepe in the Kangavar Valley (Zagros Mountains, Western Iran) have added substantially to our knowledge of the extent to which the "Uruk System" exercised control over areas in Syro-Anatolia and Western Iran, with which economic interactions are known to have occurred. Classified by Algaze as an "outpost" of the Uruk System, the so-called "Oval" of Godin's Level VI was built as a walled enclosure within and separated from a preexisting local settlement. Its architecture, largely constructed with local building conventions, is juxtaposed by a material assemblage that in part betrays strong Uruk traditions, notably among its bureaucratic tools (seals, tokens, numerical tablets). This paper will evaluate the ceramic assemblage from Godin, typologically consisting of an almost even mix of Uruk and local types, in light of recent INAA analyses, allowing new insights into the modes and mechanisms of interaction between a local culture and the wider sphere of Uruk's zone of influence.

Gordon, Adam [16] see Raichlen, David

Gore, Angela (Center for the Study of the First Americans, Texas A&M University) and Kelly Graf (Center for the Study of the First Americans, Texas)

[131] *Eastern Beringian Toolstone Procurement and Selection: A Case Study from the Nenana Valley*
Two multicomponent sites in central Alaska, Owl Ridge and Dry Creek, each possess two terminal Pleistocene-aged cultural components significant to understanding early human behavior in eastern Beringia. These components date to about 13.5-13 and 12 ka, respectively. Recently, I analyzed the lithic assemblages from these early components to examine raw material procurement and selection strategies and how they vary, with the ultimate goal of examining how this technological variability can inform on mobility and settlement in the Nenana Valley. Results indicate several striking differences between components and sites, and these results are presented in this paper.

Gorman, Alicia (UC Santa Barbara), Jelmer Eerkens (UC Davis) and Kevin Vaughn (Purdue University)

[19] *Electron Microprobe Analysis of Nasca Polychrome Ceramic Pigments*

This study investigates the mineralogy and physical structure of pigments on Nasca polychrome ceramics using electron microprobe analysis. Physical structure characteristics studied include relative uniformity of mineral grain size and mineral grain roundedness, which are tested as proxies for standardization of pigment production. We focus on mineralogical uniformity in order to more closely align our focus with selection criteria of ancient Nasca potters. Our study shows that Nasca 3 and 4 pigments are relatively uniform while Nasca 5-7, Loro, Wari, and the Late Intermediate Period are more variable. Interestingly, while Wari was not as uniform as Early Nasca pigments, it was less variable than Loro. We interpret these results in light of other archaeological evidence, including previous studies on Nasca fineware ceramic paste, as evidence for fluctuating numbers of ceramic production communities. The results have implications for how we understand centralization of ceramic production in the region, especially in the context of the rise and fall of the Nasca and Wari civilizations.

Gorogianni, Eugenia [5] see Abell, Natalie

Gosner, Linda (Brown University)

[215] *The Afterlife of Industrial Landscapes: Strategies for Cultural Heritage Management of Ancient and Historical Mining Sites in Spain and Beyond*

From the spectacular opencast gold mines of the Roman period that destroyed whole mountains, to the silver mines that supplied coinage to the Islamic caliphate in Cordoba, to the British colonial copper mines that transformed the landscape of southwest Spain, mineral exploitation in the Iberian Peninsula has always been a major economic industry. The mines in Spain, some of which were exploited from early prehistory through the 19th century, help inform our understanding of the economic and cultural history of the region as a whole. Despite this, many ancient and historic mines and mining settlements have been left abandoned. Others have fared better. Using the examples of Las Médulas, the Linares-La Carolina Mining District, and Rio Tinto, this paper examines several successful strategies for cultural heritage management of industrial landscapes currently employed in Spain. These include private and state ventures at both national and local levels that help promote tourism and preservation of these important sites. Finally, this paper discusses the potential of using similar strategies for industrial landscapes in other parts of the world.

Götz, Christopher (Facultad de Ciencias Antropológicas, UADY), Carlos Andrés García Paz (Facultad de Ciencias Antropológicas, UADY), Derek Smith (University of Washington), Dominique Rissolo (Waitt Institute) and Jeffrey B. Glover (Georgia State University)

[192] *The View from Laguna Holbox: Ancient Maya Fishing and Foraging along the North Coast of Quintana Roo, Mexico*

This paper provides an overview of the marine faunal assemblage documented at the ancient Maya coastal site of Vista Alegre and its environs. Based on careful taphonomic differentiation between anthropogenic and natural deposits, we discuss the diverse ecosystems of the region as well as fishing and foraging techniques – and associated adaptive strategies – employed by the site's inhabitants over time. Consideration is given to the taxonomy, size, and resulting biogeography of marine fauna. Results from Vista Alegre are incorporated into a diachronic comparison of zooarchaeological data from other coastal Maya sites across the Yucatan Peninsula to provide a broad view of fisheries exploited by the northern lowland Maya that is also informed by ethnohistoric and artifactual data from coastal sites.

Finally, we propose future zooarchaeological research that employs the historical ecology approach to study the complex interrelationships between the Maya and their marine environments along the coast of the Yucatán Peninsula.

Gough, Stan [117] see Fulkerson, Tiffany

Gowland, Rebecca [241] see Tschinkel, Khrystyne

Grabowska, Samantha [230] see Forringer-Beal, Anna

Gradwohl, David Mayer (Iowa State University (Ames))

[239] *Flapping Tents, Outhouses, Hail Storms, and Running for Water: An Insider's View of Life in Interagency Archaeological Salvage Program Field Camps, 1950s-1970s*

Like many other Plains anthropologists of my generation, I began my career as a "shovel bum" on IASP field parties. Without running water and electricity, we lived in tent camps that were sometimes flattened by summer storms. The weather was sizzling; the work was strenuous; the pay was pitiful. Adding insult to injury, the RBS crews, and those of most cooperating agencies, were restricted to males. Despite this near monastic ambiance and "no frills" accommodations, we had the opportunity to train under some outstanding mentors, establish productive, long-term associations with colleagues, and explore some dramatic and significant archaeological sites.

Graesch, Anthony [173] see Shankel, Sarah

Graesch, Anthony (Connecticut College) and Timothy Hartshorn (Connecticut College)

[230] *Cigarette as Artifact: An Archaeological Ethnography of Bars, Smoking, and Social Identity on the Urban Landscape*

Archaeologists have long grappled with the complex relationship of material culture to social meaning and identity. Our research examines this relationship by focusing on a category of objects that are (1) frequently used in the social construction of identity and (2) regularly discarded on the urban landscape: cigarettes. Like comestibles, cigarettes are symbolically distinct from most other material culture in that they are not merely worn or used but rather physically incorporated into the body. It follows that ways of smoking (in general) and cigarette preference (in particular) can be framed as deeply personal ways of interacting with the material surround and thus, like food, objects of personal significance and even moral concern. Cigarettes are also among the most ubiquitous and tolerated forms of trash on the urban landscape, especially outside drinking establishments, where social identities are created, negotiated, and defended. Drawing on data collected at 24 sites, including over 30,000 artifacts, this poster highlights the ways that social group affiliation or social identity is reflected and/or indexed by the spatial distribution of more than 350 unique types of cigarettes.

Graesch , Anthony [173] see Antoniou, Anna

Graf, Kelly (Texas A&M University, Department of Anthropology)

[23] *Early Modern Human Expansion North to Siberia and Beringia*

Initial human settlement of northern landscapes was a major undertaking and certainly an exceedingly complex process. This was especially true in Northern Asia. In this paper, I review the record of human expansion north into Siberia above 55°N, specifically looking at human-adaptive strategies enabling this spread. Early modern humans had negotiated southern Siberian habitats soon after 50 ka. By about 32 ka they made it all the way to the Arctic. Initial incursion into the far north, however, may have been short-lived because as yet there are no archaeological sites unequivocally dating to 31-17 ka for this region. Further, sites postdating 17 ka evidence major technological and land-use reorganization. Ultimately, the data suggest Pleistocene peopling of northern Asia was episodic, taking tens of thousands of years and involving major shifts in adaptation to changing northern environments.

Graf, Kelly [131] see Gore, Angela

Graff, Emily (School of Anthropology, University of Arizona)

[102] *The Bioarchaeology of Peripheral Populations within the Mycenaean World: Ancient Kallithea Laganidia Cemetery near Patras, Greece*

Bioarchaeological studies throughout the ancient Mediterranean often focus on palatial rather than peripheral settlement populations. The neglect of these outlying populations could misrepresent the demographic, cultural, and paleopathological understanding of the culture as a whole. This is particularly prominent within the Mycenaean civilization, which too often is defined by its well-known palaces like those at Mycenae, Pylos, and Tiryns. Thus the bioarchaeological agenda throughout the Mediterranean needs to include known peripheral populations in order to properly interpret and decipher the health, culture, and lifestyle of particular ancient groups. Moreover, many of these peripheral populations have been already excavated, but not studied. Ancient Mediterranean cemetery collections have been removed, stored or discarded and misplaced. Without the maintenance and study of these forgotten collections, archaeologists and bioarchaeologists will continue to be without data significant to further research and interpretation. This research focuses on the bioarchaeological data collected from five tombs belonging to a peripheral Mycenaean cemetery, Kallithea Laganidia, in the region of Achaea. The small sample of 38 individuals revealed much about the health, pathology, culture, and social stratification of an otherwise unknown Mycenaean population.

Graham, Elizabeth (Institute of Archaeology)**[21] *Mobility and Resilience: A Perspective from the Eastern Maya Lowlands***

Circum-peninsular travel was a feature of eastern Maya lowlands coastal communities such as Lamanai and Marco Gonzalez, and the regularity of contact with non-local settlements and settings must have contributed to community diversity and outlook. It is true that stability was manifested in the continuity and persistence of coastal activity--both subsistence and commercial--from the Preclassic to early Colonial period, yet coastal communities changed a good deal in character over time, and some of these changes may reflect small-scale population movements. Some movements were distinctive to the coast, particularly in the Terminal Classic to Postclassic transition, whereas in other circumstances and times we seem to be seeing change on the coast as a response to the reorganization of local political entities and small-scale mobility on the mainland. Subsistence practices as well as access to products and trade routes changed, as did elite demands and how these demands were met. These ideas and other hypotheses will be discussed in the hope of shedding light on prehispanic urbanization and the life cycle of cities.

Graham, Elizabeth [72] see Mayfield, Tracie

Graham, Martha (SRI Foundation) and Nell Murphy (American Museum of Natural History)**[77] *Inside a Mediator's Toolkit: Reframing Cultural Resource Compliance in the Context of Alternative Dispute Resolution***

Archaeologists who pursue collaborative research projects on cultural landscape and traditional cultural properties, conduct NAGPRA or Section 106 consultations, and develop agreement documents can find working with multiple parties on potentially contentious issues to be a challenge. Effective communication and conflict management tools are useful in establishing and maintaining relationships with Indian tribes, descent communities, state and federal agency officials, and other participants in the process. Alternative dispute resolution (ADR) techniques are common approaches for settling potential lawsuits outside of the court system. Moreover, they have a utility and role in clarifying interests and ensuring better communication so as to avoid having conflicts rise to the level of court-bound disputes. For this reason, ADR techniques are applicable in contexts of cultural resource compliance where the parties involved may have diverse interests, and where relationships between entities, if not individuals, are long-term. This poster session introduces basic concepts and techniques of ADR. It provides examples of how facilitation, negotiation, mediation, and other ADR approaches can be applied effectively in cultural resource settings. By reframing standard approaches to cultural resource compliance using the ADR tools, archaeologists can better manage potential conflicts and develop satisfactory long-term relationships with other parties.

Graham, Lain (New South Associates Inc. and Georgia State University) and Hugh B. Matternes**[155] *Unwelcome Pay for a Hard Day's Work: Osteoarthritis in Two African-American Cemeteries on the Outskirts of Savannah, Georgia***

The relocation of two African-American cemeteries on Hunter Army Airfield in Chatham County, Georgia, enabled New South Associates, Inc. to examine human remains for evidence of joint deterioration as a means of assessing quality of life. 9CH1168 (Area 1) contained 40 individuals, while 9CH875 (Area 2)

yielded 346 interments. Emancipated local and refugee communities deposited both cemeteries in the mid-late 19th and early 20th centuries. All remains were sexed and aged using standard osteological methods, and the severity of osteoarthritic changes were scored using a three-point ranking system. The age-at-death ranges were divided into three age groups, and comparisons were made between sex, age, and severity of skeletal response. Statistical analysis was used to identify patterns in the osteoarthritis data. A t-test and a liner regression were used to assess between sex differences, which verified the anticipated correlation between advancing age and severity of osteoarthritis. The Area 1 cemetery population represents a local community, which differed in overall health and socioeconomic status when contrasted with Area 2. This dichotomy warrants further examination of differences between cemeteries as it relates to osteoarthritis and degenerative joint disease to see if there are significant differences when contrasting a local and refugee populations.

Grant, David [125] see Hughes, Susan

Gratuze, Bernard [249] see Erturaç, Korhan

Gravalos, Marie (Purdue University) and Rebecca Bria (Vanderbilt University)

[336] *Conceptualizing Communities of Weavers and Group Identity through the Analysis of Fragmented Andean Textiles*

Excavations from 2011-2013 at the highland site of Hualcayán in the Callejón de Huaylas valley, Perú have revealed an abundance of surprisingly well-preserved textiles and cordage. Despite preservation, these materials come from looted tomb contexts, dating to the Early Intermediate Period and the Middle Horizon (circa AD1-1000). The long-term mortuary use and architectural transformation of these ossuaries in the ancient past have contributed to the fragmentation and decay of fiber-perishable materials. Through technical attribute analysis using high-powered microscopy, we examine the hypothesis that single communities of weavers tend to produce relatively homogenous textiles because of a uniformity of practice (standardization in technical or stylistic attributes) in production. We argue that the sharing of technical knowledge and practices forges a collective identity and set of values. Despite the sample's looted context, this study demonstrates that (1) fragmented textiles have the potential to infer the presence of discrete communities of practice in the ancient past, and (2) careful technical analysis of looted artifacts can reconstruct some of the contextual information that contemporary grave robbers destroyed.

Grave, Alfonso (INAH Sinaloa)

[339] *No Todo lo que Reluce es la Cerámica Aztatlán: Arqueología del Sur de Sinaloa*

Fue en el sur de Sinaloa, en 1930, donde por vez primera se reconoció lo que se denominó cerámica Aztatlán. Sin embargo, la arqueología de la región no se limita únicamente a este rasgo. En los últimos años he desarrollado trabajos de investigación en las cuencas de los ríos Presidio y Baluarte, así como en las marismas de Escuinapa. Con los datos obtenidos he logrado establecer que la ocupación se remonta a los inicios de nuestra era y que la complejidad social inicia varios siglos antes del surgimiento del complejo cerámico Aztatlán, lo cual se manifiesta tanto en la construcción de estructuras monumentales, cuyo patrón arquitectónico se mantiene a lo largo de los siglos, como en la explotación intensiva de los recursos del estero, cuya importancia fue tal, que incluso en el ambiente hostil de la marisma se erigieron edificios ceremoniales destinados a la realización de rituales propiciatorios de una buena temporada en la pesca y las salinas.

Gravel-Miguel, Claudine (Arizona State University)

[299] *The Pebbles of Arene Candide*

Bernabo Brea and Cardini's 1940-42 excavation of the Grotta delle Arene Candide (Italy) uncovered a Mesolithic necropolis of about 20 skeletons. Most of the individuals were interred with different types of grave goods, including assortments of rounded flat pebbles. The presence of these pebbles in a karstic environment 90m above modern sea level shows that these artifacts were deliberately selected and transported to the cave to be discarded in a mortuary context. Those pebbles have never been studied in details and thus, their use is still unclear. Through a microscopic study of 30 pebbles found in the 2009-2011 excavations of the Arene Candide's Epigravettian layers, I address this question. The results of the analysis show that the majority of the pebbles – which were most likely collected from nearby beaches – were used in conjunction with ochre. The position and the extent of ochre traces vary by pebble but suggest the presence of ochre applicers and some grinders, which may be linked to the burial process

itself, as most skeletons were covered in ochre. This study provides a base against which I can study in detail the 1942 assemblage as well as similar artifacts found in other Italian Epigravettian burials.

Graves, William (Statistical Research, Inc.) and Eric Klucas (Statistical Research, Inc.)**[47] Communalism, Household, and Power in the Pre-Classic Tucson Basin**

In this paper, we explore potential variability in power and inequality among households and communities in the Pre-Classic period Tucson Basin. We examine variability in household storage capacity, the communal consumption activities, and access to social and economic relationships with the Phoenix Basin, to identify variability in control over the means of production, the social scale of consumption, and access to long-distance materials and ideas. Throughout the Pre-Classic period, a seemingly paradoxical relationship between communalism and the rise of inequality developed among the Tucson Basin Hohokam as households were able to acquire power differentially and social inequality became increasingly entrenched.

Graves, William [159] see Van Keuren, Scott

Greaves, Russell (Peabody Museum, Harvard) and Karen Kramer (University of Utah)**[22] String Figures and Dominant Cords: Tying Ethnoarchaeological Views of the Crucial Roles of Hunter-Gatherer Fiber Use Together to Explore Patterns of Technological Organization and Economy**

Compared with other classes of archaeological remains, methods for studying the roles of technologies constructed from organic materials are underdeveloped. Significant recent advances in the identification of plant remains and DNA have expanded the opportunities for detecting their presence in archaeological deposits. However, the greater archaeological visibility of durable materials, such as lithics or ceramics, is still equated with their assumed past technological or behavioral importance. Ethnographic studies demonstrate that the vast majority of traditional technologies either rely on organic materials for the majority of their components, or are entirely made from such materials. This study examines the ways that plant raw materials are collected, processed, manufactured, and used in longitudinal ethnoarchaeological research with savanna hunter-gatherers of Venezuela. Special emphasis is placed on the critical roles that string, cord, and basketry play in the technological strategies of Pumé foraging. This study identifies the dominant role of organic technology and explores links with other classes of more archaeologically visible artifacts to expand understanding of the use dynamics of these underappreciated technologies. Comparisons with other ethnoarchaeological data examine potential distinctions between foraging, horticultural, or agriculturally based economies and their technological organization.

Green, Ulrike (University of California San Diego)**[15] Seeing What's Happening on the Fringe: Exploring the Visual Representation of Cross-Cultural Interaction**

In order to more clearly elucidate the processes that occur in the context of colonization, frontiers, and ancient borderlands we have developed a model of cross-cultural interaction that visually represents simultaneous interactions by numerous participants visually. Our model explores the various ways in which people interact and what motivates their participation in cultural exchanges or what they reject. This paper serves as an introduction to the session and its purpose of testing the visual interaction model. In it we provide a basic introduction of this model and its theoretical origins and review the changes we have made since its inception. Finally a brief introduction of the case studies in this symposium serves to showcase the wide range of applicability of this model.

[15] Chair

Green, Ulrike Matthies [15] see Costion, Kirk

Green, William (Logan Museum of Anthropology, Beloit College)**[109] Museum Resources for North African Archaeology: The Collections of the Logan Museum of Anthropology**

Museum collections supply important research resources for Africanist archaeologists. As an example, Beloit College's Logan Museum of Anthropology houses about 120,000 objects from 200 site locations in Algeria and other parts of North Africa. Most of this material derives from the museum's surveys and

excavations from 1925 through 1930. Notable collections include Middle Stone Age and Epipaleolithic material. Much of the material was catalogued and published in the 1930s, but relatively little analysis has been conducted since then despite advances in method and theory. Documentation and provenience data are good for most collections and are being refined through archival research. The collections retain significant research value, especially for work on MSA and Capsian cultures and on topics such as lithic technology and mammalian, molluscan, and avian (ostrich) resource use. The collections are also of historical value in terms of the legacy of early American involvement in African archaeology.

Green, Thomas**[151]** *Discussant***Greene, Alan (University of Chicago), Charles Hartley (University of Chicago) and Paula Doumani (Washington University in St. Louis)****[20]** *Forging a Eurasian Archaeometry: Nine Years of Materials Analysis and Technique Development by The Making of Ancient Eurasia (MAE) Project*

Since 2005, a consortium of Eurasian archaeologists from various North American universities has been working in concert with material scientists at Argonne National Laboratory as The Making of Ancient Eurasia (MAE) Project, to collect instrumental data and develop new analytical techniques that speak directly to the research needs of our particular archaeological community. From a cultural and historical perspective the vastness of Eurasian archaeology often prevents the development of pan-regional research questions and collaborations. Yet our project demonstrates one clear intersection may be found in an investigative framework that can comprehensively develop assemblage-based knowledge "from the ground up." In exploring and analyzing so-called virgin territories and unexamined assemblages, Eurasian archaeologists possess a particular need to parse robust samples of diverse materials. The MAE Project, studying radically different sociohistorical contexts from the Caucasus to China's central plain, has spent nine years developing a cohort of instrumental techniques for the non-destructive and high frequency analysis of large archaeological assemblages. Our shared goal to deconstruct complexes, collections, and technologies investigated previously under dominantly evolutionary, functionalist, and culture- historical paradigms has propelled a rapid diversification of archaeological perspectives on production regimes and cultural formations that were previously understood as undifferentiated and homogeneous.

Greene, Lance (Georgia Southern University) and Matthew Luke (Georgia Southern University)**[221]** *The Whole Shebang: The Use of LiDAR Technology to Identify and Record Union Prisoners' Huts at the Confederate POW site of Camp Lawton*

The Confederacy constructed a massive POW facility, Camp Lawton, in the summer of 1864 to relieve the horrendous conditions at Andersonville. Excavations at Camp Lawton by archaeologists from Georgia Southern University have uncovered pit features representing semi-subterranean huts, called shebangs, dug by the prisoners held there. Recently, GSU archaeologists have incorporated LiDAR scanning as one method to identify and record these huts. High-resolution scans are used to create digital elevation models, which aid in locating subsurface features. Shebang features exposed in excavation blocks are recorded using scan data, including standard point clouds, intensity values, and photographic imagery.

Greene, Michelle [247] see Durand Gore, Kathy

Greenlee, Diana (U of Louisiana - Monroe)**[165]** *Measuring Earthwork Stability Under Changing Vegetation Cover at Poverty Point*

Erosion poses the greatest threat to earthwork preservation. Guidelines for landscape management of earthworks advise that grassy covers are the most effective for protecting earthworks against erosion, but woods can also provide adequate cover. Woods provide the most protection when they are composed of small trees with a good duff layer underneath. Although earthworks can be stable under either vegetative regime, it is considered risky to switch between them.

In August 2009, the Louisiana Office of State Parks began removing trees from the earthen mounds at Poverty Point in order to establish a grass cover. It was done for reasons of preservation (falling trees threatened the integrity of the mounds) and a more authentic visitor experience (the mounds were treeless when they were built roughly 3400 years ago). This presented an opportunity to use techniques of dendrogeomorphology (tree-ring dating of surface processes) to study historic rates of erosion under

wooded cover. Erosion during the shift in vegetative cover from trees to grass was monitored using the stumps as control points. Soil loss rates under these different vegetation regimes are compared with each other and with estimated damage had the trees not been removed.

Greenlee, Diana [263] see Hargrave, Michael

Greenwald, Alexandra and Jelmer Eerkens (University of California, Davis)

[163] *Stable Isotope Measures of Age at Weaning and Early Childhood Diet as a Proxy for Parental Investment Strategies During the Medieval Climatic Anomaly in Central California*

Human behavioral ecology predicts that individuals alter reproductive strategies in response to environmental conditions. Individuals are predicted to invest less in each offspring during periods of environmental stress to maximize their number of offspring. Conversely, individuals will invest more resources in fewer offspring during periods of environmental stability. We test this by estimating measures of parental investment - weaning age and early childhood dietary quality - from serial samples of dentinal collagen. ^{15}N , ^{13}C , and C:N ratios were generated for 35 individuals from the San Francisco Bay Area archaeological site CA-ALA-554, which was occupied during the Medieval Climatic Anomaly (MCA). The MCA (1200-600 B.P.) was a high-stress period of environmental instability in Central California. These results are contrasted against 40 individuals from four different sites in the same region that pre- and post-date the MCA - when environmental stress was less. Our findings confirm that parental investment in offspring was lower during the high-stress Medieval Climatic Anomaly in Central California, and provide support for predictions from life history theory.

Greer, John (Greer Archaeology) and Mavis Greer (Greer Services, Archaeological

Consulting) [156] *Masks in American Rock Art*

Masks occur in rock art throughout the world as part of a general propensity for humans to portray human and humanoid faces in various forms, contexts, purposes, and meanings. Our small sample from the New World concentrates on the Northwestern Plains, American Southwest, and extended Caribbean area. Rock art masks appear to be comparable in presentation and use to faces in other media such as actual masks on dancers or produced for other purposes, as documented among the Hopi and cultures of northwestern Mexico and northern South America. Drawings of faces onto other media (e.g., walls, plaques, ceramics, sand, trees) have similar characteristics of private, public, and instructional art, as do actual painted faces as part of physical body decoration. Masks may be personal signatures or referents to deities, supernatural beings, or generalized concepts. Rock art masks, as with other face portrayals, mostly appear to be ritual related but also may refer to clan affiliation, specific social society membership, social control, history, and beliefs related to agriculture.

Greer, Mavis [156] see Greer, John

Greer, Mavis (Greer Services) and John Greer (Greer Services, Archaeological Consulting)

[248] *Fingerlines in Central Montana Rock Art Compared with European Finger Flutings*

Painted fingerlines now are receiving attention in central Montana as a distinctive rock art element and are differentiated from tally marks (rows of short lines of generally equal length) in size, grouping, and meaning, although the general method of application is the same. Fingerlines are made with red paint, often occur in groups of three, and are usually at least 30 cm long. These are intentional element groupings and are separate from hand-cleaning smears. They are occasionally similar to straight finger flutings in deep caves in Europe, Australia, and elsewhere, and French research has shown the potential to identify individuals, approximate age, gender, and number of people participating in specific groupings. We examine how the North American and European marks compare and what we can learn from the extensive research in other countries to better understand the images in North America.

Gregoricka, Lesley (University of South Alabama)

[67] *Regional Mobility in the Land of Magan: Strontium and Oxygen Isotope Analysis at the Al Khubayb Necropolis, Oman*

Radiogenic strontium and stable oxygen isotope analyses permit considerable insight into patterns of migration and residential mobility in archaeological populations. In the Bronze Age of southeastern Arabia, questions regarding the nature of human mobility are essential to elucidating the shift from nomadic pastoralists building small circular cairns in the Hafit period (ca. 3100-2700 B.C.) to sedentary

communities constructing large collective tombs in the Umm an-Nar (ca. 2700-2000 B.C.). As no settlements have been discovered in association with tombs from the early third millennium B.C., this transition remains a poorly understood but pivotal time in Arabian prehistory. Recent excavations at the Al Khubayb Necropolis in the desert interior of Oman have revealed a number of tombs dating to this "Transitional" period, and individuals interred within these funerary structures present an exciting new means of assessing mobility in the region. The hypothesis that local communities engaged in a semi-nomadic lifestyle was tested using dental enamel from individuals interred in three large Transitional tombs. Instead, both $^{87}\text{Sr}/^{86}\text{Sr}$ (0.708531 ± 0.000078 , 1o) and ^{18}O (-1.4 ± 0.30 , 1o) ratios exhibit little variability, indicating that this Transitional period was a time of declining mobility coinciding with an increasingly complex social landscape in the Oman Peninsula.

[67] *Chair*

Gregoricka, Lesley [67] see Williams, Kimberly

Gregory, Danny (New South Associates)

[117] *Soil Drainage, Roads, and Predictive Modeling: Mapping Site Probability on the North Carolina Coast*

Predictive modeling of site probability based primarily on soil drainage characteristics was tested on a large CRM project on the North Carolina Coast. This research explored the utility of soil drainage as a site predictor when compared with other factors such as site age, proximity to roads, and elevation. Because well drained soils mirrored the locations of roads, towns, and farms, the model appears to work in certain cases. However, especially for recent historic sites, soil drainage is shown to be a poor predictor of site location.

Gregory, Brittney [199] see Lawrence, Ken

Gregory, Michael

[328] *Backyard Investigations along the Crabgrass Frontier: An Archaeological Exploration of Suburbia* American suburbanization began during the early 19th century, and since then, suburbia has been characterized as a land bound by dreams, contempt, and myth. The popular image portrays suburbia as a homogenous setting; however, suburbanization is really marked by a mixed emphasis on residential, commercial, and industrial development in addition to a diverse set of competing social and economic conditions. Geographers and historians explore some of these issues through the spatial layout of suburbs as revealed by the changing character of built environments, but few researchers have examined the lives and motives of individuals residing in early suburbs. Can archaeology remedy this situation and contribute to a greater understanding about suburbanization in America? This is one goal of the DePaul University Urban Historical Archaeology Field School, which is excavating residential yards in the Village of Maywood, Illinois. Maywood is an early Chicago suburb dating to the late 1860s, and Village yards have yielded data that inform about sanitary practices, dietary habits, children's interests, and household activities, in addition to other insights, all of which are supplemented by documentary sources. Far from being a sterile research topic, suburbia offers archaeologists a fertile field of inquiry occupying the historical rural-urban fringe.

Greiman, Nora (University of Nebraska-Lincoln), Ronald Goble (University of Nebraska-Lincoln), Matthew Douglass (University of Nebraska-Lincoln) and LuAnn Wandsnider (University of Nebraska-Lincoln)

[265] *An Evaluation of OSL Dating of Ceramic Sherds from the Nebraska Sand Hills, USA*

We report on a program of optically stimulated luminescence (OSL) dating of ceramic sherds and its potential for helping us understand past human behavior in the Sand Hills of Nebraska during the peri-Medieval Climatic Anomaly (AD 900-1300), when warmer and drier conditions prevailed here. Ceramic sherds derived from site collections maintained by the Nebraska State Historical Society were sampled. Sediment samples from these same sites and archaeological contexts provide the dose rate for analysis. Here, we discuss the preliminary results of this analysis and the potential for application in other regions.

Grier, Colin [173] see Dolan, Patrick

Grier, Colin (Washington State University)

[290] Actor Networks and Coastal Landforms in Precontact Coast Salish History: Formulating a New Approach to Some Key Issues in Northwest Coast Archaeology

Following a long engagement with unilinear and evolutionary notions of complexity, Northwest Coast scholars have been recently pursuing more historicized approaches to conceptualizing precontact lifeways. Despite this shift, few explicit statements have emerged that outline how we should now tackle critical issues such as the emergence of Northwest Coast settled village life, social stratification, and control over resources—enduring anthropological problems that transcend theoretical predilections. Here, I outline how a theory of Actor Networks, which posits human and non-human actors existing in complex relationships, can be employed for this goal. Drawing on data gained from coastal spit locations in the southern Gulf Islands of British Columbia, I focus on explicating the relationship between the construction of these landforms, the development of control over resources, and broader social inequalities. Positing both human and non-human actors in such processes emphasizes how natural and built environments recursively evolve and change over time, providing a framework for new practices and a vehicle for social transformation. As importantly, an Actor Network approach parallels animistic indigenous ontologies, offering an opportunity to develop indigenous-informed approaches without resorting to employing idealized ethnographic descriptions as models or explanations.

Griffin, Patrick**[259] An Historian Looks at the Famine: Looking Backwards and Forward from the Vanishing Point**

This paper will address the ways in which historians consider the Famine today: what it meant for Irish society; how it transformed migrations; and how it affected adaptation in America. The paper will put the Famine and its origins and legacies in the broad framework of links between Ireland and America in the Atlantic world and offer a new means of considering the event.

Griffin, Robert (University of Alabama, Huntsville), Nicholas Dunning (University of Cincinnati) and Thomas Sever (University of Alabama, Huntsville)**[295] Measuring Ancient Human Influence on a River Drainage Using Multispectral Satellite Remote Sensing and a Channel Sinuosity Index**

In the central Maya Lowlands, seasonal swamps (bajos) are a prominent landscape feature and are often found within short distances of ancient sites. The extent to which these depressions were used for agriculture remains unknown for most of the lowland region, however some isolated areas show evidence of stream channelization with ancient drained field agriculture being a likely culprit. This study focuses on the Ixcán Rio Basin of northeastern Guatemala, an area where both large and small Maya settlements developed around the margins of several large bajos including the expansive Bajo de Azucar. Initial visual inspection of high resolution multispectral satellite imagery (Quickbird, IKONOS) identified lengths of the Rio Azul which appeared less sinuous than what would be expected in the flat, homogenous environment of the surrounding bajo. We applied VNIR indicators of vegetation stress as proxies for drainage location and conducted feature extraction to isolate linear channels. We developed a Channel Sinuosity Index to quantify sinuosity and conducted a sensitivity analysis of segment length impacts on this sinuosity factor. We present the results here, focusing on the application of a sinuosity measure as a proxy for human influence on drainage channels.

Griffith, Cameron (University of Arkansas)**[70] Cave Use, Ritual Apotheosis, and Tribute to the God(s) of the Ancient Maya Underworld**

A recent exponential increase in cave research in the Mundo Maya over the past 30 years has yielded myriad data on the ancient use of caves. This paper presents recent analyses conducted on cave sites in the Macal River Valley of Belize, in order to elucidate spatial patterns and move towards a better understanding of a “grammar” of ancient Maya cave utilization. Some of the transforms affecting the assemblages in these cave sites are the result of natural processes, whereas others are due to formalized and structured intentions related to both functional activities and ritual practice.

Griffith, Anne (St. Charles Community College)**[228] Field School at the Community College Level: A Happy Medium**

One of the principles of modern archaeology is that we have a duty to the public to make our finds available. In the summer of 2013 an archaeology field school was conducted through St. Charles Community College outside of St. Louis, Missouri. This field school was structured differently than the traditional model as a way to make learning about archaeological methods more accessible to a wider range of people. Field schools like this one can be a great middle ground between single-occurrence

'archaeology days' and four- to six-week-long digs offered by many large universities. Many St. Charles students (and community college students in general) have children, are working nearly full-time, or have obligations beyond simple school work that make them unable to participate in multi-month-long projects. Additionally, community college field schools may be more financially feasible for those who have the desire but not necessarily the funds to work on digs throughout the US or abroad. With field schools being done on the community college level, we as archaeologists can reach even greater numbers of people and live up to a core tenet of contemporary archaeological practice.

Griffitts, Janet (SRI)

[210] *Get along Little Bunnies: A Possible Early Twentieth Century Rabbit Drive in Southern Arizona.* A single historical-period pit was discovered among the thousands of prehistoric features in the Luke Air Force Base Project, near Phoenix, Arizona, and that pit yielded over a thousand pieces of bone. Most are leporids or are from rabbit-sized taxa, including a minimum of fourteen cottontails and jackrabbits, interred with shotgun shells dating to the 1900s to 1920. Bones are well preserved, unburned, and many are intact. All leporid regions are represented, and portions were articulated at the time of excavation. Other pest species were found in the same pit.

Why are the rabbit carcasses so complete? Why were so many killed but not consumed? A look at early twentieth century interactions between humans and leporids offers a possible explanation. Jackrabbit drives are not only a part of Arizona's prehistory, but in the late nineteenth and the first third of the twentieth century, periodic localized peaks in leporid populations competed with cattle for forage and with farmers for their crops. The Arizona Territories offered bounties for rabbit ears and local ranchers and farmers organized rabbit drives in response, at times killing hundreds or thousands of leporids. This feature may provide evidence of a similar hunting episode.

Grifoni Cremonesi, Renata [241] see Mannino, Marcello A.

Griggs, Carol [200] see Turkon, Paula

Grillo, Katherine (University of Wisconsin - La Crosse)

[186] *"Nderit:" Typology, Archaeography, and the Implications of Pottery Use at Ceremonial Sites in the Turkana Basin*

"Nderit Ware," a type of pottery famous in eastern Africa for its remarkably intricate basket-like bowls, is associated with evidence for the region's earliest pastoralism. This paper reviews the changing ways archaeologists have conceptualized "Nderit" pottery over the past eighty years, and discusses ways in which the archaeographical process – the act of writing about archaeological evidence - has influenced the interpretation of Pastoral Neolithic sites throughout eastern Africa. The "Nderit" ware type was itself defined prior to the discovery of its early presence and fluorescence as a technology/artistic tradition in the Turkana Basin. New data from pillar sites west of Lake Turkana Lothagam North (GeJi9), Lothagam West (GeJi10), and Manemanya (GcJh5) suggest a much more variable and complex history of ceramic production and use than previously recognized. These findings carry important implications for reconstructing the cultural history and material lives of early herding groups moving within and beyond the Turkana Basin.

[186] Chair

Grillo, Katherine [186] see Hildebrand, Elisabeth

Grimm, Sonja (MONREPOS Archaeological Research Centre and Museum, RGZM)

[278] *Tomorrow Is Another Day: The Limits of Magdalenian Resilience in Lateglacial North-Western Europe*

The onset of the Lateglacial Interstadial in north-western Europe is characterized by significant climatic and environmental changes. The transition from the Late Magdalenian to the Azilian occurred in this period. The Magdalenian reveals a highly generalist behavior adapted to a cold grass steppe environment with strong climatic fluctuations. In contrast, the Azilian shows a more regionally adapted behavior within a temperate forest environment. The transition between these complexes was analyzed based on assemblages from northern France, southern Belgium, and western Germany. According to the results, with minor adaptations the resilience of the generalist Magdalenian behavior coped easily with the initial

climatic and environmental changes. Moreover, the increase of resources during the continuing climatic amelioration in this initial period caused a neglect of safeguarding strategies. As a result the buffering mechanism failed to provide security during a period of climatic and environmental instability in the early Lateglacial Interstadial and the Magdalenian way of life collapsed. However, with the following climatic and environmental stabilization an established Azilian appeared abruptly based on the previous Magdalenian adaptations. The process of change from Magdalenian to Azilian behavior in north-western Europe can, therefore, be described as a phase-transition driven by climatic and environmental stability.

Groleau, Amy (Colgate University)

- [38] *Conchopata's Ceramic "Trophy" Heads: Breaking and Curating Anthropomorphic Vessels in A Wari City*

Studies of human head-taking in the Wari Empire, particularly the site of Conchopata, indicate an enduring practice of raiding, captive taking, and eventual sacrifice that is linked to imperial expansion and the buttressing of political authority. Iconography on ceremonial wares and remains from temple complexes have illuminated such state-sponsored practices, but have left the involvement of the larger community under-theorized as passive recipients of an ideological message of power and violence. New research into domestic spaces at the site reveals a parallel practice of decapitation and curation of heads from ceramic bodies that appears to predate and continue alongside the findings in the ceremonial sectors. A systematic study of 44 unique architectural spaces identifies a complex interplay of civic and domestic ritual practices in which anthropomorphic vessels and pieces of sacrificed pottery were circulated through multiple contexts suggesting similarly dynamic social relationships in city religious and political life.

Gronenborn, Detlef (Roemisch-Germanisches Zentralmuseum), Strien Hans-Christoph (Institut für Vor- und Frühgeschichte, Johannes-Gutenberg-University), Schoene Bernd (Institute of Geosciences, Department of Applied and Analytical Paleontology, Institute of Geosciences, University of Mainz), Sirocko Frank (Institute of Geosciences, Johannes-Gutenberg-University) and Scholz Denis (Institute of Geosciences, Johannes-Gutenberg-University)

- [201] *Dynamics of Neolithic Societies in Temperate Europe—A Paleoclimatology-Informed Approach*

Many archaeologists—at least in Europe—have been hesitant in accepting climate as one active parameter in the formation processes of historic trajectories. This is certainly partly due to previous oversimplifying hypotheses often formulated outside both anthropology and the historic disciplines.

We present current results of a project based at Roemisch-Germanisches Zentralmuseum/Johannes-Gutenberg-University, Mainz, Germany, focusing on the dynamics of Neolithic societies of western Temperate Europe (5500–3500 cal B.C.), in which paleoclimatic proxies and archaeological data are confronted. Hypotheses are generated by going beyond simple event-oriented temporal correlations; we try to understand social and economic dynamics over certain periods of time by analyzing the complex interrelations between archaeological and paleoclimatological time series.

Grosch, Peregrine (College of Wooster) and P. Nick Kardulias (College of Wooster)

- [300] *A Study of the Abandonment of Sites in Roman Britain*

This study examines the collapse of the Western Roman Empire in the context of the abandonment of Britain. Following Tainter's discussions of collapse and using a model based on Boak's interpretation of the fall of the Western Roman Empire, this study seeks to explain the Roman abandonment of Britain by examining the archaeological record at the sites of Calleva Atrebatum and Vindolanda. Calleva Atrebatum features major indications of the collapse of traditional city life such as a rubble filled gate, a major junction filled with pits and the forum's basilica transformed into an industrial area with no permanent residence, and little evidence of any occupation following the late Roman period. Vindolanda exemplified Boak's notion of military threat and a shrinking Roman influence in the area, leading up to complete abandonment of the fort. These lines of evidence provide a framework for examining the collapse of the Roman Empire in the context of events in Britain.

Gross, Haley (Washington State University)

- [209] *A Potential Method for Sourcing Shell Middens: Trace Element Ratios of *Perna perna* Mussels from the Southern Coast of South Africa*

Evidence of coastal exploitation is first found in the archaeological record ~164 kya at Pinnacle Point, South Africa (Jerardino and Marean 2010). Though archaeologists have long understood the value of shell middens, in the past, these analyses have addressed questions of temporal range of occupation,

group size, seasonality, and dietary contribution. Information is primarily derived from analyses of shell species, size, and frequency, though some investigations have used oxygen isotope analysis to understand seasonality and environmental conditions. Expanding upon recent studies in biology and marine ecology, I used laser ablation, inductively coupled plasma, mass-spectrometry (LA-ICP-MS) to analyze 'elemental fingerprints' (Becker 2004), or trace element ratios, found in the shells of *Perna perna* mussels from seven different locations along the southern coast of South Africa with a spatial distribution between 165 km to 5 km. This study aims to address not only the range of limitations of the method but also the possibility of employing this method for sourcing mussel shells found in the archaeological record. Identifying the source locations of shell middens could potentially open the door to new understandings of coastal foraging behavior and possibly even reveal insights into social networks and inter-group connections.

Grove, David (University of Florida)**[254] How Mesoamerican Culture History Has Cursed West Mexico**

Since the 1950s some archaeologists have categorized the prehistory of non-Maya Mesoamerica into four periods: Olmec, Teotihuacan, Toltec, and Aztec. That simplistic but popular culture historical paradigm utilizes Central Mexican prehistory as a yardstick to measure cultural developments in other regions of Mesoamerica, including West Mexico. In addition, Paul Kirchhoff's well-known list of defining traits for "Mesoamerica" is heavily laden with central Mexican attributes. Based on those culture classifications, certain regions of Mesoamerica were privileged, while others, such as West Mexico, were marginalized and virtually ignored. The legacy of the culture history approach still impacts Mesoamerica today. In fact, the question has frequently been raised, is West Mexico part of the Mesoamerican culture area? The region is sometimes excluded from Mesoamerica on maps and in textbooks, and most Mesoamericanists have little knowledge of the archaeology of West Mexico. This presentation reviews the negative impacts of culture history on West Mexico and discusses Formative Period archaeological research in West Mexico to demonstrate that the region was indeed part of Mesoamerica, yet its contributions continue to go unrecognized.

Gruber, Thomas [66] see Gilman, Patricia

Grund, Brigid (University of Wyoming) and Stephen Williams (University of Wyoming)**[343] Viable Soil Microorganism Trophic Group Composition and Density: Useful for Paleoclimatic Reconstruction and Relative Dating?**

Paleosol microorganisms are capable of surviving in paleosols for many millennia by entering states of dormancy or exhibiting slowed metabolic processes. Surprisingly, microorganisms have only rarely been studied in archaeological contexts. Some scholars argue that contemporary microbial community composition in soils is retained after burial, continuing to reflect trophic group ratios at the time of soil formation. This presentation details the results of a research project with two main objectives: 1) to test a previously proposed microbial technique for paleoclimatic reconstruction implemented using paleosols located stratigraphically below kurgan burial mounds in Russia and 2) to present and evaluate a preliminary method for relative dating of paleosols using microbial densities throughout a vertical sample column. Soil microorganisms from Hell Gap Locality I, Wyoming, were cultured on three different solid media in order to calculate the community composition and density used to evaluate these techniques. Microbial trophic group composition did not yield paleoclimatic results that significantly correlate to prior reconstructions, but did significantly correlate to pH (which differed between media), indicating that pH might be acting as a confounding variable within this method. Microbial density, however, decreases with age, indicating that density could potentially be used as a relative dating technique.

Grussing, Valerie (National Marine Protected Areas Center)**[136] Moderator****[136] Discussant**

Guderjan, Thomas [17] see Beach, Timothy

Guderjan, Thomas (University of Texas at Tyler)**[292] A Mechanism for Collection, Transport and Distribution of Maritime Resources into Mainland Markets in Chetumal and Corozal Bays**

Leslie Shaw analyzed the faunal remains from the site of Ek Luum on Ambergris Caye, Belize. Observation of economic behavior of mainland fishermen camping on Ambergris Caye and selling in the Corozal market in 1985 serves to link analysis of maritime and island catchment zones with patterns of faunal remains from Cerros on the shore of Corozal Bay. Combined, the behavior of modern fishermen serves as an analogous mechanism that reflects a model of Classic period residents of Ambergris Caye providing both fresh and salted and dried fish to mainland markets.

[330] *Discussant*

[330] *Chair*

Gudino, Alejandra [57] see Lippi, Ronald

Gudino, Alejandra

[57] *Chair*

Guengerich, Anna (University of Chicago)

[110] *Residential and Public Architecture from the Perspective of Monte Viudo, Chachapoyas, Peru*

In this paper, I critique the scholarly distinction between “vernacular” architecture and institutional, monumental, or elite architecture, using a case study from the settlement site of Monte Viudo in Peru’s northern highlands, which was built and occupied between A.D. 900 and 1450 by an ethnically Chachapoya community. The monumental character of Monte Viudo’s houses, their excellent preservation, and the unusual absence of public architecture in this built environment make it an especially fruitful setting in which to explore the social role of residential architecture. On the basis of these data, I argue that the archaeological tendency to isolate the study of residential and public architecture impoverishes our understanding of both phenomena by obstructing comparison of the construction practices, meanings, and social milieus out of which both come into being. In particular, I argue that anthropological scholarship of vernacular architecture has undervalued the role of human agency in the creation of house form, which has led to an overreliance on standard interpretive tropes such as structuralism, habitus, and “tradition.” In order to counterbalance these tendencies, greater consideration of the construction process and the material features of residences is essential for approximating their role in a particular society.

Guenter, Stanley [312] see Navarro-Farr, Olivia

Guernsey, Julia (University Of Texas At Austin)

[279] *High Culture in Preclassic Mesoamerica: Sculpture, Ideology, and Identity*

This paper explores sculpture and its role in the creation, visualization, and structure of Preclassic urbanism. It focuses in particular on the shifts in sculptural form and imagery during the transition from the Middle to the Late Preclassic period. To do so, it considers both monumental sculpture but also other figural imagery more generally, focusing especially on how representation of the human form – and consideration of where it appears, how it is articulated, and in what medium – provides a rich and nuanced view into how sculpture was wielded by elites to give physical form to notions of “high culture” in Preclassic Mesoamerica.

Guía, Andrea [163] see Fonseca Ibarra, Enah Montserrat

Guiducci, Dario [16] see Burke, Ariane

Guiry, Eric

[233] *Rats and the Detection of Waste Management: Stable Isotope Insights from the 17th Century Fishing Settlement of Ferryland, Newfoundland, Canada.*

Waste management practices are a critical aspect of human sanitation and health yet can be difficult to ascertain from often scant and incomplete archaeological records. This poster presents a pilot project to determine the feasibility of detecting human control and disposal of fisheries waste at the 17thC. fishing settlement of Ferryland, Newfoundland, Canada, using stable isotope analyses of rat remains. Recent stable carbon and nitrogen isotope work on animal bone collagen identified local husbandry practices for omnivorous domesticates (pigs and dogs) based on fish offal from the adjacent fishery. New bone

collagen data presented here suggests that many rats ($n=30$) cohabiting the fishery did not have access to the fisheries refuse. These results indicate that while a certain amount of fish offal was allocated to omnivores domesticates, other fisheries refuse was likely disposed of away from the settlement. In the context of the historical record, suggesting that fisheries waste management practices at contemporaneous fisheries could be unsanitary, these findings have important implications. Moreover, these analyses show how a comparison of species with differing human-animal relationships (unwanted scavengers vs. provisioned livestock) can begin to unravel aspects of waste management regimes and the cultural ideas of sanitation that underlay them.

Gullapalli, Praveena (Rhode Island College) and Shinu Anna Abraham (St. Lawrence University)**[35] *Investigating the Production Landscapes of Southern Andhra Pradesh***

Excavations in South India have yielded significant numbers of iron and glass artifacts from a variety of contexts. These varied and prolific consumption patterns seem to indicate that these items played an important role in early South Indian societies. However, we know little about how and where these artifacts were produced, and especially what relationships, if any, there existed between these and other technologies. Here we present the results of the preliminary season of a project investigating the organization of various technologies – especially glass and iron production practices – in southern Andhra Pradesh, along the Swarnamukhi River Valley. Survey revealed a variety of sites, some with significant pyrotechnological evidence. The variation among and within these sites indicates a complex production landscape comprised of multiple technologies, including but not limited to iron and glass production, and highlights the fruitfulness of an explicit focus on identifying and documenting production evidence. The spatial patterning of production evidence allows us to begin identifying possible communities of craftworkers and the relationships between them. Future research will focus on further delineating the geographic and chronological patterning of production practices in order to better understand such inter-relationships.

Gumerman, George [202] see Hays-Gilpin, Kelley

Gunn, Scott**[42] *Interpreting Ancestral Puebloan Settlement Patterns and Spatial Discontinuities Through the Use of Archaeological Predictive Modeling: An Example from the Northern Rio Puerco Basin in Northwestern New Mexico***

Ancestral Puebloan settlement patterns in the Northern Rio Puerco Basin in northwestern New Mexico remain poorly understood despite extensive archaeological survey coverage throughout the region. In response to this, an archaeological predictive model is constructed that characterizes the relationship between Ancestral Puebloan site location and a number of independent environmental variables, including terrain roughness, proximity to water resources, and elevation. The results of this predictive model confirm the presence of a large spatial discontinuity in Ancestral Puebloan activity west of the immediate Rio Puerco Basin and suggest that resource availability or environmental conditions may have played a major role in settlement preference during the Pueblo III period. In addition to testing a geographically specific area, this study assesses the ability of the relatively new Random Forest modeling method in locating previously unrecorded Ancestral Puebloan sites in the wider Rio Puerco Basin. This study finds that the Random Forest method accurately identified over 29% of known Ancestral Puebloan sites in high potential zones comprising less than 3% of the total study area. By evaluating the results of this model against known sites, this model can be further refined and incorporated into future archaeological survey efforts in the region.

Gunn, Joel [75] see Scarborough, Vernon

Gunn, Joel (University of North Carolina-Greensboro)**[158] *The Maya in Global Perspective***

Roland Fletcher proposes that a “Low-Density, Agrarian-Based Urbanism” appeared world-wide during the first millennium A.D. That this form of polity appeared and disappeared in relative coincidence raises the question of background causes, a question that has to be answered before other issues such as causes of local change emanating from global climate and landscape engineering can be addressed. This paper attempts to identify a global context that might have encouraged their appearance. For comparison, recent analysis of the Maya Lowlands suggests that during the first millennium large cities were constructed in elevated landscapes away from abundant water to intercept trade routes. These

cities flourished so long as they could serve as entrepôts and sustain their vested interests. However, parallel to the interior cities, marine cities were also developing. They were slower to rise to power, apparently because it required a longer period to ramp up the skills of marine transport. When a downturn in climate destroyed the support system of the interior cities in the ninth century AD, the whole system collapsed, even the cities that were not particularly vulnerable to climate change. Does this scenario suggest anything about the other low density civilizations?

Gunn, Christopher (University of Kentucky)

[167] *Market Exchange and Household Provisioning in the Kiuc Polity during the Puuc Fluorescence*
The fluorescence of the Puuc Region of the northwestern Yucatan during the Late Classic and Terminal Classic periods is best known through the impressive architectural building programs of its largest sites. The processes involved in this sociopolitical transformation have, however, only received limited attention. One key concern in reconstructions of this transformation is the mechanisms that integrated elite and non-elite members of Puuc polities. This is likewise an issue of concern in more general debates over the degree to which control of ancient Maya polities was centralized. This paper examines elite and non-elite household economic interaction during the Puuc fluorescence. Working from the perspective of "distributional approaches" to identifying exchange mechanisms (Hirth 1998), new models of the effects of non-market horizontal exchanges, vertical exchanges, and market exchanges on artifact variability were developed to identify household provisioning strategies. The results of these analyses suggest that market exchanges were utilized during both the Late Classic and Terminal Classic periods at Kiuc. The implications of this form of economic integration on broader political economic systems are discussed.

[167] Chair

Gunter, Madeleine (College of William and Mary)

[15] *Modeling Colonial Encounter: An Analysis of Trade Networks on the Seventeenth-Century Eastern Siouan Frontier*

Siouan-speaking native communities across the Roanoke River Drainage in Virginia's southern Piedmont occupied a pivotal place on the seventeenth-century Southeastern geopolitical landscape. Between 1650 and 1676, the Siouan-speaking Occaneechi controlled European-Indian trade across southern Virginia. Acting as middlemen, they funneled deerskins from their western trading partners--the Sara--to English colonists in the East. On the periphery of Occaneechi-controlled fur trading networks, the Sara were free to selectively engage in, and avoid, the eastern deerskin trade. Drawing on material evidence from six contact-period sites in the Dan River Basin (the farthest western boundary of the Roanoke River Drainage), this paper examines and models the complex borderland processes that played out across the western Piedmont, with the goal of understanding how native communities on the "Siouan frontier" engaged in, and resisted, emerging deerskin trading economies during the seventeenth century. These analyses serve as a case study for investigating both the direct and indirect nature of colonial encounters at a regional scale.

Gunther, María Virginia [57] see Díaz, María Etelvina

Gurevitz, Anna (Northern Arizona University) and Danielle Kurin (University of California, Santa Barbara)

[103] *Sexing Commingled Remains to Evaluate Mortuary Organization: A Case Study from South-Central Peru*

Sexing human remains is an integral part of evaluating demographic profiles and community structure among ancient and modern human populations. While there are fairly solid ranges for sexing the humeral and femoral head among modern populations, no such ranges exists for modern or prehistoric populations in Andean South America despite the plethora of ancient skeletal material within this region. This study attempts to address this lacuna through a study of 58 femura and 71 humerii from commingled burial contexts from late prehispanic highland Peru (ca. A.D. 1000 – 1400). Metrics were employed to establish a preliminary range of humeral and femoral diameter lengths; discriminant function analysis was then used to determine the probable sex of the skeletal element. In this case, results suggest commingled burials in the highland Andes were likely structured by kinship, rather than sex.

Gurstelle, Andrew (University of Michigan)

[4] *Ceramic Styles and Regional Interaction in the Savè Hills, Bénin*

This study presents the first systematic description of ceramic artifacts from Late Iron Age sites in the Savè Hills area of Bénin, West Africa. Formal and stylistic features of the ceramics are used to delineate cultural historical phases. This study assumes that the movement of ceramics through Save Hills communities reflects regional interaction systems, and as such the distribution of ceramic types can be considered as an indicator of regional processes of migration, sociopolitical development, and trade. Intense warfare during the 19th century is considered as a potential catalyst for change in ceramic form and style.

Gurstelle, Andrew [171] see Williams, Travis

Gurtov, Alia (University of Wisconsin - Madison) and Metin Eren (Department of Anthropology, University of Kent, Ca)

[255] *Does Raw Material Influence Bipolar Flake Morphology? An Experimental Examination of Quartz vs. Basalt*

Lithic raw material differences are widely assumed to be a determining factor of flaked stone tool morphology, but this assumption remains largely untested. Two different sets of toolstone properties are thought to influence lithic artifact form. The first set is internal, i.e. the mechanical flaking properties. The second set is external, namely the form (size, shape, surface regularity, and presence of cortex) of the initial nodule, block, or blank from which the flakes are struck. In this paper we examine the effect of two different raw materials (quartz and basalt) on the morphology of experimentally produced bipolar flakes. Our results speak to hominin toolstone selection during the Pleistocene and contribute to wider debates about the relative influence of raw materials on stone tool morphology.

Gusick, Amy (University of California, Santa Barbara)

[284] *A Balancing Act: Energetic Yield Objectives and Non-Food Resources during the Early Holocene on Santa Cruz Island*

Santa Cruz Island is a varied landscape that harbors not only marine and coastal environments but also diverse terrestrial environments. Faced with a choice of these habitats, hunter-gatherers should occupy environments highly ranked with regard to food resource productivity, beginning with the environments that involve the least effort and least risk in acquiring sufficient resources. Within the environmental context of Santa Cruz Island, the abundant coastal and marine habitats that surround the island provided the abundant, clustered resources necessary for high-return forging. While these marine resources are integral in settlement decisions, hunter-gatherers would also be expected to balance energetic yield objectives and the need for non-food resources such as chert, and less abundant or seasonal resources such as plants or freshwater. Choice of habitation locale and the degree of mobility must, therefore, take into account the availability of both the key food and non-food resources needed for island survival. Research into the Early Holocene on Santa Cruz Island shows this consideration of abundant and less abundant resources and how this balance affects movement across the landscape.

Gust, Sherri [315] see McElhoes, Jennifer

Gustas, Robert [137] see Marinkovich, Erik

Gustas, Robert (University of Alberta)

[315] *Early Coastal Migration Routes In the Pacific Northwest: A Case Study in Predictive Geospatial Analysis*

Some of the oldest and most heated debates in archaeology center on the route and method of the arrival of the very first individuals in the New World. In this poster, I present a series predictive geospatial analysis techniques and test them against a case study that proposes routes of initial migration by Paleo-Indian peoples out of Asia along the coast of British Columbia into the new world. By quantitatively analyzing factors of topography, bathymetry, and the archaeological record at established Paleo-Indian sites using Geographic Information System (GIS) programs, it is possible to predict hypothetical routes across the landscape that existed ~13,000 years ago. I implement methodologies and techniques which identify areas that may contain archaeological material which clarifies to what extent and at what scale coastal migration was practiced. These methodologies combine elements of predictive modeling, least cost path analysis, and topographic analysis to look at this issue in new ways. The results of this case study demonstrate the usefulness and feasibility of these techniques in revealing patterns and findings

which would not be apparent through traditional methods, highlighting the power and place of modern GIS analysis in archaeology.

Gustavsen, Jenifer (Human Evolutionary Studies Program and Simon Fraser University), Laura Dane (Psychology Department, Douglas College) and Mark Collard (Human Evolutionary Studies Program and Department)

[278] Developing a Method for Assessing the Skillfulness and Practice Time of Upper Paleolithic Artists
Archaeologists have tended to approach Upper Paleolithic art in the same way that art modern art is approached, with a focus on meaning. While this approach has yielded interesting results, its dominance has led to the neglect of another important aspect of art—the skill required to produce it. Research on the acquisition of skill suggests that an individual's level of skill in a given activity is primarily determined by the number of hours they have practiced that activity. With this in mind, we developed an experimental approach for the evaluation of skill in representative drawing, a common form of Upper Paleolithic art. First, we developed a set of criteria that can be used to evaluate drawing skill. Then, we asked 30 subjects with varying amounts of experience to produce drawings and provide an estimate of their hours of practice. Next, the subjects' drawings were scored with the evaluation criteria. Lastly, we regressed the scores for the drawings on hours of practice. We found a strong, significant relationship between drawing skill and number of hours of practice. Thus, we now have a tool with which to infer the skillfulness and practice time of Upper Paleolithic artists.

Gutierrez, Gerardo [8] see Hinojosa-Balino, Israel

Gutierrez, Maria (CONICET, INCUAPA) and Gustavo Martínez (CONICET-INCUAPA; Facultad de Ciencias Sociales (UN)

[69] Archaeological Research Contributions to the Study of Early Human Occupations in the Pampean Region of Argentina: Progress and New Directions

The Pampean region of Argentina has been a key area for the debate of early peopling of South America since the XIX Century. Nevertheless, systematic investigations started at the beginning of the 1980s. Since then, several sites have been excavated leading to the discussion of different issues that are part of the current research agenda of the peopling of the Americas. The aim of this presentation is to analyze how the archaeology of early hunter-gatherers of the region contributed to the following topics: a) paleoenvironmental and paleoclimatic reconstructions; b) timing and mode of the peopling process, c) lithic raw material procurement, technological strategies and the development of social networks, d) subsistence patterns, extinctions and survival of Pleistocene faunas in the Early Holocene, e) early human remains, chronology and diet , f) hunter-gatherer strategies developed for dealing with periods of stress of critical resources (e.g., water), g) landscapes modifications induced by human activities during the late Pleistocene-Early Holocene. Undoubtedly, abundant information was generated from the archaeological projects conducted in the Pampean region during the last 15 years, which positively impacted the advance of the knowledge of the early human occupations of the Southern Cone of South America.

Gutierrez, Gerardo (University of Colorado at Boulder, Department of Anthropology)

[83] Spatial Structure and Genealogical Interactions of the Complex Yuhuitayu of Tlapa-Tlachinollan of Mixteca Guerrero

This paper focuses on the ethnohistorical and archaeological formation of a complex Mixtec-Tlapanec-Nahua political system in southern Mesoamerica between the 14th and 16th centuries. Here, I will analyze how genealogical claims and key marriage alliances between ruling lineages shaped the political development of the largest yuhuitayu/kubaa/altepeli of Eastern Guerrero. Further, I discuss how these arrangements were imprinted on settlement patterns and landscapes in the so-called La Montaña and Costa Chica regions of the state of Guerrero, Mexico.

Gutiérrez, María [6] see Álvarez, María

Gutiérrez Pérez, Abril Ivonne [25] see Alvarado Viñas, Luis

Gutiérrez-Zugasti, Igor [71] see Gonzalez-Morales, Manuel

Guttenberg, Richard B. [163] see Brown, Kaitlin

Guzman Contreras, Victor [163] see Wiewall, Darcy

Gyucha, Attila [310] see Yerkes, Richard

Haas, Wm. (The University of Arizona)

[6] Residential Mobility, Site-Size Variation, and Archaic Foragers of the Altiplano

Agent-based models (ABMs) are used to predict archaeological site-size variation that emerges from foraging-radius models (FRMs) of hunter-gatherer residential mobility (*sensu* Binford 1982 and Kelly 1995). In the Lake Titicaca Basin, Peru, environmental parameters are consistent with those of FRMs. However, the ABMs demonstrate that FRMs as currently formulated cannot account for size variation among Late Archaic Period (7000-5000 cal. B.P.) hunter-gatherer sites in the region. I propose an alternative model that draws key behavioral insights from hunter-gatherer ethnography and statistical mechanics. The model posits that residential mobility is predicated upon the trade-off between subsistence and social interests. At each time-step in the agent-based implementation of the model, a given residential unit either (1) pursues social interests by moving to the residential location of another residential group with probability p or (2) pursues subsistence interests by moving to a novel location on the landscape with a probability of p-1. The model is empirically verifiable. Modeled settlement-size distributions are found to be statistically consistent with observations in the Titicaca Basin suggesting that this simple behavioral model holds explanatory potential.

Haas, W. Randall [16] see Kuhn, Steven

Haas, Katherine (University of Pittsburgh)

[20] Death in the Context of Dying: Comparing Evidence for Differential Mortality at Two Bronze Age Cemeteries from Northern Serbia

The Early/Middle Bronze Age cemetery at Ostojicevo, northeast Serbia, represents a large undocumented sample of Maros-style burials (n = 285). The Bronze Age Maros Culture (2600-1500 B.C.E.), located between the Tisza, Maros, and Aranca Rivers in the southeastern Great Hungarian Plain, is defined by common mortuary practices and ceramic styles. Here, I compare mortality profiles between Middle and Late Bronze Age burials at Ostojicevo with Middle Bronze Age burials 20 km to the northwest at Mokrin (n = 318). I demonstrate that while adult mortality profiles are identical at Mokrin and Ostojicevo, the latter site is distinguished by the presence of infants (< 3 years at death) buried in urns. Because adult mortality is identical at the two cemeteries, I conclude that the presence of infants at Ostojicevo is due to changes in social dynamics and perceptions of personhood rather than increased child mortality. Treatment of infants corresponds to broader social conventions governing mortuary practices. Bodies in urns were placed in a flexed position facing east, and aligned along a linear N-S or S-N axis according to gender. This inclusion of children < 3 years at death is unique for the prehistory of the region and provides general evidence for high child mortality.

Haas, Mallory (Cleveland State University) and Elizabeth Hoag (Cuyahoga Community College)

[152] Developing Archaeological Vernacular When Approaching Salvage in Community: Decommissioning Euclid Avenue Churches in Cleveland Ohio

The obstacle of resurrecting conservancy and archaeology into the severed dialogue can take longer than the physical time and length of the project. At The Center for Community Studies (CCS) we have begun to be a voice of reason within city planning and dismantlement of spaces, if of course the space must be demolished. Over the past 20 months we have been working with the city, the property buyers, which is The Cleveland Clinic, the local congregations and the dioceses of these churches to help mitigate the loss of information and provenance of artifacts, including architecture, stained glass windows and each churches time capsule. We have been working to ignite a set of principles utilizing a holistic perspective of planning within the interested community on future threatened sites, savings of property and/or in combination with potentially abandoned archaeology resources around Cleveland and her surrounding suburbs.

Habicht-Mauche, Judith (UC-Santa Cruz)

[202] Tijeras in the Ancestral Pueblo World: A Pottery Analysis Perspective

During the 1970s, Linda Cordell supervised three summer field schools at the site of Tijeras Pueblo (LA 581), a fourteenth century Ancestral Pueblo village site located in the central Rio Grande region of New Mexico. The material recovered from those excavations continues to provide archaeologists with a wealth of information about migration, community formation and inter-regional interaction in the late Precontact Southwest, themes that were central to Cordell's scholarship and intellectual legacy. This paper presents results of current research on Tijeras pottery, with particular emphasis on the early glaze-painted wares from the site. Data generated through a variety of integrated analytical techniques, including attribute analysis and characterization studies using optical mineralogy, neutron activation analysis, and lead-isotope analysis are providing us with a complex picture of how Tijeras emerged as a unique, aggregated community and its relations with the broader fourteenth century Pueblo world.

Habu, Junko (University of California Berkeley) and Steven Weber (Washington State University)**[201] Mobility, Food Diversity, and Climate Change: Prehistoric Cases from East and South Asia**

This presentation examines problems of subsistence specialization and centralization, including intensive hunting-gathering and full-scale agriculture, in relation to the impacts of climate change. Previous studies tended to associate sedentism and large-scale agriculture with more "advanced" societies. However, archaeological studies from prehistoric Japan and northern South Asia indicate that mobility (including seasonal sedentism) associated with diverse subsistence strategies (including hunting-gathering and small-scale millet cultivation) may have been the key to understanding the growth and decline of prehistoric cultures. The role of climate change is emphasized as a constant and crucial variable in understanding long-term social change.

Hadad, Rémi [28] see Haddow, Scott

Hadden, Carla (University of Georgia) and Maran Little (University of Georgia)**[216] A Comparison of Cool- and Warm-Season Subsistence Practices on the Woodland Gulf Coast (USA)**

Resource scheduling is a compromise among the social, economic, and political needs of the group, the availability and distribution of potential resources, and the perceived value and ease of procurement of the resources themselves. The seasonal aspects of resource use are fundamental to other significant human behaviors including ritual cycles, settlement patterns, and social and political organization. We investigate the seasonal aspects of resource scheduling at Plash Island, a Woodland-period site on Mobile Bay, Alabama (USA). Stable oxygen isotope analyses of mollusc valves and fish otoliths were used to estimate the seasons-of-deposition of several small, discrete pit features, presumed to be relatively rapid depositional events. Here we present the zooarchaeological data for just two of these features; one deposited during a cool season, the other deposited during a warm season. We compare the richness, diversity, and equitability of animal resources used in one locale during different seasons of the year. A similar suite of fishes, shellfishes, reptiles, and mammals are represented in both features, but their relative abundances differ.

Haddow, Scott (Cranfield University), Joshua Sadvari (The Ohio State University), Christopher Knüsel (PACEA, Université Bordeaux 1, France) and Rémi Hadad (Université Paris-Ouest Nanterre La Défense, France)**[28] Past Practices and Current Interpretations: A Case Analysis of Commingled Skeletal Remains at Neolithic Çatalhöyük**

To date, bioarchaeological analyses of commingled skeletal remains have been less of a focus than studies of single primary inhumations. Commingled assemblages are traditionally viewed as being constructed through the occurrence of successive burial events or as a result of catastrophic episodes leading to multiple, simultaneous burials. These scenarios contribute to high levels of disarticulation, mixing, and fragmentation, and commingled assemblages are often considered to be of less utility for addressing population-level research questions than more well-preserved, articulated skeletal remains. In this paper, we use three-dimensional modeling techniques to document, analyze, and present two examples of commingled assemblages excavated in Building 52 at the Neolithic site of Çatalhöyük (9400-8000 y.B.P.). We highlight variation in mortuary practices within adjacent burial platforms that has resulted in the creation of two very different commingled assemblages, one characterized by successive interments and the other by a single-event collective burial. Such variation reflects the deliberateness with which certain acts of commingling occurred and thus the past intent associated with the construction of particular burial assemblages. The burial events and sequences presented here are interpreted within the framework of building closure and abandonment, tying mortuary behaviors into other household and

community-level social practices at Neolithic Çatalhöyük.

Hadel, Patrick, Dr. Yadmaa Tserendagva (Mongolian Institute of Archaeology.) and Dalantai Sereuya (Mongolian Institute of Archaeology)

[92] Investigations at Burgas Ni Am Buddhist monastery in the Northern Gobi, Mongolia

The ruins of the Buddhist Monastery at Burgas Ni Am are located in Ikh Nart Nature Reserve in the desert steppe region of the Mongolian Gobi Desert. No information was available regarding how the monastery was destroyed or if it naturally deteriorated over time. A systematic test excavation was conducted during the 2013 summer field season. The goal of these test excavations was to ascertain if there is any subsurface physical evidence such as fire affected stone, charcoal, or ash in and around the structure to indicate how the monastery came to be in the ruined state it is today. The excavations were modeled on a Cultural Resource Management (CRM) industry design in order to maximize the data collection potential of a small team of people with limited time and limited resources. This goal was attained based on materials recovered from Shovel Test Pits, Surface Scraps, and Controlled Excavation Units. The evidence supports the hypothesis that the monastery succumbed to the purges carried out against Buddhism and against Buddhist religious centers and their attendant monks in the early 20th century (1900-1939) by the burgeoning Communist Regime.

Hadel, Patrick [211] see Schneider, Joan

Hadlett, Tracy (University of Arkansas)

[263] Use-Wear Analysis of Bone Awls from the Ozark Plateaus

This poster will present the results of a micro-wear study of bone and awls from various Archaic and Woodland period bluff shelter sites located in the Ozark Plateaus in Arkansas. The goal of this research is to understand the possible variation in the use of bone awls in relation to the types of basketry found in context at the sites. The use-wear will be compared and analyzed using GIS software to enhance image quality and to measure the periodicity of the striations. This research will look into how the size and shape of the awl is related to the intended use of the tool in a specific type of basketry production.

Haggard, Alyssa (Humboldt State University), Marisol Cortes-Rincon (Humboldt State University), Robert Gustas (University of Alberta), Kyle Ports (Texas Tech University) and Matthew Price (Humboldt State University)

[322] 3D Virtual Curation of Archaeological Artifacts

This paper will discuss the transitional process from physical collections to a virtual 3D environment. 3D imaging is an innovative technology that enables users to preserve cultural remains to a virtual database which provide researchers remote access to collections not readily available. Due to the fragile nature of collections, the costs associated with housing assemblages, and international importing/exporting fees; a virtual database could be an invaluable asset to smaller institutions. Inadequate curation facilities can inadvertently cause damage to artifacts. The 3D models of archaeological remains can be utilized as teaching collections without damaging the "real" artifacts by constant handling. For the scope of this research two collections were digitally rendered; a faunal assemblage from northern California and Maya cultural remains from northwestern Belize.

Haines, Helen [70] see Gonzalez, Toni

Haines, Helen (Trent University), Kerry Sagebiel (Northern Illinois University) and Cara Tremain (University of Calgary)

[302] "Footprints on the Sands of Time": Constructing a History for the Ancient Maya Site of Ka'Kabish, Belize.

Archaeological knowledge is recognized as being a cumulative process; a process that both expands as well as changes our understanding of the past as new information is uncovered. Individual histories of ancient settlements also are produced by, and subject to, this process, thereby resulting in an ever emergent and increasing understanding of past cities and their inhabitants. With the addition of new discoveries made during the 2012 and 2013 summer field seasons we now have a fuller understanding of the occupation history of Ka'Kabish, an ancient Maya city in north-central Belize. These discoveries enhance our understanding of the chronological depth of the site as well as increase our understanding of the types of inter-regional exchange networks in which the inhabitants participated. Using these new discoveries, this paper will present a revised history of Ka'Kabish and tentatively locate this history into

the broader political landscape.

Hale, John and Michael Coe (Department of Anthropology, Yale University)

[312] Mapping a Submerged Preclassic Maya Site in Lake Atitlán, Guatemala

Recent underwater discoveries in Lake Atitlán, Guatemala, provided the opportunity to map a Maya archaeological site in its entirety. Rising lake levels covered the Late Preclassic site of Samabaj centuries ago, submerging stone altars, stelae, platforms and jetties dating from about 400 B.C.E. to 300 CE. Sidescan sonar helped delineate the ancient shorelines, revealing Samabaj as one of three islands that originated as volcanic littoral cones. Geological features determined the Maya site plan on Samabaj. Tuff deposits supported platforms for elite residences; pyroclastic ridges outlined a ready-made ceremonial plaza. Visitors were routed from a monumental jetty on the southeastern shore, through natural corridors in a ridge, to a platform mound near the island's summit. Topographical connections to Maya creation myths may have enhanced Samabaj's importance. Over a period of several millennia, volcanic activity first formed three littoral cones on a lava delta. Then rising lake levels created a small archipelago, and finally an isolated sacred island that gradually disappeared beneath the lake surface altogether. Future geological and archaeological research should establish a precise time-line for these transformations, and help us understand more fully the origins, functions and cultural connections of this small but important Maya site.

[312] Chair

Haley, Bryan [30] see Johnson, Jay

Haley, Bryan

[252] Remote Sensing Investigations of Maya Plazas in Western Belize

Monumental architecture has traditionally dominated the research agendas at Maya centers. A less conspicuous, but no less important, architectural feature is the plaza and activities associated with these remain poorly understood. One method for better understanding these features is remote sensing techniques such as magnetic gradiometer, electrical resistivity, conductivity, magnetic susceptibility, and ground penetrating radar (GPR). To evaluate these techniques, plazas were surveyed at five sites in western Belize: Cahal Pech, Xunantunich, Buenavista del Cayo, Pook's Hill, and Plazuela Xubzulima. Geophysical results hint at features such as buried platforms and market areas. Results from plazas at monumental sites in other regions, including the southeastern United States, serve as an interesting comparison for those surveys.

Hall, Derek [201] see Malloy, Kevin

Hall, John (Statistical Research Inc.)

[210] Extramural Pit Classification: Form, Function, and Archaic period Land-use in the Western Phoenix Basin

Large-scale excavation of a 44-acre area within a larger site in the western Phoenix Basin of southern Arizona revealed close to 2,800 pit features. Observations of the size, shape, and thermal alteration of a sample ($n=1,379$) of these pits allowed the authors to perform statistical examinations of pit spatial geometry in order to group similar pits, and to separate dissimilar pits. The results of these groupings were the establishment of 16 mutually exclusive categories of pit size, shape, and thermal involvement. These categories established a framework to examine pit function based on content and use. The results of this analysis show meaningful trends of spatial distribution across the excavated portion of the site, as well as chronologic groups within a larger cultural context. The examination of these extramural pit features provides insight into Archaic land-use and subsistence patterns, which are intimately tied to this lower-bajada landscape.

[210] Chair

Hall, Katherine (University of Puget Sound), Anna Antoniou (University of Michigan), Haeden Stewart (University of Chicago), Jess Beck (University of Michigan) and Jason De León (University of Michigan)

[230] Exploring the taphonomic processes that impact the remains of undocumented border crossers in the Sonoran Desert of Arizona

Between 2000 and 2012, an average of 200 deceased border crossers per year have been recovered

along the Arizona and Mexico border. Despite this high volume of deaths, little is known about how bodies decompose in this environment or how animals impact corpses. Researchers with the Undocumented Migration Project have been conducting taphonomic experiments to better understand the rate of decomposition and the impact of scavengers in this environment. Using pig carcasses as proxies for human remains, we dressed these animals in clothes similar to those worn by migrants, placed personal effects in their pockets, and positioned them in contexts which replicate common features of migrant death sites (e.g., direct sunlight, shade). The decomposition process was documented through site visits, motion-sensitive cameras and GIS mapping, while skeletal preservation was investigated through faunal analysis following periods of animal scavenging. In this poster we present two seasons of taphonomic data and argue that scavengers can skeletonize and disarticulate skeletons faster than previous estimated. Moreover, the rapid destruction of bodies by environmental conditions, animals, and insects suggests that the current fatality count for the region grossly underestimates the actual number of people who have died while trying to cross the border.

Hall, Terrance and Ryan Collins (Brandeis University)**[326] Creating a Space for Public Archaeology: Spatiality in Yaxuna Urban Centers**

As anthropologists, research often takes us to public places, but rarely does gained information leave our esoteric circles. The issue is not from a lack of public interest, but from a lack of understanding of the actual research, rather than its representations in the popular media. One method to promote public understanding in archaeology is through relating it to already familiar concepts and ideas. It is important to contextualize our research in the present rather than maintaining our binds to the past. One way such a goal may be achieved is through the explication of a strange concept, like an urban center, and making it familiar in the past and present. In this paper we focus on the modern Maya urban center of Yaxunah and its ancient counterpart. Despite several name changes in nearly 3000 years of occupation, the modern community, 'founded' in the 20th century, continues to undergo great change. Yet the town center, composed of administrative and religious centers, a mercantile district, and prominent family housing signifies a relationship to the past and a direction of present identity. The specifics allow this place to remain unique, but the urban center in this form is nearly ubiquitous.

Haller, Mikael (St. FX University)**[335] Archaeological Interpretation and the Use of Different Scales of Analysis from the Rio Parita Valley, Panama**

A multi-scalar approach has played an important role in examining the archaeological record. By using different scales of analysis, archaeologists hope to obtain a more holistic and less-biased view of the past; in reality, however, it is difficult to achieve this goal. How can we best integrate different scales of analysis and be sure that the variation we see in archaeological patterning is not just the result of the different methodologies employed? To examine this concern, this paper focuses on a multi-scalar approach to investigating the rise of social complexity in the Rio Parita Valley, Panama. Specifically, I examine how interpretations from the systematic regional survey articulate with surface and sub-surface testing at the site of He-2. A comparison of archaeological interpretations from several different scales of analysis will be used to examine how different methodological approaches have influenced reconstructions of the past, and to offer suggestions for improvement.

Halligan, Jessi (University of Wisconsin La Crosse)**[114] Geoarchaeological Interpretations of Reported pre-Clovis Components in the Aucilla River, Florida**

For nearly a century, collectors, archaeologists, and paleontologists have been recovering remnants of the terminal Pleistocene from the Aucilla River of northwestern Florida. Archaeological evidence has consisted largely of surface finds of diagnostic Paleoindian bifaces and osseous artifacts manufactured from extinct mammals, but formal excavations have revealed some artifacts buried in dateable sediments in potentially-intact contexts on sinkhole margins as well. Excavators reported a pre-Clovis component at Page-Ladson (8JE591), consisting of a handful of lithic artifacts and worked osseous material. A potential pre-Clovis component was also recorded at another submerged sinkhole site in the river channel, Sloth Hole (8JE121). Recent archaeological and geoarchaeological investigations at these and another sinkhole site, Wayne's Sink (8JE1508/8TA280) and the terrestrial areas adjacent to the three sites provide contextual interpretations of these components. Stratigraphic correlations between these sites inform upon paleoenvironments and site formation processes during the terminal Pleistocene and indicate the preservation potential for possible pre-Clovis components in the Aucilla Basin.

Hallin, Kristen [127] see Schoeninger, Margaret

Halling, Christine [12] see Nelson, Elizabeth

Halling, Christine (University of Indianapolis) and Elizabeth Nelson (University of North Texas Health Science Center)

[12] Bone Resorption of the Distal Radius and Ulna: a Case Study from the Ray Site

The Ray site, a Middle Woodland cemetery located on a tributary of the Illinois River can be considered anomalous for a number of reasons. Primary among these is the absence of earthworks, as well as the presence of a remarkable range of anomalies and pathological conditions. Among the latter is a previously unreported resorptive syndrome located in the distal portion of the forearm. Extensive remodeling of the ulnar head along with focal resorption in the radius generally characterizes the pathology, which is detailed here and analyzed through an extensive differential diagnosis. Behavioral accommodations are considered, along with the relationship of this condition to others noted at the Ray site.

Hally, David [276] see Smith, Marvin

Halperin, Christina (Princeton University)

[110] Vernacular and Monumental Maya Architecture: Discourses and Changes during the Classic to Postclassic (ca. A.D. 800-1200) Transition

It is commonplace for archaeologists to note the similarities between modern and ancient commoner domestic architecture from Mesoamerica. Such comparisons often imply a relatively static perspective of vernacular architecture, which contrasts with a dynamic development of monumental and elite architecture over the course of Pre-Columbian history. Nevertheless, domestic architectural forms and the social, political, and economic lives of those who inhabited such structures were far from static. This paper examines the introduction of new vernacular architectural styles during the Classic-to-Postclassic-period transition in the Maya Lowlands and explores how ordinary people participated in a changing social, demographic, and political atmosphere amidst the collapse of royal dynasties across the region.

[110] Chair

Halperin, Christina [147] see Smith, Erika

Hamilton, Derek [13] see Krus, Anthony

Hamilton, Marcus (Santa Fe Institute)

[16] The Ecology of Hunter-Gatherer Residential Mobility

Hunter-gatherer residential mobility varies along a spectrum from nomadic groups that move camp every few days and travel hundreds of kilometers a year, to those that reside in semi-permanent villages and are functionally sedentary. The factors that underlie this variation have long been of interest to anthropologists studying the behavioral ecology of foragers. Because hunter-gatherers harvest all resources they require for maintaining life, health, and well-being from wild plants and animals much of their basic ecology is fundamentally tied to the flows of energy and resources within the ecosystems in which they operate. Here, I show empirically, that variation in hunter-gatherer mobility is well-explained by a simple macroecological model of ecological production. To minimize the energy and time costs of mobility hunter-gatherer groups minimize travel distances between patches conditional on water availability. In warm wet ecosystems foragers travel the shortest distances and utilize the smallest patches. As ecosystems become cooler and drier travel distances and patch sizes increase exponentially at a rate predicted by theory. These results demonstrate that residential mobility is an adaptive behavioral response to the ecological and demographic environment, well-predicted by established ecological theory.

Hamilton, W. (Scottish Universities Environmental Research Centre), Kerry Sayle (Scottish Universities Environmental Research Centre), Philippa Ascough (Scottish Universities Environmental Research Centre) and Gordon Cook (Scottish Universities Environmental Research Centre)

[89] Stable Isotopes ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, and $\delta^{34}\text{S}$), Radiocarbon Dating, and the Chronology of Early Norse Settlers around Lake Myvatn, North-East Iceland

Radiocarbon (^{14}C) forms the basis of the majority of archaeological chronologies developed from scientific dates, owing to the relative abundance of organic materials available for dating from most archaeological periods in the Holocene. While calibrated radiocarbon ages produce accurate estimates for the date of death for an organism that derives its carbon from terrestrial sources (i.e. charcoal, herbivores, etc.), the same is not true for organisms that derived some or all of their carbon from marine and freshwater sources. This paper explores using a multi-stable isotope approach to model marine and freshwater reservoir effects on human skeletal remains within a Bayesian statistical framework. We apply this to a dataset of 46 human skeletons excavated from an early Norse cemetery at Hofstadir, Lake Myvatn, north-east Iceland, in an effort to produce a more robust, accurate, and precise chronology for these earliest European settlers.

Hammerl, Emily [79] see Wandsnider, LuAnn

Hammerstedt, Scott (University of Oklahoma), Patrick Livingood (University of Oklahoma), Jami Lockhart (Arkansas Archaeological Survey), Amanda Regnier (University of Oklahoma) and George Sabo (Arkansas Archaeological Survey)

[327] Initial Archaeological and Geophysical Results of the Spiro Landscape Archaeological Project
The Spiro mounds site in eastern Oklahoma, prominent from ca. A.D. 1200-1400, is best known for the remarkable objects and ritual tableau found within the Great Mortuary that have enhanced the study of Mississippian iconography and exchange. However, with few exceptions, research has focused on mounds and mound deposits. The Spiro Landscape Archaeological Project, begun in 2011, combines geophysics and targeted excavations to better understand both off-mound areas and the surrounding landscape. This paper presents the results of four weeks of geophysical survey and provides a preliminary report on recent excavations of geophysical anomalies along the lower terrace portion of the site.

Hammond, Norman (Department of Archaeology, Boston University)

[292] Middle Preclassic Maya Economy at Cuello, Belize

A range of recovery methods including flotation, and analyses including macro- and micro-botanical identification of plants and stable-isotope assays of human and food-animal bones, have allowed reconstruction of local ecology and subsistence economy for the Middle Preclassic (1200-400 B.C.) Maya community at Cuello in northern Belize. Maize, root crops, and harvested tree products were complemented by domestic dogs and hunted deer and other forest species.

[61] Discussant

Hammond, Krystal (University of Nevada, Las Vegas), John Crandall (University of Nevada, Las Vegas) and Debra Martin (University of Nevada, Las Vegas)

[64] Networked Neighbors or Competing Villages? Using Bioarchaeological Data to Test Models of Regional Community Organization in the Ancient Southwest

Scholarly debates concerning hierarchical structure in ancient Southwest communities have proliferated in the literature since the late 1970s. Drawing from numerous data sets, researchers have postulated a range of competing models for Pueblo community organization. Recent works that integrate Hopi oral history and ethnographic analogy suggest convincingly that villages may not have clustered together as a homogenous community. Instead, a number of migrating clans interacting as autonomous smaller communities challenge the notion that pueblo clusters represent a distinct social grouping. Models of community organization suppose that hierarchy limits access to food resources and prestige. While supported by a variety of data, these models rarely integrate human skeletal remains. Information regarding community health and nutrition, which could be used to test hypotheses about the degree of food sharing and egalitarianism, has been overlooked. Building upon over 20 years of bioarchaeological research on Black Mesa, we present evidence of widespread nutritional stress and disease. Mortuary data, alongside osteological stress profiles that document homogeneity in hardship among and between communities, support models of egalitarian organization. These data suggest widespread inter-village food sharing. Such cooperation suggests that the ancestral Hopi of Black Mesa probably espoused a sense of regional community.

Hammond, Gail (University College London / Maya Research Program), Thomas Guderjan

(University of Texas at Tyler / Maya Research Program), Samantha Krause (Four Corner Research / NMSU Alamogordo / Maya Rese) and Marc Wolf (City University of New York / Maya Research Program)

[137] *Continuing Research at the Edge of the Alacranes Bajo, An Ancient Maya Landscape in Northwestern Belize.*

We present continuing results of interdisciplinary efforts in determining the use and management of ancient Maya rural landscapes in northwestern Belize. Through our comprehensive data set combining archaeology, GIS, land survey and soil science, we provide a singular insight into the strategies used by the people that inhabited the sites of Nojol Nah and Tulix Mul on the periphery of the Maya world. Georeferenced maps - the results of intensive pedestrian survey - have been combined with a NASA digital elevation model as well as hydrological and soil data into a regional geodatabase, which includes the results of ongoing test units, and larger excavations. This poster focuses on work carried out between 2010 and 2013.

Handsman, Russell [152] see Kasper, Kimberly

Hanks, Bryan (University of Pittsburgh, Department of Anthropology)

[15] *Social Processes and Frontier Dynamics in the Late Prehistoric Eurasian Steppes*

This presentation explores the utility of a model proposed by Green and Costion for comparative studies of inter-group interaction and dynamism. A diachronic case study will be discussed that focuses on Bronze and Iron Age developments (~1500-500 B.C.E.) in the north central Eurasian forest-steppe region (Southern Ural Mountains, Russian Federation) at the interface of the steppe and forest environmental zones. The Eurasian steppe region has been frequently discussed by scholars in terms of large scale interaction and integration in which World Systems Theory and core-periphery models have dominated. A detailed discussion of settlement evidence and ritual landscape appropriation are used in this presentation to examine cultural and social interaction and change in the context of models that stress increasing levels of migration and seasonal mobility by the first millennium B.C.E. New interdisciplinary field research from the Southern Urals region, including large scale pedestrian survey, environmental reconstruction, geophysical and geochemical surveys, and targeted excavation, are presented.

Hanna, Jonathan [292] see Walling, Stanley

Hans-Christoph, Strien [201] see Gronenborn, Detlef

Hanselmann, Frederick, Christopher Horrell (Federal Preservation Officer, Bureau of Safety and), Amy Borgens (State Marine Archaeologist, Texas Historical Commission) and Michael Brennan (Graduate School of Oceanography, University of Rhode Island)

[307] *The Monterrey Shipwreck Project: Overview and Context*

Lying at a depth of 4,300 feet off the coast of Texas in the Gulf of Mexico are the remains of three early 19th century shipwrecks, laden with a wide array of artifacts, from arms to tanned hides. Following discovery in 2011 and documentation in 2012, a privately-funded collaboration of federal, state, and academic institutions carried out a detailed mapping effort of the first shipwreck, Monterrey A, and recovered potentially diagnostic artifacts in 2013. This fieldwork also provided the opportunity to document two nearby shipwrecks never before investigated. The research took a multidisciplinary approach to answering questions about not only the shipwrecks themselves, but also a broader context of maritime activity in the Gulf region during a time of economic expansion and political transition, as well as site formation in the deep ocean environment. Additionally, the project incorporated a large public outreach component that allowed live participation throughout the fieldwork.

[307] *Chair*

Hanselmann, Frederick [307] see Borgens, Amy

Hansen, Richard [61] see Balcarcel, AnaBeatriz

Hansen, Richard

[288] *The Feast before Famine and Fighting: The Origins and Consequences of Social Complexity in the Mirador Basin, Guatemala*

Archaeological investigations in northern Guatemala have provided a strong record of the origins, dynamics, and collapse of social, political and economic complexity in the Preclassic periods of Maya civilization. Extensive isotope, pollen, and phytolith analyses have indicated that the economic engine of the marsh region of the Mirador Basin gave rise to cultural sophistication through abundant raw resources and agricultural exploitation. Sophisticated terrace systems provided rich agricultural resources that allowed population growth, ideological solidarity, and economic prosperity which fueled a rapid and dynamic cultural fluorescence during the Middle and Late Preclassic periods of Maya civilization (ca. 1000 B.C.-A.D. 150). This trajectory however, led to a conspicuous consumption of resources and blinded the societies to the abuses of labor, environment, and productivity by an increasingly top-heavy bureaucracy and elite. Stresses on societies apparently included, and were exacerbated by, excessive erosion, droughts and periods of dessication, and social upheavals which led to a posture of militaristic behavior indicative of predatory, symptomatic conflict.

Hansen, Gitte (University Museum of Bergen, Norway) and Øystein James Jansen (University Museum of Bergen, Geology, University o)

[325] Soapstone Vessels in Viking Age and Early Medieval Norway: Producers and Consumers
Soapstone was an important outfield resource in Viking Age and medieval Norway. Some 200 quarries are surveyed, and 50 of these are found in the Hordaland region on the southwest-coast of the country. Vessels of soapstone were made both for local use and for wider distribution into the Norse area. How were the production and consumption of these goods organized? Did many small quarries deliver vessels to a wide range of consumers or did a few large quarries have a 'monopoly' on such services? How did one acquire a stone vessel? Did one cut it from one's own local quarry, or did one buy it as a commodity on a market? Did this change over time? In this inter-disciplinary study, 149 stone vessels from urban and rural households in 12th century Bergen and Viking Age Hordaland, and their connection to 39 quarries in Hordaland have been studied. The vessels have been provenanced to known and unknown quarries through analyses of geochemical and archaeological data. The paper presents new understandings of how soapstone products moved from the hands of small and large scale producers to urban and rural consumers through local as well as superregional relations and networks.

Hanson, Katharyn (Iraqi Institute for the Conservation of Antiquities and Heritage, Erbil, Iraq), Brian Lione (Iraqi Institute for the Conservation of Antiquitie) and Jessica Johnson (Iraqi Institute for the Conservation of Antiquities)

[215] Archaeological Site Preservation Instruction: The Iraqi Institute for the Conservation of Antiquities and Heritage, University of Delaware

In the recent past archaeological sites in Iraq have suffered dramatic damage. This paper describes training efforts to prevent future damage and maintain archaeological sites through the new Archaeological Site Preservation Course (ASP) at the Iraqi Institute for the Conservation of Antiquities and Heritage in Erbil, Iraq. Through the University of Delaware's Academic Programs at the Iraqi Institute employees of the Iraqi State Board of Antiquities and Heritage and the Kurdistan Regional Government have participated in the course. The ASP focuses on strategies for identification, evaluation, prioritization, and stabilization of archaeological sites.

This paper details the success of the ASP's two training courses and the future developments for the Archaeology Preservation Program. In the first two courses students learned the basics of Geographic Information Systems (GIS), remote sensing techniques, archaeological survey skills, ground-truthing, fieldwork, approaches to mitigation, threat identification skills, measurement techniques, presentation skills, site stabilization strategies, and collaboration with various stakeholders in the process. These elements of the ASP were taught with classroom, computer lab, and field components. As the Iraqi Institute further develops its ASP syllabus we look forward to working with colleagues from the SAA.

Hanson, Ian [283] see Evis, Laura

Haour, Anne [108] see Wynne-Jones, Stephanie

Hard, Robert (University of Texas at San Antonio), A. C. MacWilliams (University of Calgary) and John

R. Roney (Colinas Cultural Resource Consulting)**[47] Settlement Structure in Central and Southern Chihuahua**

The absence of a sizable, distinctive Precolonial society in central or southern Chihuahua has long been recognized. Based on several field seasons of reconnaissance, systematic survey and limited excavations, it is evident that the area was populated by generally dispersed groups of people, with instances of aggregation being limited in frequency and scale. Assemblages from sites throughout many parts of the region indicate prevalent localized resource selection. On tentative evidence, there are several highly localized ceramic traditions, though all are dominated by the use of plainware and less than ten percent decorated pottery. Even the largest known sites are lacking evidence for large populations.

Within central and southern Chihuahua along the foothills and in the Sierra Madre Occidental, rainfed farming is viable. With a major constraint on available farming locations eased, variable or low agricultural productivity prevailed, along with the use of many wild food resources while settlements were dominated by dispersed rancherfas.

Hard, Robert J. [103] see Jones, Ashley

Harding, Gregg (Florida Public Archaeology Network) and Jess Hendrix (Florida Public Archaeology Network)**[228] Heritage Education within High School: A Public Archaeology Case Study of the Scott Site**

In the fall of 2012 the Florida Public Archaeology Network (FPAN) Northwest Region continued a long-term public archaeology program in partnership with students from Milton High School's Anthropology/Archaeology class. Once a week students meet with graduate students from the University of West Florida at the Scott Site, an early to mid-19th century brick-making operation located in northwest Florida. At the Scott Site, high school students participate in hands-on archaeological methods and act as contributors to on-going anthropological research. Through field surveys and excavations, the use of remote sensing technologies, and the practice of site interpretation, students from Milton High School have been able to grasp an early understanding of site stewardship and the importance in preserving their local history. This paper highlights the successes and challenges of creating and maintaining a hands-on public archaeology program within a high school setting.

Hardy, Meredith (National Park Service)**[96] New Directions in Archaeological and Cultural Heritage Education**

The Public Education Committee serves as a nexus for heritage education and communication between federal, state, and local agencies, academia, and the private sector. With the explosion of the internet and online information in the 1990s and beyond, the public has become savvy when searching for basic or introductory information about archaeological and cultural heritage, but in many cases this information comes across as passive, trite, and dated. How do you reach an audience that is accustomed to instant access to information in a format that catches their attention and drives home a message? This paper presents some of the ways the National Park Service, through the national Heritage Initiatives, educates and engages the public with the places that comprise our shared and diverse cultural and historical heritage, and the value of their protection and preservation.

Hardy, Thomas (University of Pennsylvania)**[231] Wari Colonialism in Middle Horizon Peru: Preliminary Results from the Site of Minaspata, Lucre, Cuzco**

The Wari state (AD 600-1000) expanded from its heartland in the central Andes throughout various parts of highland and coastal Peru, installing invasive colonies, reorganizing settlement patterns in some areas, and disseminating a distinctive material culture over wide swaths of the Andes. Recent research has pointed out that Wari colonization is much more intensive in some areas than others, and that evidence of more complex interactions can be seen in many regions. Some scholars have begun to recognize the importance of shifting our attention to local contexts and settlements where the colonial encounter took place, linking this shift to broader theoretical approaches focusing on local agency and cultural hybridity. Toward this end, research was conducted at the site of Minaspata, a 35-ha, multi-component site located in the Cuzco Valley near the Wari site of Pikillacta, with the goal of investigating the social and cultural transformations which occurred as a result of Wari colonial practices. Minaspata was a local site occupied continually from the Early Horizon (B.C. 800 – AD 1) to the Late Horizon (AD 1476-1531). Preliminary results from the 2013 field season at Minaspata are presented here.

Hare, Timothy (IRAPP, Morehead State University), Marilyn Masson (SUNY, University at Albany) and Bradley Russell (College of St. Rose)

[337] *The Mayapan LiDAR Mapping Project*

A 2013 survey of a 40 square kilometer area surrounding Mayapan, Yucatan, Mexico used high resolution LiDAR data to map prehispanic architecture and related natural features. Most of the area is covered by low canopy dense forest vegetation over karstic hilly terrain that impedes full coverage archaeological survey. We used LiDAR at forty laser points per square meter to generate a bare earth digital elevation model (DEM). Results were evaluated with comparisons to previously mapped areas and with traditional archaeological survey methods for 38 settlement clusters outside of the city wall. Ground checking employed full coverage survey of selected 500 m grid squares, as well as documentation of the chronology and detail of new public and domestic settlement features and cenotes. Results identify the full extent of continued, contemporary Postclassic settlement (A.D. 1150-1450) outside of the city wall to at least 500 meters to the east, north, and west. New data also reveal an extensive modified landscape of terraformed residential altillos, rejolladas, and dense settlement dating from Preclassic through Classic periods. The LiDAR data also allow for the identification of rooms, benches, and stone property walls and lanes within the city.

Hargrave, Michael (ERDC CERL), R. Berle Clay (Southern Illinois University-Carbondale), Rinita Dalan (Minnesota State University Moorhead) and Diana Greenlee (Poverty Point State Historic Site)

[263] *Posts at Poverty Point: A View from Haag's Rise*

The discovery of numerous post circles in magnetic surveys at Poverty Point has led us to take a closer look at the possible significance of the site's other, seemingly unpatterned (non-circle) posts, particularly those located at "Haag's Rise". That landform is located where the central aisle enters the plaza, opposite Mound A. Haag's excavations in the 1970s encountered 47 massive postholes that did not form recognizable patterns and contained few artifacts or soil stains. The density of features in his two excavation units, if extrapolated, suggests that several thousand massive postholes could be present at and near the rise. That projection is not supported by the modest number of magnetic anomalies consistent with non-circle posts, but Haag's excavation results may have helped us identify a bias in the survey. The posts at Haag's Rise may be significant in several ways. If numerous, they would represent a substantial expenditure of energy and perhaps an ongoing requirement for organized communal labor. Posts could have provided a versatile, visually compelling means of marking astronomical or other alignments as well as important locations within the site. Post circles and non-circle posts may well represent an important, previously underappreciated component of the Poverty Point landscape.

Hargrave, Eve, Julie Bukowski (Illinois State Archaeological Survey/Prairie Research) and Lenna Nash (Illinois State Archaeological Survey/Prairie Research)

[272] *Death and Sacrifice in the American Bottom*

Single burials and isolated human elements have been discovered in association with large post pits at several late prehistoric sites in the American Bottom region of Illinois, including the East Saint Louis Mound Center. The location, burial positioning, and sex of these individuals, and isolated elements suggest intentional deposition of human remains. Feature profiles illustrate that these burial events were associated with the removal and refilling of large marker posts. The use of posts to mark sacred space, and the association of ritual offerings and human sacrifice with sacred space, have been identified on a larger scale within Mound 72 at the American Bottom Mississippian mound center of Cahokia. These offertory burial events and evidence for human sacrifice are all associated with the early Mississippian Lohmann and Stirling phases (A.D. 1050-1200). This paper focuses on the unique relationship that exists between human sacrifice and the delineation of sacred space during a period of significant ideological and political change.

Harke, Ryan

[96] *Towards a Public Environmental Archaeology: History, Survey and Suggestion*

The Florida Public Archaeology Network (FPAN) is a state-wide archaeology organization established by the Florida Department of State, with goals to conduct outreach and education, assist local governments, and support the Division of Historical Resources. FPAN is a 9-year experiment in the programming of full-time public archaeologists, and thus, the accomplishments that such an organization could achieve. As a result of this multi-year experience, we suggest that long-term, effective public archaeology is more easily

achieved under models that employ full-time staff. Although the numerous workshops, trainings, and partnerships are immensely successful in supporting outreach goals, surveys of research in ecological archaeology and the success of environmental education reveal the untapped potential for collaboration between environmental science programmers and public archaeologists. This interdisciplinary effort is imperative to highlight the historical impacts of humans on the natural environment and how archaeology is useful in addressing modern environmental problems.

Harkness, Rebecca (Arizona State University)

- [43] *Track and Shield: Exploring the Connection between Racetracks and Shield Petroglyphs on Perry Mesa*

The late prehistoric (A.D. 1280-1425) occupation on Perry Mesa in central Arizona is uniquely characterized by an abundance of formal racetracks. Will Russell has argued that the racetracks hint at an overarching social network and were used as ritual venues. Rock art is also common on Perry Mesa, and diverse motifs have been systematically recorded over the past decade. A particular motif, the shield petroglyph, is the focus of this study. As part of the 2013 Legacies on the Landscape field season I undertook two spatial analyses of seventeen of these petroglyphs distributed among seven sites on Perry Mesa and Black Mesa in the Agua Fria National Monument. The purpose of this study is to determine whether a spatial correlation exists between shield-like petroglyphs and ritual racetrack sites which could indicate a ritual connection. Such a correlation exists among the pueblos of the Northern Rio Grande area, which is a possible destination for Perry Mesa migrants when they left central Arizona in the early-mid 1400s.

Harlan, Mark (Dos Locos Consultores, LLC)

- [179] *A Semiotic Approach to Variability in Formative Period Mesoamerican Anthropomorphic Figurines*
- Anthropomorphic figurines are commonly encountered in substantial numbers on Mesoamerican sites occupied throughout the Formative Period, a feature these sites have in common with pre-state villages around the world. Most past studies have either used traditional typological approaches to use the figurines for chronological control or perused the collections for interesting clues to the appearance or concerns of the prehistoric peoples who created them. Systematic typological analysis cross-cuts much of the variability while most studies searching for connections to past communities rely on impressionistic observations that focus attention on unusual aspects of figurine variability rather than regularities. This paper discusses an approach to figurine variability that relies on semiotics in an attempt to combine systematics with attention those aspects of variability most likely to illuminate past lives.

Harlow, Jeanette (California State University, Long Beach), Elizabeth Niespolo (California State University, Long Beach), Sachiko Sakai (California State University, Long Beach) and Carl Lipo (California State University, Long Beach)

- [11] *Thermal Properties and Functional Advantages of Olivine-Tempered Moapa Ware: a Comparative Study*

Moapa Gray Ware, a unique olivine-tempered pottery type seen widely in the Anasazi region, derives from Mt. Trumbull on the Uinkaret Plateau and is frequently found in surrounding areas. This project explores why Moapa Ware could be considered functionally advantageous over other cookware types that would have been more easily obtained by people not directly local to Mt. Trumbull. Thermal gravimetric analysis (TGA) and differential scanning calorimetry (DSC) compares thermal characteristics between the olivine-tempered Moapa Ware, Moapa Ware grog-tempered Shivwits Ware, and a generic sand-tempered ware. All were analyzed using X-Ray Diffraction, confirming temper mineralogy and eliminating the possible ceramic clay sourcing as a distinguishing manufacturing characteristic. Samples tested with TGA from each ware type show minimum firing temperatures of above 950°C, indicating no pyrotechnical distinguishability of Moapa Ware from other ware types. Preliminary DSC results demonstrate potential functional differences between ware types based on their respective heat capacities. All ware types demonstrate peak exothermic reactions at approximately 500°C. Sand-tempered samples and Shivwits Ware samples do not sustain exothermic reactions beyond 590°C, indicating inefficient high-temperature heating. Moapa Ware samples show the highest exothermic reaction range of up to 648°C, indicating a possible high-heating functional capability of this ware type.

Harlow, Jeanette [315] see McElhoes, Jennifer

Harmand, Sonia [255] see Lewis, Jason

Harmansah, Ömür [41] see Johnson, Peri

Harmansah, Ömur (University of Texas at Austin and Brown University)

[124] *Place, Politics, and Local Knowledge: Methodological Lessons from Yalburt Landscape Survey*
Yalburt Yaylasi Archaeological Landscape Research Project is a diachronic regional survey, investigating a small but coherent region in central western Turkey. Since its first season in 2010, yearly field operations have combined archaeological survey, geomorphological research, and informal ethnographic interviews to understand the long term history of settlement in this little explored karstic landscape of highland pastures, river valleys, and lowland plains around the modern town Ilg1n, west of Konya province. The core research objective of the project is to understand the tense interaction between local cultures and imperial powers at the time of the Hittite Empire (Late Bronze Age, 15-12th c. B.C.E.) through the evidence of state interventions into the region, evidenced through programs of new settlement, agricultural rehabilitation, and irrigation. Methodologically, the project advocates an archaeology of place that does not isolate ancient (so-called authentic) landscapes from contemporary (supposedly degenerate) ones but emphasizes the connections, ruptures, and continuities between the ancient and modern landscapes. Using the results of the last four seasons of fieldwork, this paper will argue that place-based approaches in survey archaeology supported by geomorphological and ethnographic work are fundamental to understand long term practices of land use and the production of indigenous knowledge about landscapes.

Harmon, Brian

[344] *Don't Be Deceived by Small Pueblo Room Blocks*

Although small Coalition Period (A.D. 1200-1325) pueblo room blocks on New Mexico's Pajarito Plateau appear to be relatively uniform when discovered on survey, excavations conducted during Los Alamos National Laboratory's (LANL) Land Conveyance and Transfer (C&T) Project suggest that surface appearances mask architectural variability representing different ceremonial and economic emphases. In this paper I explore evidence indicating that greater stress was placed on agricultural activities at sites without formal ceremonial structures than at sites with formal ceremonial structures. Analysis of four excavated C&T pueblos demonstrates that larger habitation and storage rooms coupled with a greater ubiquity of maize kernels characterize non-kiva sites whereas sites with kivas contain smaller rooms and less maize. To discover if there is additional evidence of this architectural-agricultural correlation I compare the groundstone assemblage size, groundstone assemblage content, and maize pollen ubiquity of these four sites. Finally, I examine room size, kiva presence, maize ubiquity, and groundstone assemblage data from other small, excavated Coalition Period Plateau room blocks to determine if the identified pattern is observed in a larger sample.

[344] *Chair*

Harper, Charlie (Florida State University)

[300] *Working for the Man: Constructing the Cyclopean Tomb and the Treasury of Atreus at Mycenae, Greece*

The evolution of state power at Mycenae, Greece, in the Late Bronze Age has often been discussed through the lens of monumental architecture. Particularly, the development of the distinctive stone "beehive" tombs or tholoi from the Late Helladic II (LHII) to Late Helladic III (LHIII) is viewed as mirroring the growth of the state over that period. Recently, an architectural energetics approach has been used to bolster this idea by illustrating the increasing labor-cost of tholos construction over time. This study approaches the problem of tholos construction in more detail by specifically comparing one of the latest tholoi, the Treasury of Atreus, to one of the earliest, the Cyclopean Tomb. Using three-dimensional CAD models, I highlight the disparate building techniques used in these tholos tombs, I present detailed breakdowns of labor-costs, and I simulate how the construction of each tholos would have been organized in time and space. The results of this analysis suggest that the transformation in tholoi at Mycenae between LHII and LHIII was not simply the result of increasing labor investment, but that it also represents a deep-seated change in labor recruitment strategies, managerial abilities, and technical knowledge.

Harper, Christopher [334] see Landon, Amanda

Harrington, Lesley [53] see Losey, Robert

Harrington, Katherine (Brown University)

[332] *Privacy, Performance, and Production: Sensory Aspects of Domestic Production and Household Industry in Classical and Hellenistic Greece*

Evidence from ancient house plans and contemporary literature suggests that household privacy was a high priority in many ancient Greek cities. The apparent ideal of perfect household privacy was not attainable in practice, however, and various household activities were sure to draw the attention of the neighbors. Excavations of Greek houses indicate that many households were producing craft objects or processing agricultural surplus at a scale beyond that required for their own needs. Some craftspeople even engaged in pyrotechnologies at home within the city, including firing ceramics or smithing metals. This paper explores the tension between the desire for household privacy and the inevitable notice drawn by the sights, sounds, and odors of production in an urban environment in the cities of Athens, Olynthus, and Eleutherna. I argue that rather than being part of a “hidden” economy, Greek domestic production and household industry were more strongly integrated into the formal economy and the sensory aspects of such production were part of the experience of everyday life in the city. Household industry was still performative, even when conducted within the “privacy” of the home.

Harris, Arthur H. [14] see Vasquez, J. Javi

Harris, J. Chrys and Chris Gaffney (University of Bradford)

[157] *Assessing the Trapezoidal Array for Archaeological Earth Resistance Investigations*

Earth resistance is a well-established technique for archaeological prospection. Even though it has proven effective, earth-resistance surveys have a reputation for being slow and time consuming. Since rapid data collection is often an important factor for survey work, especially over large areas, earth resistance is reserved for targeted areas. Traditional electrode configurations, such as the twin-probe array, do have a slower rate of data collection compared to other prospection techniques. However, the adoption of non-linear electrode configurations, such as the square array, to mobile platforms has increased earth resistance's efficiency for large-scale survey work. Mobile platforms increase the rate of data collection and facilitate more flexible survey strategies. Still, the square array possesses certain properties, such as a limited depth of investigation and orientation dependences, which lessen its effectiveness for archaeological investigations. These drawbacks warrant further research into a more effective array. This paper explores the trapezoidal array. The results from a series of experiments assessing trapezoidal array properties, such as depth of investigation, apparent anisotropy, and resolution, show the trapezoidal array is an effective configuration for archaeological prospection, demonstrating its potential for further development and applications.

Harris, Khadene (Northwestern University) and Mark Hauser (Northwestern University)

[188] *Post Emancipation Shifts: Land, Labor, and Freedom on the Bois Cotlette Estate, Dominica after 1838*

This presentation focuses on the actions of the newly freed population on the Bois Cotelette Estate in Dominica in the aftermath of full legal emancipation in 1838. I explore the ways the actions of the formerly enslaved reflected specific ideas of freedom and the implications for the ways in which power was (re) defined in societies that no longer employed slave labor. In the years after slavery, land and the economic opportunities connected with landownership were important in individuals' decisions about where to go and what to do. Thus, the postemancipation period—like its antecedent—is extraordinarily significant in terms of understanding how various territories in the Caribbean were reconstituted in particular ways. In many ways the historiography of post emancipation societies has been uncritical of the concept of freedom in the post emancipation era. I attempt to show this by mapping house areas that were constructed on the Bois Cotlette Estate for the laboring class after slavery ended. I further highlight changes in the layout of these house areas as compared to the pre-emancipation period to show how the newly freed perceived and acted upon legal emancipation.

Harris, Kathryn (Washington State University), Stefani Crabtree (Washington State University) and William Andrefsky, Jr. (Washington State University)

[208] *The Multifunctional Lives of Points and Flakes: An Experimental Study*

The terms “projectile points” and “flakes” imply that these tools have only one function. On the contrary,

we argue that these are multipurpose tools. Specifically, we explore their efficiency as sawing implements. While we initially hypothesized that flakes would be less efficient than hafted bifaces, the results of this study show that retouched flakes are infinitely more efficient at sawing than hafted bifaces. Due to the efficiency of retouched flakes, and the fact that there is minimal investment to create them, retouched flake tools should always be preferred over hafted bifaces for the task of sawing. There is little likelihood that a prehistoric hunter-gatherer would choose to use a hafted biface as a saw when flakes are available. This study serves as a useful springboard for a better understanding of tool function, and more importantly, it demonstrates the significance of cognitive human design of lithic tools.

Harris, Megan

- [234] *Digging up the Junk in Grandpa's Basement: An Analysis of the Lithic Artifacts from the Lane Family Collection*

This poster presents an analysis of the Lane family collection donated to the Laboratory of Archaeology at the University of British Columbia in 2009. The Lane family collection has a diverse curated assemblage of lithic, bone, and other materials collected from a variety of locations but with its own system of organization and cataloging. The inherent system of organization and cataloging implies appreciation for provenience and respect for the artifacts themselves.

I discuss the distribution of lithic typologies and raw materials among the Lane family collection, and postulate techniques in identifying a general provenience for lithic materials. The identification of a general provenience allows the use of these specific artifacts from the Lane family collection, and potentially other artifacts from other donated collections, in either a teaching or research setting.

Harris, Susan and Lynn Fisher (University of Illinois, Springfield)

- [246] *The Southwest German Regional Archaeological Survey Project: Twenty Years of Research on the Federsee Lake*

The Southwest German Regional Archaeological Survey Project was initiated by Mike Jochim in 1992. It has focused on the archaeologically rich area surrounding the Federsee Bog and Lake as well as two smaller bogs to the south. The study area includes a transect centered on the Federsee Lake extending from the Danube River in the North to Lake Constance in the South. The project was designed to explore the landscape through first mapping the distribution of all previously known sites in the region, and then adding an extensive regional survey of plowed fields to record locations both with and without archaeological finds to create a broader and less biased database of site locations for the study area. The goals of this project were to explore regional landuse, test assumptions about the level to which Stone Age groups focused their activities on the Federsee and other bogs, and then look for changes in the landuse patterns during the course of the Stone Age. The data collected during the over 20 years since the project began provide the basis for some observations about the initial research questions as well as new questions about regional survey data and methods.

Harris, Lucille (Applied Archaeological Research, Inc.)

- [290] *An Entanglement of Boxes: Navigating the Web of Theory and Ethnography in Plateau Archaeology and Charting One Possible Course Out of the Interpretive "Box"*

This paper is premised on the belief that archaeological interpretation of Late Prehistoric Northern Plateau archaeology, particularly that of the Mid-Fraser region, has been constrained by both theoretical and ethnographic considerations. Importantly, however, I argue that theoretical perspectives that forefront nonegalitarian social and political organization have exerted an unprecedented influence on our uses of the ethnographies. Thus, while we need to escape the ethnographic box that we have constructed, we also need to step outside of the theoretical box that we used to build it. In this paper I will examine the relationship between archaeological theory and applications of ethnographic analogy that are at the base of archaeological interpretation of Mid-Fraser archaeology. Having deconstructed this relationship, I will provide an alternative theoretical perspective that focuses on the social construction of leadership and networks of social relationships in Plateau society that draws heavily, but less selectively, from a historically situated understanding of the regional ethnographies. In so doing, this paper will demonstrate one possible course out of "The Box".

Harrison, Ramona (City University of New York)

- [29] *Scales of Resilience and Exchange in Medieval Iceland: Sustainable Transition from Small Scale Subsistence Economy to Proto-World System Participation*

This paper presents a set of scenarios on long term human-ecodynamics from four different economically organized components of the Eyjafjörður region's cultural and environmental landscapes, all resulting

from transdisciplinary research efforts. The harbor and trade site complex at Gásir with its large medieval Merchant's Church and the monastic estate at Möðruvellir were part of the central areas. Möðruvellir, a large-scale landowner, under the Northern Bishopric at Hólar, undoubtedly influenced the movement of goods across the region, the exchange at Gásir, and the economic strategies of a large proportion of cottages and smaller scale farming operations in the Möðruvellir and Gásir Hinterlands. These hinterlands, and especially steep-sloped and narrow-spaced Hörgá Valley as closest supplier of animal products, provide archaeological and environmental data informative about this medieval economic system's transformation from local and regional to internationally oriented exchange. Siglunes, a fishery site in Siglufjörður, provides insight into early Icelandic fishing exchange. Siglunes very likely supplied the dried cod fish filets that were part of the bulk goods moved abroad via Gásir's harbor. The interplay of all these various components is used to demonstrate sustainable farming and fishing practices in this region from the time of Settlement to the High Middle Ages.

Harrison, Rebecca (The University of Sheffield)**[209] When and Why Did Handedness Evolve?**

It might be supposed that having two equally skilful hands would ensure maximum manipulative ability, however in humans complex manual tasks are performed more effectively when one hand is dominant. It is widely stated that 90% of all modern humans are right handed and that this correlates with asymmetries in the brain's language areas. There is evidence for right handedness throughout human evolution: in stone tool manufacture (1.4 to 1.9 million years ago); tool use (130 000 years ago); and Upper Paleolithic cave art (approximately 27 000 years ago). In contrast, evidence for handedness in nonhuman primates is ambiguous, and research carried out by the current author has not found convincing evidence that handedness exists, other than sporadically, in nonhuman apes. However there is evidence in nonhuman apes for asymmetries in the brain in areas which are homologues of the language areas in humans. A possible explanation for this which will be investigated here, is that this asymmetrical neural pattern performs functions relating to gestural communication in nonhuman apes, and that handedness evolved as spoken language gradually replaced gestural language. This would have both facilitated the transfer of information, and simultaneously left the hands free to perform manipulative duties.

Harrison-Buck, Eleanor (University of New Hampshire), Serita Frey (University of New Hampshire), Melissa Knorr (University of New Hampshire) and David Buck (Biodiversity Research Institute)**[330] Colonial Period Cultivation and Commodification of Cacao in the Maya Lowlands**

Currently, we know more about cacao consumption in Mesoamerica than its production. In colonial contexts, our understanding of Maya cacao cultivation, its "value," and commodification during the sixteenth and seventeenth centuries comes primarily from the Spanish ethnohistoric accounts. According to these accounts, Belize was one of several important cacao-producing areas at the time of contact. However, scholars have been largely unsuccessful in identifying the locations of cacao production in the archaeological record. Here we discuss our investigations in the middle Belize Valley where the Spanish recorded a series of contact period Maya settlements with sizeable cacao orchards that came under the control of the Spanish encomienda system during the colonial period. We present preliminary results of soil testing in Belize where we have been able to detect a cacao biomarker. We discuss this new technique, which may offer the first viable method for identifying historic (and possibly prehistoric) cacao orchards in the archaeological record. As a "frontier" zone, the middle Belize Valley engaged in both the European and Maya ("Black Market") economies and offers a unique context in which to review how these competing economies impacted the production and "value" of cacao during this transitional time in Maya history.

Harro, Douglas [289] see Arakawa, Fumiyasu

Harrod, Ryan (UAA)**[126] Embodiments of Conflict and Cooperation: A Biocultural Analysis of Violence and Social Inequality in the Ancient U.S. Southwest**

Archaeological reconstructions focused on the people living in the Southwest portion of the United States around the Chaco Canyon cultural area (A.D. 850-1250) reveal a complex and sophisticated world centered around practice and performance. The Ancestral Pueblo populations living in this region offer a unique case study for exploring the ways in which people interact with and are impacted by their landscape, architecture, and material culture. The primary goal of this presentation is to identify patterns

of nutrition, activity, health, and trauma found on the human skeletal remains in order to provide insight into the embodiment of sociopolitical and ideological structures that reinforced and promoted violence and social inequality. The project involves the analysis of over 200 complete and incomplete burials recovered from seven sites in and around Chaco Canyon using a biocultural approach that evaluates markers left on the bones within the environmental, cultural, and sociopolitical context. Findings suggest that there were institutions in place in the U.S. Southwest during this period that resulted in differential patterns of trauma, health, and labor.

Harry, Karen (University of Nevada-Las Vegas)

- [2] *Changing Subsistence and Interaction Patterns in the Mt. Dellenbaugh Region of the Shivwits Plateau, Northern Arizona*

The Mt. Dellenbaugh region of northern Arizona was first settled by Virgin Branch Puebloan farmers during the middle Pueblo II period (about A.D. 1050). Ceramic evidence suggests that these settlers came from diverse backgrounds and maintained ties with people in different regions. Settlement expanded during the next century before the area was abruptly abandoned during the early Pueblo III period. This paper traces the changes in subsistence and interaction patterns that occurred in the region during the century or ore of occupation, and considers the implications of these findings for understanding the final abandonment.

Hart, Thomas (University of Connecticut)

- [250] *Preliminary Analysis of Phytolith Production Patterns in Select Non-Grass Southwest Asian Plant Taxa*

Phytoliths are becoming an increasingly important tool in archaeological, forensic, paleontological, and nanotechnological research. Deborah Pearsall has been a pioneer in emphasizing the importance of understanding phytolith production patterns and in discovering phytolith types that can be used to reconstruct various aspects of human/plant interactions. In this project, I analyzed 354 samples from 181 select non-grass species commonly encountered in Southwest Asian archaeological soils. Southwest Asia has played a pivotal role throughout history and prehistory due in large part to its geographic location at the intersection of Asia, Africa, and Europe. To date, the majority of phytolith research in this region has focused on understanding production patterns in plants commonly consumed by humans. This project was focused on understanding phytolith production patterns in non-grass, predominately weedy taxa. The results of this study have added to the growing body of knowledge surrounding phytolith production in general and helped to clarify what species do and do not produce phytoliths in Southwest Asia.

- [39] *Moderator*

Hart, Sharlot (University of Arizona)

- [78] *Setting the Record Straight: Ethnography of Montezuma Castle and Tuzigoot National Monuments*

The Spanish explorer Espejo's 1583 trip through the Verde Valley of central Arizona may constitute the first written accounts regarding Native American use of resources at what is today Montezuma Well, a unit of Montezuma Castle National Monument in Yavapai County. Despite these and subsequent accounts, many cultural connections to archaeological sites throughout the valley have been ignored and forgotten by some. Indeed, the National Park Service (NPS) itself reported to Congress in 1915 that the local Yavapai people did not have any connections to the former inhabitants of the valley. Today's Montezuma Castle and Tuzigoot National Monuments are jointly managed, including the Montezuma Well Unit. Together they represent three points within the larger archaeological landscape with ties to many extant peoples. This research records, synthesizes, and promotes cultural resources and the connections which tribes still have with these NPS sites. Hopi, Yavapai, Apache, Zuni, and Southern Arizona tribes are represented. The data presented supports the NPS through historic preservation, interpretation, and management decisions involving these archaeological sites. Those decisions, when better informed by tribal input and increased awareness of ethnographic resources, in turn benefit culturally associated tribes.

Hart, Isaac (University of Utah), Andrea Brunelle (University of Utah RED Lab) and Stacy Morris (University of Utah RED Lab)

- [317] *Comparing Paleoecological Proxy Data to the Archaeological Record in Range Creek Canyon, Utah*

We are comparing climate and vegetation proxy data to archaeological data in Range Creek Canyon,

Utah. Data for pollen abundances, local fire histories, and sediment composition including stable isotope chemistry, were derived from several sediment cores and tree-ring samples within the canyon. These data provide a detailed prehistory of ecological conditions in the canyon before, during and after the expansion of Fremont-era archaeological sites here between roughly 800-1100 A.D. Using models from Behavioral Ecology and experimental data regarding energetic return rates for various taxa, we estimate the availability and productivity of key food resources and predict their inclusion or exclusion from the forager diet in the canyon, including the adoption or abandonment of maize agriculture.

Hart, Isaac [317] see Boomgarden, Shannon

Hartley, Charles [20] see Greene, Alan

Hartley, James

[206] *Environmental Causes of the Extinction of the Pleistocene Megafauna in the Desert Southwest*
The extinction of Pleistocene megafauna in North America is a source of heated debate. There are many theories to explain this event. The most widely accepted theories are overkill and climate change. Mastodons and other proboscideans are the most common megafauna at Pleistocene-aged North American sites and are thus most widely studied. This research covers environmental factors of the extinction. Climate change had the greater contribution, with overkill finishing the remaining populations. This poster discusses several megafauna sites and Clovis kill sites in the Desert Southwest (i.e., Sonoran and Chihuahuan Deserts), a region with abundant sites and megafauna diversity. Clovis-age sites include Murray Springs, Lehner, Naco, and M and M (all in Arizona) and El Fin del Mundo (Sonora). Older Megafauna sites include Isleta Cave, Lake Otero, and Lake San Agustín (all in New Mexico), the Borrego Badlands (California), Prescott Valley and the 111 Ranch Beds (both in Arizona), and the Upper San Pedro Valley and Térapa (both in Sonora). This study compares different taxa and their relative abundance at pre-Clovis-age and Clovis-age sites to show which taxa survived to the terminal Pleistocene. It is expected that megafauna were already declining before Clovis people arrived.

Hartman, Gideon [209] see Leslie, David

Hartshorn, Timothy [230] see Graesch, Anthony

Harvey, Allison (White Sands National Monument)

[87] *Experimental Hearth Reconstruction at White Sands National Monument*

Cultural sites known as "hearth mounds," scattered throughout the gypsum dune field of White Sands National Monument in south-central New Mexico, have the potential to provide additional insight into human habitation and subsistence strategies within the Tularosa Basin. These sites contain the remains of prehistoric thermal features which transformed the surrounding gypsum sediments into a hardened material similar to plaster of Paris. This paper explores the formation processes that influence the spatial and temporal relationships between Middle Archaic through Pueblo period (4300 B.C. – AD 1450) hearth mound sites and presents the results from an experiment designed to replicate simple cooking facilities described ethnographically for Mescalero Apache and other Southwestern pueblos. The data collected during and following the experimental hearth reconstruction provide a more robust understanding of site function, resource availability, recycling strategies, and the potential number of firing episodes, as well as a site's preservation potential.

Hasaki, Eleni (University of Arizona)

[332] *Potters' Skills and Secrets: The Potter's Wheel in Ancient Greece*

Greek vessels are predominantly formed on the wheel by experienced potters. Limited evidence on potters' wheels includes philosophical references, pictorial representations, and several prehistoric clay discs interpreted as rotating mats or wheel-heads. The entire apparatus of a potter's wheel has not yet been excavated, either in prehistoric or historical contexts. Athenian and Corinthian depictions show potters, mainly in a seated position, using a low, hand-turned wheel, often assisted by younger workmen. Experimental data from constructing and operating a modern replica of an ancient potter's hand-operated wheel highlights the challenges of its form. It also examines the relationships between speed and weight of clay as well as weight of wheelhead. This paper will incorporate archaeological, iconographical, experimental, and ethnoarchaeological data to evaluate optimal construction materials and design of

ancient Greek wheels and to elucidate issues of wheel operation and size-related specialization in wheel-throwing.

Hassler, Gabriel**[231] Archaeobotany of the Reducción Movement in Peru**

During the reducción movement in Peru, as many as 1,500,000 people were forcibly resettled by the Spanish colonial government into planned towns called reducciones. While this process was ostensibly designed to evangelize and "civilize" local populations, it also facilitated the Spanish consolidation of political authority. While the movement was enormous in scope, few primary historical sources provide any information as to how it was practically implemented. As part of the Proyecto Arqueológico Zaña Colonial, the research presented here attempts to discover how the reducción movement was implemented on the north coast of Peru and the effect it had on the local population. Macrobotanical remains from reducciones and late prehispanic sites in the Zaña valley will be compared to see what effect the reducción movement had on diet and subsistence.

Hassler, Gabriel [245] see VanValkenburgh, Parker

Hastorf, Christine (University of California-Berkeley)**[27] The Actions and Meanings of Open and Hidden Performances at Formative Chiripa**

From recent excavations the Taraco Archaeological Project has completed, in addition to the previous work by Bennett, Kidder, Portugal, and Browman at the Middle Formative settlement and ceremonial site of Chiripa in the shores of lake Titicaca in highland Bolivia, we have discovered a stepped, nested set of civic ceremonial spaces, linking the lake-shore to the highest interior sunken enclosure. The ceremonial tradition in this region seems to be made up of multiple locations at one site, where different activities occurred. At times the more open spaces were used for daily tasks, but the closed spaces were more restrictively used. These spaces and their sensory impact will be discussed as they reflect the scale of ceremony, with suggestions for shifting experiences with the heavens, the lake as well as inter- personally.

[99] Discussant

Hastorf, Christine [250] see Piperno, Dolores

Hattori, Eugene (Nevada State Museum) and Larry Benson (Museum of Natural History, Univ. of Colorado)**[248] Dating an Early Holocene-Late Pleistocene Petroglyph Panel at Winnemucca Lake, Nevada.** A Winnemucca (dry) Lake, Nevada, petroglyph panel at site 26Wa3329 was coated by a calcium carbonate layer deposited during a high lake stand about 10,000 calibrated RCYBP. Additional radiocarbon dating, geochemical analyses, paleo-lacustrine studies and regional archaeology support a likely interval for creation of the underlying petroglyphs between about 10,500 and 11,300 calibrated RCYBP, although they could be as old as 14,800 calibrated RCYBP. This petroglyph site is very distinctive and the associated petroglyphs are comprised of large, deeply incised geometric elements. Sites sharing design or technological attributes are known from elsewhere in the western Great Basin.

Hauer, Bethany [78] see Blecha, Erika

Hauer, Bethany [78] see Bobbitt, Mary

Haukaas, Colleen [326] see Hodgetts, Lisa

Hauser, Mark [124] see Shearn, Isaac

Haussner, Elizabeth [123] see Aimers, Jim

Hawkins, William and Ryan Seidemann (Louisiana Department of Justice)**[283] Helping with the Previously-Deceased: Legal and Logistical Problems Encountered in Responding to Cemetery Damage in Louisiana from Hurricane Isaac**

In the wake of natural disasters, local and national officials often seek the expertise of forensic archaeologists and anthropologists in the recovery of disinterred human remains. In South Louisiana, where bodies are usually entombed in above-ground vaults, the use of recovery archaeology can be vital in preserving cemeteries and memorial grounds. We discuss our experiences as first responders in the early phases of the recovery of human remains in Louisiana after Hurricane Isaac, focusing on the legal and logistical problems encountered. We propose a set of uniform response guidelines that might prove useful to local officials concerning such recoveries.

Hawkins, Ben (Brigham Young University), Zachary Larsen (Brigham Young University), Chris Balzotti (University of Utah), Tayte Campbell (Brigham Young University) and Richard Terry (Brigham Young University)

[305] *The Soil Resources of Uci and Ucanha, Yucatan, Mexico*

This paper examines the agricultural potential of soil resources around the sites of Ucí and Ucanha, located on the coastal plain Yucatan. Shallow soils in the karst landscape produce low maize yields. The ancient Maya of Ucí were connected to both secondary centers as well as villages by a stone causeway. A survey of the soil resources of the archaeological site and its hinterland to the east has revealed an extremely difficult setting in which to grow crops and thrive. The inhabitants of Ucí and Ucanha chose to cluster around natural depressions called rejolladas that contain deep soils with the highest agricultural potential. The small area of the rejolladas limited crop production, however. Soils of the rejolladas exhibited weak carbon isotope evidence of both contemporary and ancient C4 maize agriculture. The shallow soil resources of Uci outside the rejolladas are not conducive to the production of high yield maize crops.

Haws, Jonathan (University of Louisville), Michael Benedetti (University of North Carolina Wilmington), Bryan Hockett (US Bureau of Land Management), Vera Pereira (Universidade de Coimbra) and Rita Dias (Universidade do Algarve)

[278] *Lapa do Picareiro: A 50,000-Year Record of Human Occupation and Environmental Change in Central Portugal*

Lapa do Picareiro has yielded a continuous, stratified sedimentary sequence that provides a diachronic record for MIS 3 and MIS 2 human occupation and environmental reconstructions. We present data from the 2005-2013 excavation including results of faunal, artifactual and sedimentary analyses. The spatial distribution of lithic and bone artifacts suggest sporadic, short term visits to the cave prior during most of the Early Magdalenian, Solutrean, Gravettian and Middle Paleolithic. The ungulate, rabbit, micromammal, bird and amphibian remains are used here to understand the taphonomic formation of the assemblages from Picareiro. Results suggest inputs by Neanderthals and anatomically modern humans, the Iberian lynx and raptorial and scavenging birds. Humans and lynx were likely responsible for most of the large mammal and rabbit as well as some birds. Raptorial birds likely preyed on the rodents, especially voles, amphibians and small birds. Vultures and carrion crows are present and also likely contributed many mammal remains. The fauna therefore derive from multiple sources and provide a balanced paleoenvironmental record to understand human responses to long-term environmental change in central Portugal.

Haws, Jonathan [299] see Ernst, Logan

Hayashida, Frances (University of New Mexico)

[149] *Discussant*

Haydon, Rex (University of Chicago), Maria Lozada (University of Chicago), Augusto Cardona (Centro de Investigaciones Arqueologicas de Arequipa), Hans Barnard (Cotsen Institute of Archaeology, University of California, Los Angeles) and Alanna Warner (Syracuse University)

[25] *Prepared to Be Remembered: Trophy Head Production and Meaning among the Prehispanic Ramadas of Southern Peru*

Although trophy heads in the Andes have been explored from multiple vantage points, few studies have focused on the technical aspects of creating trophy heads, nor the degree of specialization associated with this practice. Recent excavations in the Vitor Valley of southern Peru have uncovered several trophy heads in a single prehispanic cemetery. Both fully fleshed heads and skulls from male individuals were recovered and were processed in a way that appears to intentionally maintain the face, and thus the identity of the victims. Furthermore, the locations of the perforation in the frontal bone and the partial

removal of the occipital appear to be similar, suggesting some uniformity of practice. Still, a detailed osteological study of these human remains reveals enough variations in technique that we question whether there was any enforced standardization in trophy head production that would indicate that this was part of a highly specialized activity. We, therefore, propose that these recognizable heads may have been produced, curated, displayed, and used predominantly at the household level. We discuss what this distinct practice says about body concepts within the socio-political milieu of the Ramadas tradition in southern Peru.

Haynes, Gary [320] see Burke, Chrissina

Hays-Gilpin, Kelley [159] see Dongoske, Kurt

Hays-Gilpin, Kelley (Northern Arizona University), George Gumerman (Santa Fe Institute), Dennis Gilpin (PaleoWest Archaeology) and Lisa Young (University of Michigan)

[202] Picturing Early Pueblo Communities

One of Linda Cordell's ongoing "for fun" research interests was a set of Pueblo I painted pottery bowls that depict human figures holding hands in an apparent group dance. These figures often have butterfly hair whorls, today associated with Pueblo women's puberty initiations. Similar groups also appear in rock art. The images have a very broad distribution from southwest Colorado to Houck, Arizona, where George Gumerman excavated such a bowl in 1966 during Interstate-40 salvage. In this paper, we explore what these depictions tell us about community dynamics at this critical time in the development of early Pueblo communities.

Hayward, Michele (Panamerican Consultants), Frank Cahieppati (Panamerican Consultants) and Michael Cinquino (Panamerican Consultants)

[248] Rock Art and Location on Puerto Rico

Rock art is found at three principal locations throughout the Caribbean-ball court, cave and open air (river boulders; other location rock formations). These proportions vary by island with Puerto Rico possessing a substantial number of all three. Previous studies have identified similarities and differences among general rock art categories, such as between petroglyphs and pictographs. In this paper we explore via statistical measures possible locational assemblage signatures that might be expected to vary along a continuum from the large-scale open public ball court contexts, to smaller-scale, but still accessible and public waterway and inland rock formations, to more circumscribed and private caves.

Hayward, Douglas [288] see Chacon, Richard

Hayward, Anne (Pennsylvania State University)

[336] The Textiles of El Gigante, Honduras

The El Gigante site was located in a shallow rock shelter in southwest Honduras. Eastern exposure and sandy floor insured excellent preservation of human, faunal, and botanical remains. Evidence of looting pits precipitated its excavation by the Instituto Hondureño de Antropología e Historia (IHAH) in 1993 and 1994. In 1998, members of the Pennsylvania State University Anthropology Department joined IHAH and excavated living areas and burials. Radiocarbon dating put human occupation from 9,220 B.C.E. to 230 CE. Among the many artifacts recovered were fragments of cordage and woven textiles, including petate, basketry, nets, and cloth. The majority of cloth fragments consist of single ply, Z-twist threads of varying thicknesses done in a plain weave. The fibers include cotton and possibly maguey (*Agave* sp.). The purpose of this presentation is to describe the heretofore overlooked El Gigante textile collection and discuss the possible sources, technology, and use of these fiber artifacts at the site.

Heacock, Erika [32] see Vokes, Arthur

Heacock, Erika (Arizona State Museum, University of Arizona)

[234] The Repatriation-Process, Conflicts, and Resolutions

Since the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 was implemented, many museums are looking at their collections to comply with the law. Arizona State Museum (ASM) has taken the task of assembling information on sites in the collections, including the Tucson Basin area, and

other areas, such as the University of Arizona's Grasshopper Field School that ran from the 1963 to the 1993. Many problems occur when taking on this task, such as identifying all the sites that have human remains and associated objects stored at the museum, formulating the best way to process these materials and projects, assessing the documentation, consulting with interested parties, conducting the actual repatriation, and acquiring funding to cover the process. This poster emphasizes the many issues that occur and the opportunities that arise from the museum's perspective when acting in accordance with this law, the mitigation of problems, and how to create an organized process or protocol for future repatriations.

Headrick, Annabeth (University of Denver)**[167] Chichen Itza's Osario: Where Warriors Danced in Paradise**

Once considered the mortuary temple of Chichen Itza's rulers, the Osario has more recently been identified as a Flower Mountain, the celestial paradise of Mesoamerican warriors. However, this identification has remained cursory, relying exclusively on a few visual features. This study will affirm the Osario as a Flower Mountain and the location of elite warrior burials by fully exploring the material and visual remains of the structure. Analysis of charred human remains and their associated artifacts within the cave situated underneath the temple reflects military cremation practices similar to the subsequent Aztec. Likewise, the grave goods associated with a series of burials above the cave are markedly similar to the costume imagery of warriors throughout Chichen Itza. In addition, the stone relief sculpture of the temple, including dancing warriors and a series of four distinct serpents, justify this identification, as they mirror ethnohistoric textual accounts of a valorous warrior's afterlife. Not only will this study reveal this structure's function as a vehicle to disseminate the state's military propaganda through the public celebration of deceased warriors, it will also demonstrate Chichen's unique appropriation of central Mexican strategies, imagery, and ideologies during a time of great social change in Mesoamerica.

Healan, Dan (Tulane University)**[254] Discussant****Healey, Elizabeth (University of Manchester, UK) and Stuart Campbell (University of Manchester, UK)****[249] Sourcing and Beyond: Obsidian Use at Two Late Neolithic Sites in Northern Mesopotamia**

In this paper we will present the results of our studies of two contemporary but contrasting sites in northern Mesopotamia, Domuztepe and Arpachiyah. Both are pre-urban sites, dating from the sixth millennium B.C., and both may have played the role of central settlements. At both sites obsidian is used extensively for tool manufacture along with flint and additionally for non-utilitarian items which are finished by grinding and polishing. Domuztepe is a large site and obsidian is found in most contexts. Almost 400 artifacts of obsidian, including a variety of non-utilitarian items, have been geochemically analyzed and the data suggests that a wide range of sources (at least nine) are involved although not all were used for the non-utilitarian items. Arpachiyah on the other hand, is a small tell and the majority of the obsidian is concentrated in one place (the 'Burnt House'). Here the ground and polished items seem to comprise two (or perhaps more) composite objects; most of the debitage was found in the same structure. Our analysis of the obsidians confirms and amplifies Renfrew's original analysis and indicates that five different sources were exploited, three of which were used for the ground and polished items.

Heaney, Christopher (University of Texas at Austin)**[57] Julio C. Tello and Indigenous Archaeology in Peru and North America**

In 1942, a U.S. high school textbook celebrated the Peruvian archaeologist Julio C. Tello (1880-1947) as a "full-blood Quechua Indian." This paper examines the stakes inherent in the North American celebration of Tello as such, exploring whether Tello's recognition as one of the Americas' greatest archaeologists was as much because of his indigenous heritage as in spite of it. Born in a highland Andean community, Tello began his career in Peru at a time of great discrimination towards the country's indigenous population. As others have argued, he was part of a generation of intellectuals that chipped away at the overt expression of racial prejudice, replacing it—perhaps—with one based on class. Tello's career, however, was deeply in dialogue with North America and its intellectual climate as well, beginning with his studies at Harvard from 1909-1911. This intervention in the history of archaeology argues that Tello used his indigenous 'go-between' status—in Peru, in the U.S., in his highland community—to advance Andean archaeology, as well as his career. In particular, he acted as a gatekeeper for Peru's indigenous dead, forcing North Americans to recognize and praise his authority and pay increasingly earnest attention to

Peru's asserted ownership of the precolumbian past.

Heath, Margaret (Bureau of Land Management)

[96] *Past, Present, and Future Directions of Heritage Education*

In the United States and Canada heritage education is a young profession, emerging in the 1990s as archaeologists and federal and state agencies realized that reaching out to the public was important for protecting the vast prehistoric and historic resources of the Americas. The major professional archaeological organizations enthusiastically supported their fledgling public education committees and task forces and the SAA in particular provided a large venue for persons interested in practicing heritage education. Archaeologists worldwide explored the concepts of heritage and heritage values. Meanwhile, the expansion of the Internet provided a broad platform for public education as more people had the technological means to access it. After the millennium, the SAA Board began to question the size, independence, and purpose of its Public Education Committee. In 2008, it tasked the PEC with maintaining the SAA "Archaeology for the Public" web page, and it began reducing the size of all committees, requiring long-standing members to rotate off. The unintentional result was that the primary venue for heritage education practitioners disappeared. This paper will explore the past and present state of heritage education, compare it with the development of environmental education, and suggest possible future directions for the profession.

[96] *Chair*

Hechler, Ryan (McGill University)

[188] *¡Salud! A Study of Aguardiente in the Western Montaña of Ecuador*

Aguardiente is a pure cane-sugar alcohol introduced by the Spanish in the Americas and it spread wherever sugarcane production was present. The production and consumption of aguardiente was an integral part of early Spanish colonial economies in the Americas; the liquor was especially a source of income for lower class distillers whose customers consumed the alcohol socially and even sometimes ritually. With the imposition of colonial government regulation of aguardiente sales in the 18th-century Andes, many entrepreneurs resorted to smuggling the liquor by creating their own trails in the dense jungles of the western montaña of present-day Ecuador or simply appropriating forgotten local indigenous (such as of the Yumbo) and Inka trails to move their products undercover.

Aguardiente distilleries appeared throughout the fertile western montaña of Ecuador and many of these makeshift production centers still exist in the present. This paper is an historical archaeological examination of aguardiente production in the northern Ecuadorian Andes, with a particular focus on the archaeological and architectural remains of distilleries and their associated regional bootlegger trails near present-day Pucayacu, Cotopaxi, Ecuador.

[188] *Chair*

Heckenberger, Michael (University of Florida)

[281] *The Measure of Amazonian Complexity*

Amazonia has commonly been defined as a world area based on absences of traditional markers of socio-cultural development, such as a lack of productive agricultural systems, domesticated animals, writing, metallurgy, monumental architecture and cities. Recent studies suggest that rather than absent these features exist but in quite different form than other world areas. This paper explores ethnomathematical systems in the southern Amazon, in terms of units of measurement and relationship between elements of the built environment. It argues that pre-Colombian societies had complex relational mathematical systems that were the foundation for large-scale transformations of the natural environment and sophisticated systems of socio-ecological connectivity.

Heckman, Robert [294] see Trowbridge, Meaghan

Hector, Neff [140] see Niespolo, Elizabeth

Hedgepeth Balkin, Jessica (University of Colorado, Boulder), Arthur Joyce (University of Colorado, Boulder), Michelle Goman (Sonoma State University) and Sarah Barber (University of Central Florida)

[83] *In the Wake of Lord 8 Deer: Postclassic Settlement Changes in the Lower Río Verde Valley of*

Coastal Oaxaca

Around A.D. 1100, Lord 8 Deer “Jaguar Claw” established a Mixtec empire in the lower Río Verde Valley of coastal Oaxaca—known as Nunduei (“Land of the Sky”) by 16th century Mixtecs (Reyes 1593:ii). Lord 8 Deer took advantage of the political instability caused by the collapse of Río Viejo (ca. A.D. 800), the Valley’s capital, to found a new center at Tututepec. Due to an influx of immigrants from the Mixteca Alta, population exploded in the lower Verde. By the Late Postclassic (A.D. 1100-1522), settlement concentration shifted dramatically from the floodplain in the western Valley near the former capital to the eastern piedmont around Tututepec. Areas were inhabited farther away from fertile floodplain lands than ever before, suggesting that political incentives behind settlement choice outweighed ecological concerns. Over the past two years, a continuation of the Valley’s full-coverage survey has shed new light on this phenomenon. This paper discusses Postclassic survey results, focusing on changes in settlement ecology and the political relationship of settlements with Tututepec and the greater Mixteca Alta. We investigate Joyce and colleagues’ (2004) hypothesis that population increases spurred leaders to move settlement off the floodplain in order to free up lands for agricultural production.

Hedland, Jonathan [343] see Gilmore, Kevin

Hedman, Kristen [272] see Thompson, Andrew

Hedquist, Saul (University of Arizona) and Kye Miller (PaleoWest Archaeology)**[18] Reach 12A Sites and Ritual Deposition in a Regional Context**

Data recovery investigations along Reach 12A of the Navajo-Gallup Water Supply Project north of Gallup, New Mexico revealed multiple rich and well-preserved floor assemblages. Complete excavations of two structures -- a Basketmaker III pit structure and a Pueblo II kiva -- exposed numerous discrete deposits, the content and architectural context of which alludes to their purposeful placement, possibly as part of planned ritual closures of associated spaces. The pit structure's floor assemblage was exceptionally extensive, containing over 150 objects and object clusters including (in varying combinations) projectile points, whole and partial ceramic vessels, cloud blowers, mineral pigments, intact mammal crania, ground stone, polishing stones, and ornaments. This paper examines the social implications of observed depositional patterns, especially the use of specific objects and object associations, a number of which have analogs among ethnographically known ritual paraphernalia. The findings from Reach 12A are contextualized using ethnohistorical accounts and archaeological documentation of floor assemblages from excavated structures in the San Juan Basin and beyond.

Heep, Nathan (University of Texas at San Antonio) and Whitney Lytle (University of Texas at San Antonio)**[228] Archaeology, Public Outreach, and the University**

The benefits of outreach programs have been demonstrated to be multifold. Archaeology education and outreach can benefit grade school students by offering the opportunity to reinforce required curriculum with a unique hands-on approach. Community education also encourages respect and preservation of the archaeological record. As part of a university's anthropology department, these programs can offer much more than grade school community outreach. Volunteer opportunities allow undergraduate and graduate students to add stock to their resumes while gaining valuable experience learning effective techniques to disseminate archaeological knowledge. Additionally, by acting as another educational resource where students enhance their own pedagogical methods, the outreach program reinforces their significance to the university. The Center for Archaeological Research at the University of Texas San Antonio offers these opportunities to students through their "LEGACY: Hands on the Past" outreach program. If education is considered the goal, then outreach can be seen as the method to reach this goal. Expanding public outreach goals to include both the public and student educators, the program creates a richer edifying environment. This paper will present the strategies utilized by the LEGACY outreach program to benefit the community and the university while enhancing the preservation of the archaeological record.

Heffter, Eric (The University of Arizona) and Kele Missal (The University of Minnesota)**[217] Absolute Beginners: Indicators of Knapping Expertise in Simple Technologies**

It is well known that the task of flintknapping requires time and some level of skill to properly execute. Several authors (summarized in Bamforth and Finlay 2008) have hypothesized that certain flake attributes are indicative of skill. Unfortunately, few researchers have attempted to confirm these

hypothesized markers of proficiency. Our experiment tests which flake attributes are indicative of expertise by comparing the debitage produced by 37 novice and 4 expert knappers during a simple flake removal exercise. While some novices were able to produce flakes comparable in size to expert knappers, aggregate data confirms that there are significant differences between novices and experts for several flake variables, including weight, size and platform type. Many other flake characteristics thought to indicate skill (such as termination type) were not significantly different between the two groups. The experimental results from this robust data set can help archaeologists understand the ways in which knapping expertise influences flake morphology and which flake attributes can aid in identifying episodes of novice knapping in the archaeological record.

Hegmon, Michelle [66] see Nelson, Margaret

Hegmon, Michelle (Arizona State University), Will Russell (Arizona State University), James McGrath (Arizona State University) and Michael O'Hara (Arizona State University)

[66] *Mimbres Pottery Designs in Social Context*

In order to record and study the spectacular designs on Mimbres pottery, Steven LeBlanc and the Mimbres Foundation created the invaluable Mimbres Archive, a collection of photographs of Mimbres vessels. The Archive was the basis of the much larger recently created Mimbres Pottery Images Digital Database (MimPIDD), which facilitates systematic analysis of the designs. Using data from MimPIDD this paper investigates the social significance of the pottery designs through spatial analyses of several design dimensions. Specifically, we classify the designs based on attributes normally considered by archaeologists (design layout and animal taxon) as well as attributes suggested by Southwestern and Mesoamerican indigenous sources, including folk-tales, cosmologies, traditional histories, and traditional ecological knowledge. These sources categorize animals according to appearance, habitat, clan affiliation, relation to humans, and other characteristics (e.g., elders, tricksters). We then consider the spatial distribution—at both inter- and intrasite levels—of those various dimensions, using a sample of over 4,000 provenienced vessels. Results reveal whether and how animal designs were used to mark social distinctions, and which dimensions of the designs were socially significant.

[289] *Discussant*

Heide, Poul (The Archipelago Museum of Southern Denmark)

[29] *Tying Precious Knots: The Resilience of Communication Systems in the North Atlantic Landscapes during the Transatlantic Migration in the Viking and Middle Ages*

Establishing and maintaining communication systems is a crucial task to any society. 'Communication' can be as important as any other resource, not least to explorers and settlers. In this presentation I will discuss what my recent research has shown about how the communication systems were established and transformed during the Viking Age Transatlantic migration.

The natural conditions of the North Atlantic landscapes put any communication system under stress, even today. Whether we look into communication between new islands and homelands or the communication systems within the individual settlements, we see how it became harder and harder to maintain standards the further people move westward. Resilience of communication is the resilience of a system of habits and techniques. Communication systems are generally prone to immediate adaptation, and through the study of communication systems we get to discuss a social perspective on climatic changes that affected the ancient North Atlantic world.

The thirteenth century was an extremely volatile period in northern Europe. I discuss the specifics of the North Atlantic communication systems drawing on observations from Scandinavia, where both political, economic and technological developments were of such magnitude that they altered conditions for communication all the way out into the North Atlantic.

Heilen, Michael [294] see Homburg, Jeffrey

Heilen, Michael (Statistical Research, Inc.) and Phillip Leckman (Statistical Research, Inc.) [294] *Cultural Landscapes of the Chuska Valley, New Mexico*

In this paper, we examine cultural landscapes of the Chuska Valley, in northwestern New Mexico, through the concepts of persistent place and persistent community. Using data on more than 6000 sites recorded in the New Mexico Cultural Resources Information System, variation across time and space in

Archaic and Anasazi settlement location, clustering, intervisibility, and function is analyzed to identify where persistent places and communities emerged and to interpret long-term patterns of regional occupation and abandonment. Particular attention is paid to understanding potential relationships among sites, including the role that sites with integrative structures—such as plazas, great kivas, or great houses—likely played in influencing the organization of settlement across the landscape. The ways in which environmental and cultural factors may have affected the formation and abandonment of persistent places and communities are also considered.

Heins, Sarah**[113] Craft Bone Toolmaking at Post-Classic Mayapán**

Recent studies have examined the integration of animal resources into crafting production at the household and community level economies of the ancient Maya. White-tailed deer (*Odocoileus virginianus*), in particular, was relied on heavily by Post-classic Maya based on their presence in high frequencies in mainland faunal assemblages. Bones of white-tailed deer are found in elite and non-elite dwellings, in ritual contexts, and in crafting contexts thus indicating their economic versatility. Some researchers suggest that the Maya may have been managing deer populations which would have provided a constant supply of deer to Maya communities. This study explores the extensive bone fragmentation of white-tailed deer remains and the bone tools found at Mayapán, a Post-classic Maya urban center on the Yucatán peninsula in Mexico. High frequencies of cultural breakage, differential skeletal element representation, and large numbers of bone tools suggest that much fragmentation at crafting houselots is linked to bone tool manufacture and use. The spatial distribution of differentially fragmented bone assemblages reveals differences in activities of crafting houses and other dwellings. Formal and informal bone tools contributed significantly to the manufacture of other craft items, including textile embellishment.

Heisinger, Bryan (Gault School of Archaeological Research) and Anna Gilmer (Gault School of Archaeological Research)**[318] Fluvial Gradient Profile and Sedimentation at Gault Site, Texas**

At the Gault site (41BL323) long term fluvial sedimentation in Buttermilk Creek Valley is inconsistent among low order streams of the Central Texas region. In first and second order stream valleys across the southern plains periphery it is uncommon to find surviving deposits that are older than early Holocene, but at Gault there are extensive Late Pleistocene alluvial deposits dating from at least 27,000 BP. A slight but distinctive reduction in the longitudinal gradient profile of Buttermilk Creek is the apparent explanation both theoretically and from observed patterns of deposition during recent flood events.

Heitman, Carrie (University of Nebraska-Lincoln)**[333] Layered with Meaning: Mediating Social Integration through Architecture in Chaco Canyon**

My paper in this session addresses the question of how architecture served to mediate social integration during the Bonito Phase (A.D. 850-1150) occupations of Chaco Canyon, New Mexico. Taking a broad view of “public architecture,” I look at the practices by which built spaces were invested and layered with meaning through a shared language of religious symbols and ritual deposits. After outlining these patterns, I discuss the social processes that may have surrounded the use of these architectural investments and their role in both integrating groups of people at various scales and magnifying social inequalities over time.

Heller, Eric (University of California Riverside)**[37] A Practice of Polity: Demarcating Ideational Boundaries in the Classic Period Maya Lowlands**

Foundational to identity, social relations, and the operation of political authority, practices related to the production and construction of community and polity boundaries are well documented via ethnographic and ethnohistoric sources in Mesoamerica. Increasingly, scholars are linking modern and historical practices to more ancient archaeological materials, extending practices of community demarcation deep into the Classic period in the Maya region. Using the ancient Maya site of La Milpa, northwestern Belize, as a case study, this paper examines several possible examples of spatial delineation on community and polity scales through attention to the arrangement of architectural features and monuments on the landscape. Employing a comparative lens that considers modern practices alongside ancient examples of boundary making and marking, this paper evaluates the extension of ethnographic and ethnohistoric practices into antiquity, raises the possibility that several polities within the Maya Lowlands shared and replicated concepts of an idealized city image, and explores the potential for disjunction between material

demarcations of ideational borders and patterns of settlement shaped by the realities of praxis.

[37] Chair

Helmer, Matthew [27] see Chicoine, David

Helmer, Matthew (University of East Anglia)

[245] *Preliminary Research at Samanco: An Early Horizon Seaside Center of the Nepeña Valley, North-Central Peru*

Over the past decade, significant research has been conducted in the Nepeña Valley regarding 1st millennium B.C. coastal societies. Yet numerous questions remain regarding the role of maritime communities during a time period when inland developments are frequently emphasized. In 2012 and 2013 field operations were carried out at Samanco, one of the largest Early Horizon Nepeña sites, located adjacent to the rich Samanco Bay. Mapping data revealed a site core spanning over 30 hectares, comprised of dense quadrangular stone architecture organized into distinct compounds. Excavations confirmed Samanco's Early Horizon occupation, and provide preliminary insights into the site's identity as a focal point for maritime interactions with inland centers as well as a fully functioning, semi-autonomous residential center. This paper examines the preliminary data from Samanco which frame working hypotheses about Early Horizon economic networks and urban transformations.

Helmke, Christophe (University of Copenhagen)

[33] *Speleothem Monuments at Yaxchilan, Mexico*

Over the past two decades it has become increasingly clear that speleothems occupied a privileged position in ancient Maya culture. James Brady has been instrumental in drawing the attention of his colleagues to archaeological examples of flowstone and dripstone formations, such as stalactites and stalagmites, which were subjected to deliberate breakage and removal. Although the motivations behind these actions are still unclear, instances are known wherein large columnar speleothems were erected as monolithic monuments. The archaeological site of Yaxchilan, in present-day Mexico, provides several key examples of this practice. One such speleothem monument—designated as Stela 31—was carved with an elaborate iconographic program and a series of glyphic captions. This specimen demonstrates the importance of speleothems in royal rituals and reveals that erected speleothems, on par with conventional stelae, could serve to commemorate rites performed at important calendrical stations.

Helton, Erin (Versar/GMI) and Christopher Goodmaster (Versar/GMI)

[199] *Geospatial Analysis and Landscape Archaeology in the Lower Pecos Canyonlands*

Spatial analysis is useful in painting a holistic picture of a cultural landscape as it allows for synthesis between otherwise isolated collections of data. With renewed interest in archaeological field research conducted in the Lower Pecos Canyonlands, it is important to shift the focus of archaeological research from a site-specific scale to consider the cultural landscape as a whole. Observing archaeological data at a regional level can help researchers better understand the relationship between native groups and how they utilized their environment over time and space. Within a robust GIS framework, data can be presented in spatially meaningful ways, revealing patterns or trends that may not have otherwise been detectable. This presentation will discuss findings from spatial analyses conducted on archaeological site distributions in the Lower Pecos Canyonlands. Spatial analysis techniques include 3D terrain modeling, viewshed analysis and visibility, cost-path analysis, and distribution analysis of sites to other known resources.

Helton, Erin [248] see Goodmaster, Christopher

Hemingway, Katharina (University of Denver, Department of Anthropology) and Lawrence Conyers (University of Denver, Department of Anthropology)

[196] *Ground-penetrating Radar Efficacy for Mapping Graves in Variable Ground Conditions*

Ground-penetrating radar is an especially effective geophysical method for locating and studying graves of many different ages and types, in wide varieties of sediments, soils and environmental conditions. In formal and informal cemeteries the overburden mineralogy and moisture is the most important variable affecting resolution. Electrically resistive ground such as sandy sediment is optimum, but even good results have been obtained from ancient Medieval English cemeteries in wet clay ground if amplitude analysis and frequency filtering is used. Roman burials in crypts and vaults are easily mapped in three-

dimensions in sandy or limestone ground. Frontier USA graves composed of deteriorated wooden coffins are particularly challenging due to the plethora of reflections from the remaining features. Informal Australian Aborigine graves can be differentiated from European internments based on their orientation, associated grave goods and depth of burial. In a formal California cemetery where all burial took place at the same depth, with the same burial features, the highly variable overburden chemistry produced extremely complex GPR images, with large changes in apparent depth and resolution. These could be predicted if the ground was studied in detail during processing. GPR is the highest resolution method for mapping graves due to its three-dimensional capabilities.

Henderson, T. Kathleen [43] see Aragon, Leslie

Henderson, A. Gwynn (Kentucky Archaeological Survey)

[96] *Public Archaeology at the Kentucky Archaeological Survey*

With the creation of the Kentucky Archaeological Survey in 1996, the Kentucky Heritage Council (SHPO) and the University of Kentucky's Department of Anthropology initiated a state-wide proactive public archaeology program. In addition to providing students and the public with hands-on archaeological experiences, KAS has partnered with others to develop diverse educational programs and a variety of educational materials, including curriculum, lesson plans, booklets, webpages, and videos. Of particular importance has been an ongoing evaluation and assessment of program effectiveness, and the publication of these findings. KAS continues to develop public archaeology programs and to pursue research in this venue as part of its commitment to professionalizing heritage education.

Henderson, Lucia (The University of Texas at Austin) and Barbara Arroyo (Proyecto Kaminaljuyú, IDAEH)

[120] *The Life Aquatic: The Archaeology and Iconography of Water at Kaminaljuyú, Guatemala*

Although Guatemala City's urban sprawl has destroyed much of Late Preclassic Kaminaljuyú, the remains of this early site nevertheless speak eloquently about the ideological, political, economic, and religious importance of water. Constructions within and beyond the city center demonstrate that enormous efforts were made to channel, direct, and utilize water at Kaminaljuyú. Stone sculptures reveal that multiple deities governed water at Kaminaljuyú and were used in art to legitimize the reigns of early rulers. In this paper, the authors integrate recent archaeological discoveries with iconographic analysis, investigating the hydraulic infrastructure of Kaminaljuyú and the interconnected movements of human bodies, sculpture, and water through the site's built and natural environment.

Hendon, Julia (Gettysburg College)

[161] *Traces of Local Histories in the Landscape of the Lower Ulúa Valley Then and Now: Multiple Perspectives on the Intersection of Past and Present*

People have lived in the Lower Ulúa River Valley in Honduras for over 4000 years. We explore processes of place-making and landscape creation at several different times in the valley's occupation. We focus on the people who lived in the valley at these different moments in its history as communities of practice, each bound together by shared sets of practices and relationships. This approach allows us to consider the connection between practice and meaning, landscape and history, daily life and ritual cycles, and social relations and economic ties without entangling us in claims about cultural continuity or rupture. In addition to data derived from archaeological research in the valley at such sites as Cerro Palenque, Currusté, and others, we also draw on ethnographic research and the educational outreach programs sponsored by the Instituto Hondureño de Antropología e Historia under its former gerente, Dario Euraque. We discuss the multiple ways that the valley's residents incorporated the past into their present-day experience. Although the specific meanings may differ and the kinds of places created may vary, we argue that one thing that links together our examples is the importance of local histories grounded in a particular social and physical setting.

[110] *Discussant*

Hendrix, Jess [228] see Harding, Gregg

Henry, Edward (Washington University in St. Louis)

[159] *Negotiating Historicism and Ritual Action: Assessing Dualistic Space at the Mount Horeb Earthwork Complex in Central Kentucky.*

Middle Woodland earthwork complexes are prominent in Eastern Woodlands research. Nevertheless, we have numerous chronological voids in Woodland research on ritual landscapes. The Mount Horeb complex is a unique collection of earthworks in the Central Kentucky Bluegrass region, long considered important to social interpretations for Ohio Valley Woodland societies. However, the sequence of landscape evolution at this complex has never been investigated. Recent research at multiple earthworks in this complex allow for a fresh contextualization of geometric and irregular earthen enclosures. Using new data, historical understandings of landscape and ritual transformation—possibly grounded in social duality—are explored.

Hepp, Guy (University of Colorado)

- [8] *La Consentida and Initial Early Formative Period Social Organization on the Pacific Coast of Oaxaca, Mexico*

Investigations between 2008 and 2012 at the archaeological site of La Consentida have produced evidence for the transition to domestic sedentism, social complexity, the adoption of an agricultural economy, and exchange of ceramic iconography during the Early Formative period (1900-850 B.C.) in coastal Oaxaca, Mexico. This presentation provides a summary of field and laboratory research phases of the La Consentida Archaeological Project, including site mapping, excavations, and analyses of artifacts and samples. Information regarding architectural stratigraphy, funerary practices, ceramic vessel styles, stone tools, and ceramic iconography indicate that La Consentida participated in the fundamental social reorganization of the Early Formative. Based on several radiocarbon dates from secure contexts, La Consentida has produced some of the earliest ceramics, mounded earthen architecture, and musical instruments thus far identified in Mesoamerica. Data from obsidian sourcing and the comparison of iconographic styles of decorated ceramics and other small-scale artifacts indicate La Consentida's participation in broad spheres of early Mesoamerican interaction. Examples of these networks include ceramic iconography indicative of contacts with West Mexico and obsidian from central and Gulf coastal Mexico. These results will help to redefine the role of the Oaxacan coast in the critical social transformations of Early Formative Mesoamerica.

Herbert, James (Stantec Consulting Ltd.), Sean P. Connaughton (Simon Fraser University, Stantec Consulting Ltd.) and Mike Leon (Katzie First Nation)

- [50] *Collaboration and Corporations: An Internalist Dialogue*

Archaeology is a big business in British Columbia. Because of this, it is increasingly likely that an archaeologist will be exposed to commercial archaeology, possibly having a career in CRM. Small CRM firms are being absorbed by larger, multi-national consulting companies, and we find ourselves in a new age of practicing archaeology from within a larger corporate culture. Our dialogue seeks to illuminate particular issues felt by both First Nations and archaeologists within commercial archaeology. By sharing the research and discussions of three different participants in this process, with different backgrounds, ethnicities, and outlooks we hope to provide insight into the internal debate occurring in corporate archaeology.

Herbst, George (Naval Facilities Engineering Command, Southwest) and Jimmie Collins (Naval Air Facility, El Centro)

- [125] *Invisible Landscapes: Considering the Significance and Management Needs of Non-site Archaeological Patterning*

This paper will present two case studies of non-site archaeological patterning on Naval Air Facility El Centro Ranges as a catalyst to discuss the current challenges in managing these resources under federal regulations. It will further discuss some alternatives that will serve to engage federal cultural resource managers in current national-level discussions regarding standards for considering landscapes in compliance with regulatory statutes.

Herckis, Lauren (University of Pittsburgh)

- [50] *Why We Tell Them We're Divorced: When Local Expectations Clash with our Roles as Researchers*

Fieldwork requires the archaeologist to engage with local communities on a variety of levels, many of which have little to do with the interests of the community or the aims of our projects. Often well-trained in theory and methodology but less prepared for the ethnographic reality of fieldwork, archaeologists who do not easily meet local expectations have historically navigated local conditions individually and on an ad hoc basis. In particular, community expectations of performed femininity can be in direct conflict with methodological expectations of performed archaeology. This paper presents a framework for the training

of archaeologists equipped to meet such challenges in ethical, culturally sensitive, and methodologically sound ways.

Herdrich, David, Chris Filimoeuala (University of Hawaii), Phillip Johnson (Kentucky Historic Preservation Office), Tish Peau (National Park of American Samoa) and Erika Radewagen (South Pacific Archaeological Consulting Services)

[242] *Atoll Archaeology: A Summary Report of Archaeological Surveys at Rose and Swains Islands, American Samoa*

This paper presents preliminary results of the 2012 and 2013 archaeological field seasons at Rose and Swains Island, American Samoa. Until this project, very little archaeological documentation had been undertaken on these outlying islands. Discussion of the results from the Swains Island project include the description of limited subsurface testing, as well as the identification of historic properties including, but not limited, to a historic church (ca. 1886), historic cemeteries, a cut beach rock pathway, and a traditional pre-European tupua. Survey results on Rose Island identified historic properties ranging from a U.S Naval Administration historic monument placed on the atoll in 1920 by Governor Warren J. Terhune to a fale foundation which is likely a residential structure associated with a 19th century German copra plantation. Additionally, basalt flakes, a basalt stone, and water worn basalt pebbles were discovered and collected. Some of the basalt collected was submitted for X-Ray Fluorescence (XRF) analysis. The elemental concentration data was analyzed to determine local or exotic provenance, and will be discussed in relation to other known basalt sources in Western Polynesia.

Heredia Espinoza, Verenice [112] see Uriarte Torres, Alejandro

Heredia Espinoza, Verenice (El Colegio de Michoacan)

[189] *Reflections on the Use of Full-Coverage Archaeological Survey in the Tequila Valleys of Jalisco, Mexico*

A reassessment of the unsystematic surveys carried out in the Tequila Valleys between the 1960s and 1980s shows that pedestrian, regional, and systematic full-coverage survey is the best and most effective method for recovering large amounts of high quality data to solve anthropological questions at the regional scale. In the past six years, we have applied this methodology to the Tequila valleys of Jalisco, concentrating efforts in the valleys north of the Tequila volcano and, most recently, in the Magdalena Lake Basin. To date, we have recorded hundreds of sites some of which were known from past surveys, but many were not. However, in some cases we were unable to relocate previously identified sites for myriad reasons, including postdepositional factors. Yet, our surveys also demonstrate that large settlements without monumental architecture (especially Epiclassic and Postclassic sites) were ignored in favor of flashy places such as shaft tombs and guachimontones. Consequently, the data collected by our recent surveys provides a corrective to the biased view of the current Tequila valleys regional archaeological sequence.

Herlich, Jessica (College of William and Mary)

[125] *The Kiskiak Site and Paleoethnobotany: A Multi-linear Approach to Environmental and Social Dynamics in Tidewater Virginia*

Kiskiak is a multi-site area within the Naval Weapons Station Yorktown (NWSY) concentrated in the area of Indian Field Creek. It is compelling in Tidewater Virginia for its deep breadth of time and diversity of features, presenting facets of past Algonquian landscapes. From the Late Archaic period (ca 1300 B.C.) to the Early Colonial era (ca AD 1600), Kiskiak is a long term example of Algonquian peoples revisiting and settling coastal localities. The College of William and Mary's excavations at Kiskiak are exploring how Kiskiak fits into the greater Chesapeake archaeological and historical past. This paper will discuss my dissertation's focus on human-environmental dynamics at Kiskiak through a multi-linear paleoethnobotanical approach. Through macrobotanical remains, phytoliths, starch grains, and artifact data, this paper explores landscape and related changes in coastal hunter-gatherer and forager subsistence practices, use of natural resources, and labor divisions at Kiskiak. These various analyses indicate complex uses of space and changing human-environmental relationships over time at Kiskiak, which have intriguing implications for how coastal sites fit into conversations pertaining to tradition, movement, exchange, and subsistence in the Chesapeake.

Hermes, Taylor (University of Arizona / Russian Institute of Archaeology, Novosibirsk)

[20] *Our Complexity Against Theirs: Neolithic Cultures in the Altai Mountains*

This paper explores the transition to pastoralism in the Russian Altai Mountains through the cultural variability and interaction of autochthonous Neolithic populations. Unlike theories based in long-distant, permanent migrations, I argue that early pastoralism in this region is a social development rooted in the dynamics of pre-existing communities of hunter-gatherers. These groups in the Altai and adjacent regions have been unjustly overlooked by many archaeologists writing about transformative changes across Eurasian landscapes. Regardless of the geographic vector that domesticated animals and the knowledge to organize life around them was carried, Neolithic communities who foraged in the ecosystems of the Altai played a defining role in how culture change unfolded. I draw upon complexity science and network theory to suggest that local actors of the Altaic Neolithic mediated the receipt of new ways of living against their existing cultural logics. In this approach, subsistence change and concomitant cultural developments are byproducts of local systems fraught with histories of resilience, who differentially adopted pastoral subsistence but led to the seemingly uniform emergence of the region's first food producing societies.

Hermes, Taylor [301] see Bullion, Elissa

Hernandez, Hector (Universidad Autonoma de Yucatan)

[72] *Technological Change of Henequen Desfibradora Machine during Yucatan's Gilded Age*

Archaeologists conceive of technological change as a process that involves the transition of a certain technology through different stages, such as invention, development, manufacture, adoption, and abandonment. In this paper I discuss the technological change of the fiber processing machines that were invented during the first half of the nineteenth century in the Yucatan peninsula. The adoption and spread of the desfibradora machine was a key factor that influenced the growth of henequen production on haciendas and paved the way for other technological developments during Yucatan's gilded age. My goal is to analyze the processes of invention, adoption and abandonment of the henequen processing machines based on documents, photographs and archaeological evidence recovered from haciendas in northern Yucatan. Finally, I consider how the technological development encouraged by Yucatan's hacienda owners was part of a social process that brought different consequences to the peninsula's native communities at the dawn of the modern era.

Hernandez, Eleazar [252] see Lytle, Whitney

Hernandez, Christine (Tulane University)

[254] *Settling the Ucareo Valley: Early Classic Relationships between northeastern Michoacán, Mexico and the Eastern El Bajío*

The legacy of Dan Healan's ongoing work at the site of Tula in southern Hidalgo is well known and much celebrated. However, the impact of his investigations in the Ucareo-Zinapécuaro Obsidian Source Area (commonly referred to as the UZ source area) in northeastern Michoacán has yet to be fully appreciated. The UZ source area is perhaps best recognized as that corner of the Protohistoric Tarascan-Aztec frontier where Tarascan (Puréhpecha) led forces repeatedly defeated Aztec troops and successfully kept Mexican expansion further into the West at bay. The results of ceramic and chronometric analysis of data recovered by Dan's Ucareo-Zinapécuaro Project (1989-1995) suggest that the cessation of friendly relations with Mexico was a very recent reversal of a longstanding history of strong cultural and economic ties between NE Michoacán and its neighbors to the east. Ceramics from sites in the southern Ucareo Valley reveal a split in the cultural trajectory of settlement in the UZ source area beginning in the Early Classic period (A.D. 200- 400). The implications for the role of early obsidian exploitation are considered as are relationships with a proposed Teotihuacan enclave at el Rosario in southern Querétaro.

Hernandez, Amanda (Crow Canyon Archaeological Center)

[268] *Optimal Geophysical Methods for the Location and Identification of Basketmaker III Sites in Southwestern Colorado*

This study will discuss the use of optimal geophysical techniques to assist in locating and identifying Basketmaker III sites (A.D. 500 – 750) in the Ancestral Puebloan region of Southwestern Colorado. The National Historic Preservation Act mandates evaluating these sites for their potential to provide information important in understanding prehistoric behavior. Since most archaeological investigations (surveys, testing projects, and data recovery) to discover and evaluate sites, are time sensitive and constrained by budgets, it is imperative that geophysical methods, which are both time and cost efficient, are integrated into research. The buried structures and features that comprise Basketmaker III sites are

often imperceptible from the surface, making the use of geophysical methods invaluable for their location and evaluation. This study is a synthesis of research and geophysical survey results coupled with ground truthing of anomalies to locate and identify a small number of Basketmaker III sites on the Indian Camp Ranch subdivision in Cortez, Colorado. Geophysical explorations on this property have included magnetic gradient survey, electrical resistivity, electrical conductivity, and ground penetrating radar. This study will contribute to understandings of Baketmaker III period site structure in southwestern Colorado by elucidating patterns in site size, layout, and location on the landscape

Hernandez Arana, Jonathan [204] see Donner, Natalia

Hernandez Arana, Jonathan (Jonathan H. Arana)

[204] Chair

Hernández Escontrías, Pilar (Northwestern University), Claudia Nuñez Flores (Pontificia Universidad Católica del Perú) and Sofía Chacaltana (University of Illinois at Chicago)

[256] *Contested Space, Contested Bodies: an Archaeological Assessment of Indigeneity, Hispanicness, and the Conflicts of Spanish Colonial Governance in Peru*

We argue that in order to understand the mechanisms of colonial governance, we must analyze how the differential manipulation of spaces served as a tool of hegemony. We consider the visual and temporal relationship between two colonial-period settlements in Moquegua: Torata Alta, a colonial reduction, and Sabaya, an Inka and colonial site. Torata Alta, a symbol of Spanish control over indigenous bodies, overlooks Sabaya, an important Inka settlement in the upper Moquegua valley. Despite its visual domination over the valley, Torata Alta (the most "Spanish") did not survive as long as the more "Inka" site, Sabaya. Indeed, the site that was most successful at withstanding the test of time was the presumably more indigenous site, containing the characteristically Inka architecture. In this study, we use archaeological data to compare everyday life under two seemingly contradictory colonial gazes. We argue that, within the same valley, Spanish governance was not monolithic, resulting in differing lived experiences between the inhabitants of Sabaya and Torata Alta. By engaging in this comparison, we dismantle the heuristic boundaries existent between "indigenous" and "Spanish," and regard colonialism as a dialectical process, whereby the indigenous become hispanicized and the Spanish became indigenized.

Hernandez Garavito, Carla (Vanderbilt University)

[256] *Colonialism and the Construction of Community: The Case of Huarochirí in the Central Andes (Lima, Peru)*

Colonial Power in the Andes was constantly constituted, redefined, and negotiated, as different interests came into contact. Colonialism is built at the same time that it is experienced, leaving ample space for ambiguity and reconstitution of identity. In this presentation, I seek to explore the role colonialism played in constructing a sense of community and a shared memory through historical and archaeological evidence in the Central Andes. My main focus will be in the region of Huarochirí (Lima, Peru).

Archaeological research provides clues to the impact Inka expansion (1440-1532 A.D.) had over the area, as they facilitated community formation at the same time that they made Huarochirí legible to the Empire by appropriating community memory. Later, Spanish colonialism created the conditions for a reenactment and recording of this order: the Huarochirí Manuscript, an early 16th century document written in quechua and filled with myths and rituals still practiced in the early colony, will provide an important backdrop to understanding how these communities conceived of themselves through time. I argue that community and identity were main variables in the constitution of colonial order, both creating and negotiating the ambiguous spaces generated by the process itself.

Hernández-Sandoval, Luis [336] see R. Segura, Oliva

Hernanz, Antonio [156] see Ruiz, Juan

Herndon, Kelsey (The University of Alabama), Brett A. Houk (Texas Tech University), Mark Willis and Chester P. Walker

[107] *The Structure from Motion Solution: Mapping Structure A-5 at Chan Chich, Belize*

In 2013 the Chan Chich Archaeological Project conducted photogrammetric mapping and excavations on

Structure A-5, a large range building in the Main Plaza at the ancient Maya site of Chan Chich, Belize. Prior to excavations, the project created a digital elevation model of the mound using pole aerial photography (PAP) and Structure from Motion (SfM) software. During excavations, archaeologists photographed each exposed architectural feature extensively and uploaded the images to an analyst who created photogrammetric blocks of the excavation units using the same SfM software. The photogrammetric mapping technique proved tremendously effective. At the structure level, the PAP system used for collecting data proved efficient and cost effective. In fact, we believe that the resolution and accuracy of the SfM technique is comparable to using a 3D laser scanner, but can be accomplished for a fraction of the cost. Additionally, the SfM system, when used to record individual excavation units, can replace the traditional system of drawing plan maps and profiles. Furthermore, this method allows researchers to present data in an interactive way through 3D models that can be viewed via a variety of digital platforms.

Herr, Sarah (Desert Archaeology, Inc.)

[184] *Moderator*

[1] *Discussant*

Herr, Sarah [326] see Laluk, Nicholas

Herrera, Roberto (University of New Mexico)

[34] *Current Efforts at Defining Isthmo-Colombian Settlement Ecology*

Recent investigations into prehispanic settlements in southern Costa Rica are providing new evidence of variation among local traditions dating back to the Aguas Buenas period (300 B.C.-A.D. 800). Differences between built environments in the area, which range from mortuary villages to possible ceremonial seats of centralized leaders, seem to suggest different social configurations within different groups, despite the relatively close proximity of these different communities. Although site attributes can be broadly identified as part of greater Chiriquí culture, the apparent heterogeneity of settlement patterns raises important questions such as how local traditions emerged and to what degree these practices interacted with and influenced each other. Data obtained from the site of El Cholo are used as points of comparison to evaluate how settlements and communities located close to each other could have adopted such varying social dynamics.

Herrera, José [195] see Toscano, Lourdes

Herrmann, Virginia (Dartmouth College)

[41] *Local and Imperial Dynamics in a Residential Neighborhood at Assyrian Sam'al (Zincirli, Turkey)*

Household archaeology has transformed the study of ancient empires in the past two decades, turning these quintessential juggernauts upside-down by the addition of peripheral and quotidian voices and fine temporal and spatial scales. In this paper, this local perspective is trained on the Neo-Assyrian empire through analysis of the development of a residential neighborhood at Sam'al (modern Zincirli, Turkey) across its transition from local center to peripheral provincial capital in the late 8th century B.C. Archaeological evidence for agricultural and craft production, consumption of goods and resources, and social organization in this neighborhood is compared over successive phases of occupation. This analysis reveals striking continuities that indicate minimal direct Assyrian interference into provincial economic and social systems, supporting the view that imperial goals were limited to military control and defense in this already developed peripheral area. However, subtler shifts in local economic activities and social patterns can be attributed to the unintended consequences of the empire's unprecedented territorial unification and centralization, in combination with purely local dynamics. This study of the Assyrian impact from the perspective of household archaeology on the periphery complements and complicates previous studies based on large-scale settlement patterns or documents from the imperial center.

Herrmann, Jason (Dartmouth College)

[157] *Three-dimensional Subsurface Mapping of Earthen Mounds in the Lower Illinois Valley*

Ground-based remote sensing and three-dimensional visualization techniques have reinvigorated research on the interior structure of earthen mounds in the US Midwest as they provide a method for observing subsurface mound deposits without disturbing sensitive mortuary remains.

Archaeologists at the Center for American Archaeology in Kampsville, Illinois are documenting the internal structure of a variety of Middle and Late Woodland earthen mounds in the Lower Illinois River Valley to explore the benefits and limitations of the use of geophysical methods in mapping key mound elements. As part of this study, both large earthen mounds in the valley bottom, as well as burial tumuli along the valley bluffs, have been sampled with ground-penetrating radar (GPR) and electrical resistance tomography (ERT), each of which presents distinct advantages and drawbacks. The results of these remote sensing surveys confirm some prior interpretations of mound structure that were built on test excavations that can be extrapolated laterally across mound deposits in three-dimensional visualizations. Elements of mound structure that were not previously documented have also been identified. Finally, these surveys have proven to be an effective means to trace the slow destruction of these structures as they succumb to natural and anthropogenic erosion.

[55] *Discussant*

Herrmann, Nicholas [102] see Fuehr, Stephanie

Herrmann, Nicholas (Mississippi State University) and Jessica Stanton (Mississippi State University)

[303] *Mortuary Variability in the Late Woodland to Early Mississippian Period in the Lower Mississippi Valley and Central Gulf Coast: A View from Morton Shell Mound*

Mortuary facilities in the Lower Mississippi Valley from the Late Woodland to Mississippian Periods often present complex deposits resulting from varied burial treatments. One such facility is the Morton Shell Mound (16IB3), which represents a prehistoric settlement as well as a mortuary facility on the central Gulf Coast. The mound is a continuous shell deposit with several elevated mounds. The northwest mound, designated Mound B, contains a burial deposit likely associated with the Coles Creek to Plaquemine period of the Lower Mississippi Valley. The burial deposit is comprised of commingled remains and primary interments. Recent research has focused on an evaluation of the human remains in an attempt to decipher the sample demographics and health, body processing, burial treatment, and the depositional history of the mortuary facility. To address these issues we examine skeletal and dental pathologies, visualize skeletal and pathology spatial distribution, assess bone fracture patterns, perform intensive refitting, and analyze various quantitative measures using a three-dimensional surface fitting method to derive metrics. Through these multiple lines of evidence, we examine the mortuary behaviors and identity at Morton, relative to earlier Tchefuncte and Marksville, as well as contemporaneous Coles Creek and Plaquemine mortuary sites of the Lower Mississippi Valley.

Hester, Thomas [31] see Shafer, Harry

Hester, Thomas (Emeritus) and Harry Shafer (Prof. of Anthropology, Emeritus Texas A&M University)

[292] *Late Preclassic Complexity: Views from Colha*

We have documented in numerous papers the rapid expansion of stone-tool production in the Late Preclassic at Colha, Belize. We developed a "producer-consumer" model to illustrate the distribution of stone tools to other communities in the region. However, there are several other facets of the site's socioeconomic complexity that have received less attention. Among these is the manufacture of lithic symbols ("eccentrics") both for local ritual use, and for the elite's use at other sites. Still another example is linked to the significance of persons who functioned as flintknappers at the site, and their involvement in ceremonial rituals. Economic data demonstrate change in faunal use from Middle Preclassic into the Late Preclassic. Our colleague, Leslie Shaw, examined the Late Preclassic animal bones for her dissertation, and the data she obtained are important in the study of complexity at Colha. The changes in dietary data may reflect interaction between Colha and its neighbors.

Hicks, Megan (City University of New York)

[29] *Skútustaðir: Considering an Icelandic Farm Across Scales*

Skútustaðir has been a socially and spatially central farm in Mývatn, N. Iceland, perhaps since the middle ages (1000-1550 C.E.), though it was settled in the Viking age (871-1000 C.E.). Seasonally scheduled production at the farm combined the husbandry of domesticated mammals, collection of wild bird eggs,

fishing, and the movement of resources in from the coast, 60 km to the north. Using zooarchaeological evidence from this specific farm, the present work describes the particular strategies of resource use in the middle ages. Its production, ecology, and social life are described relative to the large-scale narratives in Icelandic history of that period.

Hicks, Patricia [77] see Slaughter, Mark

Hicks, John (Univ. of Illinois at Chicago/The Field Museum)

[298] *Portable X-Ray Fluorescence (pXRF) Analysis of Lithic Materials from Easter Island (Rapa Nui)*
This poster presents a geochemical analysis of lithic samples from prehistorically-utilized material sources on Easter Island (Rapa Nui), including obsidian, scoria, and volcanic tuff. Analysis was conducted using portable X-Ray Fluorescence (pXRF), which has not been used on Easter Island but is known to be effective in the Western Pacific. The analytical dataset consists exclusively of non-archaeological samples collected through raw-material survey; earlier studies have relied primarily on stone tools from archaeological contexts. The study had three objectives: (1) identify elements or element combinations indicative of provenance using samples from geologic sources; (2) determine if uncommonly-analyzed lithic materials--tuff and scoria--can generate meaningful data; and (3) compare the results of pXRF analysis to other, more sensitive techniques like PIXE-PIGME or TOF-LA-ICP-MS. Results of statistical analyses (e.g., PCA, DFA, and ANOVA) show that pXRF effectively discriminated between materials sources for all materials. Key diagnostic elements were Ti, Fe, and to a lesser extent Ca and Zr.

Hiebel, Gerald [36] see Wright, Holly

Higelin, Ricardo (IU) and Gonzalo Sanchez Santiago (UNAM)

[293] *The Omichicahuaztli (Scraper Bone as Musical Instrument) in Southern Mesoamerica: A Multiple-Method Approach to Interpreting Their Use and Significance among Prehispanic Cultures of Oaxaca*

We analyze a set of relatively rare artifacts made out of human and animal bone found in different archaeological sites in Oaxaca, Mexico. To make these artifacts, people carved the diaphyses (shafts) of relatively flat long bones with a series of transverse notches, sometimes adding perforations within the notch to produce a musical instrument. Based on ethnohistorical accounts, such instruments are identified Omichicahuaztli, a Nahua language term translated as "scraper bones." Given the frequent association of Omichicahuaztli within mortuary contexts, these artifacts may have been used as musical instruments associated with funeral ceremonies and ritual practices. In this paper, we examine the archaeological contexts in which Omichicahuaztli have been recovered, review examples of artifacts made out of human and animal femora found in other parts of Mesoamerica, identify the kinds of bones out of which Omichicahuaztli are constructed, and provide an organological description of the resulting musical instruments in order to try to better interpret meaning and use of Omichicahuaztli in Oaxaca and greater Mesoamerica.

Higgins, Howard (TRC Environmental Corp.)

[50] *Ethnological and Archaeological Inventory with the Mescalero Apache Tribe of Potential Traditional Cultural Properties in the Permian Basin MOA Area, New Mexico*

In 2010, the Bureau of Land Management, in cooperation with the Mescalero Apache tribe, selected nine locations in Eddy County, New Mexico, for archaeological and ethnological inventory as potential Traditional Cultural Properties (TCPs). This paper reports on how this study was conducted and its results. Each of the nine locations was visited at least once by a team consisting of an ethnologist, an archaeologist, and tribal members. During these visits, each location was evaluated as to presence or absence of characteristics that would justify its recommendation to the NRHP as a TCP or sacred site. Among others, these characteristics included physiographic elements; local historic events; and the presence of rock art, Native American structural remains, and resources important in the practice of Mescalero culture. Subsequently, five of the locations were recommended as eligible for the NRHP and two were not. The remaining two could not be evaluated due to the limited amount of work at each of these locations and the resulting paucity of information. The paper discusses the justifications for these recommendations, examines the strengths and weaknesses of the study, and concludes with ideas concerning the design and implementation of future similar studies.

Highcock, Nancy (New York University)

[257] *Preliminary Investigations at Kınık Höyük, Southern Cappadocia: Hellenistic through Medieval Periods*

The site of *Kınık Höyük*, a sizeable tell settlement with monumental architecture and walls, presents an unparalleled archaeological opportunity to better understand the region of southern Cappadocia, Turkey, which served as a crossroads between the Near East and Europe. Excavations beginning in 2011 have uncovered information concerning the Middle and Late Iron Ages, Hellenistic, and Medieval periods of occupation within the citadel walls. This presentation will report on the architecture and diagnostic material of the later periods from the summit of the mound (operation B) before introducing new data retrieved during the 2013 season. This past summer, the team extended the investigation of the northern slopes (operation A) and began excavation in the lower town (Operation D) of the site. The excavation of the latter revealed a domestic context with levels of occupation dating to both the Hellenistic and Iron Age periods. Unlike the previous results from the tell itself, however, the lower town also produced ceramic material dating to the Roman and Byzantine periods, indicating different diachronic patterns of habitation for this area of the settlement. Furthermore, this burgeoning operation uncovered substantial evidence for household craft production, particularly of textiles, and the re-use of domestic architecture over time.

Hightower, Jessica [337] see Weishampel, John

Hildebrand, Elisabeth (Stony Brook University), Katherine Grillo (University of Wisconsin-LaCrosse) and Anneke Janzen (University of California-Santa Cruz)

[186] *Construction of Megalithic Pillar Sites in the Middle Holocene of NW Kenya: Social Change on an Economic Frontier*

The middle Holocene of NW Kenya saw many changes in economy, material culture, and social life: the advent of herding, production of Nderit pottery, and construction of "pillar sites" with standing stones, large rubble platforms, stone circles, and cairns. As the earliest public or "monumental" architecture in eastern Africa, pillar sites herald important developments in social organization. Three seasons of fieldwork west of Lake Turkana have dated construction and use of four pillar sites (GeJi9, GeJi10, GcJh3 and GcJh5) to 4300-3800 14C bp; three of these sites were in use within a few human generations of each other. The sites differ, however, in portable material culture and architectural layout. Excavations have revealed stone pavements, burial pits, curbs, and ashy areas within the deposits of some pillar sites. Mortuary activities are clearly represented within the platforms of three sites; individuals are typically buried with personal adornments such as beads made from stone or ostrich eggshell, but the nature, degree of elaboration, and physical location of personal ornamentation varies. Because several of the pillar sites saw practically contemporaneous use, differences among the sites suggests a complex social landscape in which multiple commemorative practices were employed, possibly by distinct cultural groups.

Hildebrand, Elisabeth [186] see Chritz, Kendra

Hildebrandt, William (Far Western Anthropological Research Group)

[282] *Discussant*

Hill, Christopher

[24] *The Montana Experiment: A Geoecological Model for Exploration and Discovery*

The Kokopelli Archaeological Research Fund (KARF) was created by an endowment from Joe and Ruth Cramer and ultimately supported both the Paleoindian Research Program (PRP) and the Ice-Age Research Program (IARP) at Montana State University. The endowment provided the opportunity for a two-pronged, collaborative approach to the study of late Pleistocene and early Holocene environments and human populations. The relatively-stable private funding source served as effective financial leverage that led to cooperative agreements with federal agencies and support from the National Science Foundation. A long-term research agenda that focused on the stratigraphic and chronologic framework for the northern Rockies and Great Plains was developed. The goal was to integrate lithostratigraphic, geomorphic, chronometric and paleontological data with known archaeological patterns to produce a geoarchaeological potential model for regional landscapes. Detailed field studies of known archaeological and paleoentomological localities were combined with stratigraphic and geomorphic studies from a wide variety of paleoenvironmental settings in non-glaciated and glaciated Montana landscapes. Initially based on an interest in the discovery and study of evidence for the presence of late Pleistocene humans, the

goals of KARF evolved to include developing a model that could be applied to understanding long-term ecological change.

[114] *Discussant*

Hill, Natalie (Barnard College)

[42] *Houses of the Holy: A Ceremonial Cave Complex in the Northern Rio Grande*

The site, Houses of the Holy (LA 102342), is a cave complex in Pilar, New Mexico that has served as a center for ritual behaviors over multiple millennia. The cave and its surrounding landscape were repeatedly visited by Archaic hunter-gatherers, Ancestral Pueblo groups, the Jicarilla Apache, and most recently by a community of new age practitioners from the town of Pilar. Although displaced in time, many of the panels display Archaic icons overlain by iconography from later periods. Multiple shrine features and ceramic pot drops found around the site indicate the Precolumbian use for Pueblo ritual. Campsites immediately outside the cave complex provide evidence of further usage by the Jicarilla Apache during the 18th and 19th centuries. The patterns of occupation and use of the landscape demonstrate a particular interest by these groups to visit and engage in ceremony at persistent places where meanings appear to have accrued and amplified over time. Here I report on recent research at the site and consider its implications for our understanding of the development of ritual practices situated within the wider landscape.

Hill, Dr. David [46] see Brewer, Olivia

Hill, Brett (Hendrix College)

[71] *The Defender*

The title of this session highlights the prominent consideration of conceptual frameworks in both Professor Clark's research and his teaching. My goal here is to extend one circle of his career by reexamining issues in the American Southwest, where he began in the field, in light of lessons he offers from the Old World Paleolithic. Themes of extinction, abandonment and collapse are common in archaeology and in the public imagination of archaeology. In a commonly implied notion of disappearance they often presuppose oversimplified categories such as species, cultures and civilizations. Moreover, inquiries into such disappearance often simplistically presuppose failure in a way that biases subsequent research. The categories of Neandertal and Hohokam, and their ostensible disappearance, illustrate in distinctive ways the common pitfalls of such presuppositions among professional archaeologists. Yet, these are also precisely the topics of greatest intrigue to a public audience even less prepared to appreciate the subtleties of our epistemology. As a well-known defender of students, Neandertals, and science, Professor Clark has inspired careful consideration of our concepts that we would all do well to emulate.

Hill, Katherine (Hamilton College), Nathan Goodale (Hamilton College), Alissa Nauman (Hamilton College), David G. Bailey (Hamilton College) and Anna M. Prentiss (The University of Montana)

[175] *Elemental Characterization of Floor Sediments from Housepit 54, Bridge River Housepit Village,*

British Columbia

Elemental characterization of sediments from living floors can aid in establishing past spatial organization and human behavioral adaptations. In this study, we utilize EDXRF and WDXRF techniques to examine floor sediments collected from BR2 and BR3 occupations of HP54 at the Bridge River housepit village. HP54 demonstrates a long history of occupation, containing as many as fifteen occupational floors interspersed with seven roof deposits. While the final floor post-dates contact, the underlying floors pre-date 1100 cal B.P. During excavation, HP54 was systematically sampled for sediments across multiple floors. A preliminary investigation was conducted in 2012 on sediment samples (N=40) associated with the historic Fur Trade occupation. Additional samples (N=93) were collected during the excavation of underlying floors associated with BR2 and BR3 occupations. We detail our methods for sample preparation to obtain reliable XRF data and implement geospatial tools to examine the results. Results suggest that elemental composition of sediments from floor contexts can be a valuable tool for discerning activity areas. This permits us to examine patterns of continuity and change in the organization of household space over multiple occupations.

Hill, Rebecca (Tulane University)

[195] Geochemical Characterization of Obsidian Artifacts from the Bolonchén District

This paper examines obsidian procurement strategies and production technology from the Preclassic through the Terminal Classic in the Bolonchén District of the Puuc Region of Yucatán, México. Obsidian artifacts from the archaeological sites of Hunchimul, Kiuic and Escalero al Cielo have been geochemically characterized with a Bruker Tracer III-SD handheld portable X-ray fluorescence spectrometer (pXRF). The obsidian artifacts included in this analysis were recovered during the investigations of the Bolonchén Regional Archaeological Project from 2000-2013. The results of the geochemical and technological analyses allow for a detailed examination of the spatial and temporal variability in obsidian procurement strategies and production technology in the Bolonchén District, contributing to our understanding of interregional and long-distance exchange.

Hill, Katie (Eastern New Mexico University)**[230] Adobe Walls: An Example of Depression Era Parkitecture**

The Civilian Conservation Corps (CCC) was part of FDR's New Deal campaign to kick-start the economy through public works. The CCC ran from 1933-1942 and constructed structures that fit with the parkitecture theme. Parkitecture is an approach for designing structures so that they blend in or compliment the environment. It is a practice of the National Park Service, the National Forest Service and other public lands agencies to construct buildings that are in harmony with the surroundings or express the regional culture history. Outside of Portales, New Mexico are the remains of a CCC camp and the nearly forgotten Eastern New Mexico State Park that its enrollees constructed. Two adobe structures, a bathhouse and a custodian's dwelling, still stand on the site. These Depression Era parkitecture structures are less than a century old, but are rapidly deteriorating due to the elements. This camp has been recorded, mapped and photographed, with detailed drawings made of the two structures in order to preserve them on paper. Future research hopes to compare these with other structures of their kind built by the CCC in New Mexico.

Hill, David (Metropolitan State University of Denver) and Thomas Fenn (The University of Arizona)**[237] Lead Isotope Analysis of Glazed Ceramics from the Deh Luran Plain,
Southwestern Iran**

A major portion of Dr. Neely's career has involved the publication of research that he conducted resulting from his participation in the survey and excavation of sites located on the Deh Luran Plain in southwestern Iran. The De Luran project represented one of the first archaeological projects to integrate methods derived from materials science to examine cultural material. In keeping with the tradition, the current study will address the variation in the potential sources of lead used as the flux in pottery glazes dating from the Parthian, Sassanian and Early Islamic Periods recovered during the survey of the Deh Luran Plain. This study will present analysis results for the lead isotope ratios from the ceramic glazes and compare them with newly available ore analysis data from the region.

Hills, Kendall**[130] Place-Making at Minanha: A Contextual Analysis of Epicentral Material Culture**

The ancient Maya city-state of Minanha, located in west-central Belize, demonstrates a dynamic culture history, punctuated by the establishment of a royal court during the Late Classic period (A.D. 675-810). Over a period of eight years, intensive investigations performed within the Minanha Epicenter have produced a wealth of data and material culture. Informed through a contextual frequency distribution analysis of the epicentral special finds artifact assemblage, this paper provides a synthesis of the long-term occupation of the physical "space" that would, during the Late Classic period, emerge as the center's seat of power. Emphasis is placed on understanding the diverse economic, political, social, and ritual practices that were carried out in this "place" from its initial occupation in the Late Preclassic period (400 B.C.-A.D. 100), to its final abandonment in the Early Postclassic period (A.D. 900-1200). Ultimately, the general trends that have emerged from this analysis inform us as to how this segment of the greater Minanha community changed over time. This paper demonstrates that Minanha's Epicenter was a dynamic locus; with an ever evolving community.

Hilton, Michael [304] see Westby, Molly

Hinojosa-Balino, Israel (CIESAS) and Gerardo Gutierrez (University of Colorado Boulder)

[8] Archaeological Settlement Patterns in the Province of Tlapa, Guerrero

In this work we present a spatial analysis of the distribution and chronology of archaeological remains in eastern Guerrero, Mexico, in the region referred to as Tlapa by the Spaniards. Synthesis of the results of field research as well as laboratory analysis undertaken by the Archaeology and Ethnohistory of La Montaña Project will be presented.

Hirth, Kenneth (Penn State University)**[254] Early Olmec Obsidian Craft Production at San Lorenzo Tenochtitlan**

The manufacture of obsidian prismatic blades has always been an important feature of Mesoamerican craft production. Recent archaeological explorations at the Olmec site of San Lorenzo Tenochtitlan have uncovered evidence for early obsidian craft production dating to the Early Formative period from 1200- 1000 cal B.C. This paper presents the archaeological and technological evidence for this craft activity. These materials represent the earliest evidence for obsidian craft specialization currently known from Mesoamerica predating previously known blade workshop remains by 500 years. These data provide new perspectives on the origin of obsidian craft production, the spread of prismatic blade technology throughout Mesoamerica, and the procurement networks by which raw material suitable for manufacturing obsidian blades reached the Olmec Gulf Coast.

[60] Discussant

Hiscock, Peter [71] see Barton, C. Michael

Hishida, Tetsuo (Kyoto Prefectural University)**[226] State Formation Process in Japan from Economic Standpoint**

Recent advances in Japanese archaeology have made clear spatial and temporal distribution of production sites of the Kofun Period. These results lead the author to a conclusion that the growth of large-scale production centers in the fifth century played an important role in the state formation in Japan. These production centers were of iron smith, pottery production, salt production, raising and producing horses, and bead production. Many of these production systems were introduced from the Korean peninsula. In the fourth century, local polities in northern Kyushu played dominant role in trade and interaction with the Korean peninsula. During the fifth century, however, the central polity of Kinai (present Nara and Osaka) gained direct control over trade and interaction with the Korean peninsula. At that time, numerous production centers came to be concentrated in the Kinai region. These phenomena were highly significant in the state formation. In the sixth century many local production centers grew. This was made possible because tribute economy to maintain the central polity developed. This became the foundation of taxation system in the following century when a state-level society matured.

Hitchings, Philip (University of Toronto) and Edward Banning (University of Toronto)**[84] Geomorphological and Topographic Indicators of Potential Neolithic Occupation in Northwest Jordan: Survey Results from Wadi Quseiba and Their Significance for Future Research**

Two seasons of archaeological survey in Wadi Quseiba and its surrounding drainages in Northwest Jordan have revealed both artifactual evidence of Neolithic occupation, and geomorphological features suggestive of ideal locations for such occupation and its modern recovery. The survival and recovery of archaeological material is a consequence of erosion and sediment accumulation. This is especially true of surface collection by pedestrian survey. Based on this, targeted survey of Wadi Quseiba and its tributaries has been conducted, starting with a predictive model that accounts for the long-term transformative effects of erosion and sedimentation on the natural/cultural landscape. This has led the researchers to the conclusion that several remnant Neolithic terraces likely survive in the Wadi system. Previous research conducted in the area has revealed long-term correlative patterns between geomorphological features and sequences of occupation. With this, several areas have been flagged as having a high potential for being Neolithic occupation surfaces regardless of whether artifactual evidence was located during surface survey. These geomorphological indicators will serve as criteria for future research in the form of excavation to confirm Neolithic occupation, bolster the record of such occupation in the region, and allow for new discussion of Neolithic landuse in the region.

Hlubik, Sarah [209] see Cutts, Russell

Hlubik, Sarah (Rutgers University), Emily Wahler (Rutgers, The State University of New Jersey), Craig Feibel (Rutgers, The State University of New Jersey) and John WK Harris (Rutgers, The State University of New Jersey)

[295] Multi-Spectral, Low-Altitude Aerial Photography Methods for Archaeological Survey

Survey and prospection can be both a rewarding and time-consuming activity in the life of the archaeologist. There is a constant need to identify effective prospection methods using remote sensing technology. Satellite imagery, using multi- or hyper-spectral technology may be able to increase efficiency of survey and improve discovery rates of potential sites. The spectra of sediments will differ according to mineralogical make-up; this can be used on a large scale to help discover sites, and on a small-scale to identify intrasite changes that could indicate the location of features. Given the high cost of high-quality satellite images, it is not always possible to obtain the most recent, highest-resolution imagery available. However, recent advances in digital camera technology may make it possible to mimic the functionality of multi-and possibly hyper-spectral imagery by modifying high-resolution digital cameras to take infrared and ultraviolet photos. These cameras can be used with visible spectrum cameras to take photos of survey areas and sites with low-altitude aerial photography. This project proposes a methodology and evaluates its effectiveness to identify different sediments on a large scale as well as the ability to identify intrasite differences that may indicate feature presence.

Hoag, Elizabeth [152] see Haas, Mallory

Hoard, Robert J. [280] see Stites, Michael

Hockett, Bryan (Bureau of Land Management)

[148] A 13,000 Year Record of Subsistence Change at Bonneville Estates Rockshelter

Bonneville Estates Rockshelter (BER), eastern Nevada, was initially occupied by humans about 13,100 years ago. Intermittent occupations continued until very recently. All prehistoric phases recognized from the north-central Great Basin are present, and all contain an abundance of well-preserved faunal remains. Previous publications have identified two general trends in the early BER fauna exploited by human foragers: (1) high diversity in the Late Pleistocene-Early Holocene occupations, centered on the capture on large and small terrestrial mammals, birds (sage grouse), and insects (katydids) during a cool and moist climate; and (2) a focus on artiodactyls during the warm and dry Middle Holocene. I update these early records with a complete listing of the fauna recovered from the shelter, corroborating these trends. I present for the first time changes in human diet based on the faunal record throughout the Late Holocene at BER (ca. post-5,100 years ago). I then correlate trends in faunal use with nine climatic phases recognized in the Great Basin over the past 13,000 years, showing connections and disconnections between the two. I end the paper with suggestions on future directions archaeologists may wish to consider when interpreting human dietary decision-making in Great Basin foragers.

Hockett, Bryan [278] see Haws, Jonathan

Hodell, David [158] see Brenner, Mark

Hodges, Charles [315] see Kopperl, Robert

Hodgetts, Lisa [157] see Eastaugh, Edward

Hodgetts, Lisa (University of Western Ontario), Colleen Haukaas (University of Western Ontario) and Laura Kelvin (University of Western Ontario)

[326] From the Ground Up: Building a Community-Based Archaeology of Banks Island, Arctic Canada

Here, we discuss our attempts to overcome some of the challenges of developing a community-based archaeological research project in the small, remote Arctic community of Sachs Harbour, Northwest Territories. These challenges include research fatigue, local politics and logistical difficulties, which are doubtless faced by other archaeologists collaborating with local communities, whether the collaboration is initiated by the archaeologists (as in this case) or the community. We outline the specifics of these challenges in Sachs Harbour and illustrate how we are using non-invasive techniques including archaeological geophysics, 3D modeling and ethnography in concert with social media in an attempt to

build trust, encourage community participation, and facilitate dialogue.

[326] *Chair*

Hodgins, Gregory [69] see Rademaker, Kurt

Hoffman, Amy [42] see Ellyson, Laura

Hoffman, Amy (University of North Texas), Christy Winstead (University of North Texas), Laura Ellyson (University of North Texas) and Lisa Nagaoka (University of North Texas)

[42] *Resource Depression within the Ancestral Pueblo Goodman Point Community*

Prior to the depopulation of the San Juan (Four Corners) region (circa A.D. 1300), Ancestral Puebloan people faced challenges of declining and changing faunal resources due to their increasing population density in the context of climatic shifts. Several recently excavated archaeological sites within the Goodman Point Pueblo Unit in southwestern Colorado, spanning a long temporal occupation (circa A.D. 1000-1280), contain thousands of animal remains. We explore local spatiotemporal variability in faunal resources within the Goodman Point community by examining taxonomic abundance and prey choice. These analyses facilitate an investigation into the differences in the exploitation of domesticated and wild animal resources. Our results indicate a decreasing reliance on domesticated resources and increasing diet breadth at the end of the occupation, mirroring results found within the larger San Juan region.

Hoffmann, Tanja [290] see Lyons, Natasha

Hofman, Jack (University of Kansas) and Rolfe Mandel (University of Kansas)

[24] *In Pursuit of the First People on the Central Plains*

During the past decade research in the Central Plains region supported by the Odyssey Archaeological Research Fund has targeted localities with the earliest known evidence and potential evidence for human occupation. Investigations include those at Kanorado, Burntwood Creek, Claussen, Vincent-Donovan, Brookings, Simmshauser, Scheuerman, Big Eddy, Coffey, and others. This paper reviews key evidence and findings from some of these sites, documents the scope of Odyssey-supported research and how the search for early sites has developed and been refined during the decade. The unequivocal documentation of pre-13,000 year old human occupation in the region through Odyssey research has not occurred, but arguments for why we believe such evidence exists are presented.

Hofman, Courtney (University of Maryland), Torben Rick (Smithsonian Institution), Julie King (Catalina Island Conservancy), Wendy Teeter (Fowler Museum, UCLA) and Jesus Maldonado (Smithsonian Institution)

[316] *Ancient DNA and the Origin of the Catalina Island Ground Squirrel*

The Catalina Island ground squirrel is a form of the California ground squirrel (*Otospermophilus beecheyi*) found in mainland California and may be a fairly recent introduction to the island of Catalina. The differences between mainland and island *O. beecheyi* are limited, including a slightly larger skull and hind feet and an apparently darker color. Relatively few studies have investigated the ecology and natural history of Catalina Island ground squirrels and no studies of island ground squirrel genetics have been performed. The island squirrels appear to fill the same niche as mainland ground squirrels, but they occur in several archaeological sites and some bones which are burned or have possible cutmarks suggest they were hunted and/or scavenged by Native Americans. Here we report recent genetic analysis of ancient and modern ground squirrels and radiocarbon dates on archaeological ground squirrel bones. These data help evaluate the dispersal and evolutionary history of Catalina Island squirrels, as well as the relationship of such developments to changing human occupations (e.g., Native American, historical ranching, and modern).

Hogan, Patrick [87] see Worman, F. Scott

Hogan, Maura (Indiana University)

[263] *The Social Performance Characteristics of Temper: A Comparative Study of Late Woodland Pottery in the American Bottom.*

Grit tempering is a diagnostic feature of Late Woodland pottery, and is often used to distinguish earlier

occupations at multi-component sites within the American Bottom region and across the Southeastern U.S. Techno-functional analyses highlight how the inclusion of specific tempering agents will affect the performance characteristics of a vessel, and by extension, temper choice is most often interpreted with respect to these performance characteristics. In analyses of Late Woodland, grit-tempered ceramic assemblages, less attention has been paid to the non-technical considerations that guide temper choice. An alternative is to examine the social context of temper selection. Studies of materiality propose that the phenomenological properties and point of origin of substances are endowed with social and cosmological significance. This poster presents data collected on a sample of Late Woodland pottery from an upland, multi-component in Lebanon, IL, and considers the potential for tempering choice to provide insight into the social landscape. Preliminary results of this analysis suggests that, in some cases, the exclusive use of a single mineral or material for tempering and the placement of discarded sherds appear to be purposeful choices, informed by historical connections to places on the physical landscape and by social ties with neighboring communities.

Högberg, Anders (Linnaeus University)

- [115] *Children and the Materiality of Social Learning within the Evolution of Mankind and Behavioral Modernity*

Recent research has re-written the history of evolution of modern humans. Studies have shown that early modern humans evolved in sub-Saharan Africa c. 200,000 years ago, that modern humans and Neanderthals existed simultaneous for more than 10,000 years in Europe, that behavioral modernity is to be seen as developed by environmental and social processes among both archaic and modern humans, and that modern and archaic humans interbred. But, few studies have been conducted that in an interdisciplinary and global manner focus on the essence of that which develops and maintains behavioral modernity, i.e. cultural and social learning and intergenerational transmission of knowledge. More research is needed on how social learning came about, which artifacts and technologies were handled, how knowledge of these was preserved, transmitted and further developed in the form of innovations from one generation to another and which evolutionary consequences this has had. In this paper I will discuss how an understanding of the role played by the children and materiality of social learning can contribute to interpretations on evolution of mankind and behavioral modernity.

- [115] *Chair*

Hogg, Erin and John R. Welch (Simon Fraser University)

- [76] *What Does Collaborative Archaeology Mean to You?*

Archaeologists are becoming increasingly aware that archaeology affects living people, including descendant communities on whose lands they work. In British Columbia, Canada, First Nations are asserting treaty rights and titles, including their rights to proper consultation and accommodation before projects occur in their territories. These assertions, and consequent court decisions and government policy alterations, are obliging archaeologists to determine how to collaborate with descendant communities. However, as there is no mandated legal framework for collaborative practices, archaeologists and other stakeholders are creating informal and experimental policies and practices. Because these informal means of collaboration may become the next generation of law and policy, they deserve research attention to identify the most just and effective forms of engagement. Our project does just that, by using measurable attributes of collaborative practices to analyze information from British Columbia archaeology projects, including consulting, field schools, and research projects. Our assessment provides answers to how, to what extent, and to what ends archaeologists and descendant communities are working together, and highlights the diversity of community-engagement in British Columbia.

Hoggarth, Julie (Pennsylvania State University), Carolyn Freiwald (University of Mississippi), Anna Novotny (Arizona State University) and Jaime Awe (Institute of Archaeology, National Institute of Cu)

- [21] *Postclassic Settlement and Population Movement at Baking Pot and in the Belize River Valley*

While most centers in the upper Belize River valley were abandoned during the Late and Terminal Classic, people continued to reside at Baking Pot for hundreds of years. However, Postclassic occupation was characterized by changes in the settlement pattern, along with distinct shifts in the material culture of households in the eastern settlement of the site. Burial patterns that endured for generations also changed significantly, suggesting broad changes in ritual practices. In this paper, we explore the origins of Baking Pot residents during the Postclassic period using biogeochemical and archaeological data. Strontium, oxygen, and carbon isotope values for three Postclassic burials provide a

comparison with Late and Terminal Classic migration patterns of 29 individuals buried in household and public contexts. Osteological analyses that include dental metric and non-metric epigenetic traits and a taphonomic analysis of funerary treatment provide insight into the changes that occurred during and after the sociopolitical collapse at Baking Pot and elsewhere in the Maya lowlands.

Hoggarth, Julie [158] see Kennett, Douglas

Holcomb, Justin (Oregon State University) and Dennis Jenkins (Museum of Natural and Cultural History)

[148] *Early Holocene Mobility and Technological Activities at Connley Caves 5 and 6 (35LK50), in South-Central Oregon*

The Connley Caves consist of eight wave-cut rockshelters and caves located on the west side of the Connley Hills in the Fort Rock Basin in south-central Oregon. Here, we provide a first look at the lithic assemblage from Cave's 5 and 6 and discuss the possibility of occupations during the earlier Paisley Period (16,000 - 12,900 cal. yr B.P.). Previous research in the late 1960s revealed deep, well-stratified cultural deposits potentially dating to this period. The site was reopened during the summers of 2000 and 2001 as part of a larger study of early forager lifeways throughout the Fort Rock Basin by the University of Oregon field school. Two cultural components, the upper and lower pre-Mazama (the Lunette Lake and Fort Rock periods, respectively), were identified during these excavations. The Lunette Lake component was directly dated to between 9000 and 8500 cal. yr B.P. and the Fort Rock component was directly dated between 11,000 and 9800 cal. yr B.P. We discuss the technological organization, toolstone provisioning, and settlement patterns of the Western Stemmed peoples that occupied the site during the early Holocene and place the site in a broader regional context.

Holeman, Abigail (University of Virginia), Adam Watson (American Museum of Natural History), Rechanda Lee (Chaco Culture National Historical Park), Katelyn Bishop (University of California Los Angeles) and Samantha Fladd (University of Arizona)

[42] *Preliminary Results of Survey and Excavations at a Late Bonito Great House in Chaco Canyon, New Mexico*

Summer 2013 saw initial investigations at Roberts' Great House, a Late Bonito subphase (1100-1140 CE) great house in Chaco Canyon, New Mexico. Initially explored by Frank H. H. Roberts in 1926, the site is threatened by severe erosion. Sections of the site have already collapsed into the main arroyo and proximal tributary bounding the site. Following extensive surface mapping, excavations were limited in scope and designed to assess erosional damage, occupation history, and inform a more precise map of the site. Initial results indicate that Roberts' map, upon which subsequent researchers have relied, underestimated the size of the great house. Additionally, the scale of earlier Basketmaker III and Pueblo I occupations are more substantial than previously indicated. Artifacts and architecture reflect a long, complex, and episodic occupational history spanning 700 years. In this poster, we present preliminary findings of our excavation and mapping efforts, highlighting the potential for the application of leading edge 3D technologies in the assessment of threatened cultural resources.

Holk, Gregory [140] see Niespolo, Elizabeth

Holland, Christina [12] see Krigbaum, John

Hollander, David [329] see Schwartz, Mark

Hollenbach, Kandace [117] see Cyr, Howard

Holliday, Vance T. [14] see Vasquez, J. Javi

Holliday, Vance (University of Arizona), Bruce Huckell (University of New Mexico) and Jesse Ballenger (Statistical Research Incorporated)

[24] *Clovis, Folsom, and Climate: The Argonaut Archaeological Research Fund*

The Argonaut Archaeological Research Fund (AARF) was established at the University of Arizona by Joe and Ruth Cramer in 2001. AARF's mission focuses on the archaeology and geoarchaeology of First Americans in the American Southwest, including northwest Mexico. In central New Mexico AARF

supported excavation and stratigraphic mapping of the Boca Negra Wash and Deann's Folsom sites in the Albuquerque Basin, and a long-term program of testing, mapping and coring of the extensive Mockingbird Gap Clovis site on the Jornada del Muerto. This research suggests that Clovis and Folsom subsistence in this region was focused on bison hunting carried out by small, mobile groups adjacent to playa wetlands and marshy draw environments. AARF work in the San Pedro Valley of Arizona has pushed the alluvial chronology of the inner valley back to Clovis times, mapped the distribution of "black mats," and continued testing of mammoth sites in the valley. Inventories of surface finds map the occurrence of Paleoindian occupations throughout the AARF region. High concentrations of Folsom sites are documented along the Rio Grande Valley, but no Folsom artifacts are known from southern Arizona or northwest Mexico.

Holly, Donald (Eastern Illinois University) and Paul Prince (MacEwan University)

- [325] *Separate and Unequal: Amerindian and Paleoeshimo Settlement and Subsistence Patterns on the Island of Newfoundland*

For nearly a thousand years, Amerindians and Paleoeshimos shared the island of Newfoundland. During this time, Paleoeshimo peoples practiced a rather specialized maritime-focused settlement and subsistence strategy. In contrast, Amerindians pursued a more mobile and generalized approach that made greater use of interior resources. The reasons for these differences may be partly cultural, but it is suggested that they also reflect the relative power of Paleoeshimo peoples at the time. Through an examination of settlement patterns and an analysis of faunal remains from the interior of the island, we propose that the formidable presence of Paleoeshimo peoples on the coast effectively marginalized Amerindian peoples to the extent that their subsistence economy was jeopardized.

Holly, Jr., Donald H. [325] see Wolff, Christopher

Holt, James [165] see Bell, Colleen

Holt Mehta, Haley (Tulane University)

- [275] *Investigating Settlement and Identity at El Tesoro, a Classic Period Zapotec Settlement in the Tula Area*

The Tula area is well known for its fluorescence in the Early Postclassic period and its significance to the Aztecs later in time. This region also was of great importance to the state of Teotihuacan in the Early Classic period, when it was colonized for agricultural land and lime extraction. Complicating the social landscape further, archaeological evidence indicates Zapotec people were part of this Teotihuacan incursion in the Tula area. Abundant Zapotec-style pottery and at least two Zapotec-style tombs have been recovered from three sites in the area, including at the Teotihuacan administrative center of Chingu. This paper presents ongoing research from one of these sites, El Tesoro, located 20 kilometers south of what would become the great Toltec capital. Recent investigations there show evidence for an apparent hybridized Zapotec-Teotihuacano settlement, which may indicate a strong relationship with the Oaxaca Barrio of Teotihuacan and its inhabitants.

[275] *Chair*

Homburg, Jeffrey (SRI/University of Arizona), Michael Heilen (Statistical Research, Inc.) and Phillip Leckman (Statistical Research, Inc.)

- [294] *Modeling Ancient Agricultural Land Use in the Southern Chuska Valley, New Mexico*

The US 491 project provided an opportunity to model agricultural systems that supported settlements concentrated in the Chuska Valley in northwest New Mexico. We analyzed GIS data, soil data, and ethnographic information to model agricultural field locations, soil quality, and anthropogenic effects of cultivation on soil productivity. Soil survey-, topographic-, and hydrological-data were analyzed for known agricultural runoff fields to identify the salient characteristics of these fields and to model other potential field locations across the study area. Analysis considered factors such as slope elements, gradients, and watershed sizes, along with soil quality variables, such as available water content, pH, texture, and horizon depth. Long-term properties of soil quality were measured for suspected fields along the US 491 corridor using chemical and physical tests (organic and inorganic carbon, nitrogen, available and total phosphorus, pH, bulk density, and particle-size analysis) to assess the nutrient status, compaction effects, and soil-water characteristics of agricultural fields. Together, these analyses allowed us to evaluate agricultural potential and cultivation effects for different parts of the study area and to assess changing relationships through time of aboriginal settlements to potential field locations.

Hook, Fiona [244] see Ashley, Michael

Hook, Fiona

[244] *Boodie Cave Archaeology in Its Biogeographical Context*

One of the principal aims of the Barrow Island Archaeology Project is the investigation of coastal societies of northwest Australia and resultant behavioral responses to changing sea levels, coastal productivity and then isolation. Bodie Cave lies on the boundary between two biogeographic regions, and despite climatic changes through time, comparisons between the existing biogeographical regions where a large body of surface archaeological corpus can be investigated. Further, the incorporation of data from the current mainland coastline dated to the late Holocene will provide additional insights into Aboriginal cultural responses and a counterpoint to the changes observed on Barrow Island during the early Holocene/late Pleistocene.

Hoppa, Kristin (University of California, Santa Barbara)

[170] *Weaving Together the Macro and the Micro: Archaeobotanical Evidence from Middle Holocene Sites on Santa Cruz Island, California*

This study considers two lines of archaeobotanical evidence from four Middle Holocene sites on Santa Cruz Island, California: seeds recovered through soil flotation and starch grains recovered from the surface of groundstone artifacts. The low density of seeds recovered during initial macrobotanical analysis indicated scarce evidence for plant exploitation; however, starch grains recovered from the surface of groundstone artifacts provide direct evidence of plant processing. Indeed, these two lines of evidence tell very different stories about hunter-gatherer plant use. In order to contextualize these findings, this paper will discuss results of experimental processing and recovery of both seeds and starch grains from the comparative collection at the University of California, Santa Barbara. This paper explores preservation and recovery issues related to seeds and starch grains in terms of taphonomic challenges and laboratory methods, and suggests ways to weave together these multiple lines of evidence to gain broader understandings of prehistoric subsistence strategies.

Hopt, Justin [173] see Marino, Matt

Horcajada Campos, Patricia [164] see Vazquez De Agredos Pascual, Maria Luisa

Horlacher, Jacob [252] see Terry, Richard

Horn, Sherman (Tulane University)

[138] *Rocking the Major Networks in Prime Time: Resource Mobilization and Socioeconomic Interaction in the Middle Preclassic Belize Valley*

Investigations in the Belize Valley reveal the Middle Preclassic (900–300 B.C.) landscape as the setting of dynamic interactions that shaped complex societies in succeeding periods. Evidence suggests that individuals, households, and communities participated in multifaceted, intertwining webs of socioeconomic networks that mobilized resources necessary for both basic subsistence and more esoteric pursuits. Participation in networks involving repeated, interpersonal interaction is an important factor in the creation of social personae within communities, and may have played a direct role in the development of social complexity in the Belize Valley and elsewhere in the Maya Lowlands. This poster presents a spatial analysis of artifact consumption patterns from Middle Preclassic contexts at the site of Cahal Pech, Belize. It compares the intra-site distributions of artifacts made from raw materials deriving from geographically circumscribed source areas in the broader Maya region. Delineation of patterning in the relative frequencies and geographic origins of artifacts deposited at different architectural features is used to reconstruct the spatial character and extent of the networks that linked different webs of producers and consumers. This study demonstrates that differential participation in socioeconomic networks acted as a catalyst for emerging social complexity and differentiation during the Middle Preclassic.

Horneman, Rennie (California State University, Long Beach), Terry Hunt (University of Oregon), Carl Lipo (California State University, Long Beach) and Joanne Minerbi

[298] *Morphometric Analysis of Shape Variability Among Flaked Stemmed Obsidian Tools from Easter*

Island

It is often assumed that prehistoric Easter Island populations experienced intense warfare, particularly during late prehistory. One line of evidence that is used to make this assumption is the presence of mata'a, or flaked stemmed obsidian tools that are found on the surface by the thousands. Previous stylistic analyses and evaluation of use ware contradict claims of weapons and instead point to their use as either some kind of symbolic implement or as a part of cultivation activities. Here, we use shape morphometric analyses to examine mata'a variability and look for areas of shape that are constrained versus those that are free to vary. Our results suggest that mata'a were only functionally constrained in terms of the haft. These results continue to support the alternative hypothesis that these artifacts were not used as weapons.

Horowitz, Rachel (Tulane University)

[302] *Technological and Economic Implications of Chert Extraction and Production at Callar Creek Quarry, Belize*

Chert resources are fairly ubiquitous in much of Mesoamerica. Likewise, chert tools are found in many contexts, emphasizing their importance both technologically and economically. This paper examines the extraction and production of chert resources at a chert source, Callar Creek Quarry, in western Belize. Excavations at the quarry and surrounding households examined the extraction and production processes, through a technological organization approach, and how access to these materials was organized. Investigations demonstrate that Callar Creek Quarry, and surrounding household groups, were linked to regional political and economic dynamics. This paper will discuss the processes of extraction and production of chert at Callar Creek Quarry, the organization of these activities, and how these activities served to integrate this hinterland area into the broader regional political and economic sphere.

[302] *Chair*

Horrell, Christopher and Amy Borgens

[307] *The Monterrey Shipwreck Project: Research Design and Methodology*

The Monterrey Shipwrecks are just a few of the many significant deep-water sites discovered in recent years due to offshore oil and gas exploration. Monterrey Shipwreck A is only the second deep-water archaeological excavation conducted in the Gulf of Mexico. As a complete excavation of the site was not feasible, research questions and objectives were developed to formulate a recovery plan for the data and to collect diagnostic photography and video of items remaining on the seafloor. These questions and objectives were drafted within a larger theoretical and methodical framework providing context for the eventual findings. Due to a depth of 4,300 ft., a remotely operated vehicle (ROV) was utilized with purpose-built tools and equipment to recover archaeological and environmental samples. The ROV-artifact recovery effort was broadcast live from E/V Nautilus using telepresence enabling archaeologists to describe ongoing work, share initial site observations, and respond to public inquiries.

Horrell, Christopher [307] see Hanselmann, Frederick

Horsley, Timothy (Horsley Archaeological Prospection, LLC), Casey Barrier (Museum of Anthropology, University of Michigan) and Alice Wright (Museum of Anthropology, University of Michigan)

[157] *Prospecting for More Than Just Features: Integrating Geophysics into Archaeological Investigations to Define and Help Answer New Research Questions*

Geophysical surveys have the potential to significantly contribute to archaeological research projects when effectively integrated with more traditional methods. In this paper, we identify three key components to maximize this potential: (i) begin with an extensive geophysical survey to establish the function, organization, and archaeological potential of a site; (ii) maintain collaboration between geophysical archaeologists and traditional archaeologists throughout the investigation; and (iii) adopt a flexible research design. Incorporating all three has allowed us to both prospect for new and appropriate research questions, and devise suitable strategies to address them. It has also encouraged continual feedback between the geophysical and archaeological data to improve interpretations and develop new hypotheses. This interdisciplinary methodology is demonstrated through two case studies from mound sites in the Southeast United States: the Late Woodland-Early Mississippian Washausen site in Illinois; and the Middle Woodland Garden Creek site in North Carolina.

Horton, Elizabeth (Arkansas Archaeological Survey)

[22] *Weaving from Forests: Fiber Use and Fabric Production in the Ozark Plateau, Southeastern United States*

The dry caves and rockshelters of the Ozark Plateau in the Southeastern United States have yielded a remarkably well-preserved record of fiber use and fabric production by pre-Columbian peoples stretching back at least 3,000 years. Intensive ongoing studies of technological and stylistic choices in fabric production and fiber use raise important questions about continuity and change in these perishables technologies from hunter-gather to agricultural societies. Here I explore several case-studies in fiber use that link transitions in social organization and shifts in food pathways with conservation and innovation in the use, processing, and possibly management of fiber plant resources in the Ozark Plateau from the Late Archaic to the Late Prehistoric periods.

Horton, Elizabeth (National Park Service, Washington State University)

[176] *Resistance through Subsistence: Modoc Resource Strategies During the 1873 Modoc War*

Nineteenth century Euro-American settlement of Northern California brought about significant social changes in the lifeways of the Modoc People, particularly during the 1873 Modoc War with the U.S. Army. For the majority of the war, the Modoc held their traditional defensive position in the lava beds on the south shore of Tule Lake, now known as Captain Jack's Stronghold, currently in Lava Beds National Monument in northern California. During the four month siege, the Modoc acquired a small herd of cattle for consumption, and disposed the bone refuse into crevices within the stronghold. Zooarchaeological analyses of several campsites, including those occupied by Shacknasty Jim and the Hot Creek band, provided insight into the social processes at work amongst a people under siege, particularly the influence of oral traditions and risk management strategies on community consumption practices.

[176] *Chair*

Horton, Elizabeth [251] see Sabo, George

Houk, Brett (Texas Tech University)

[37] *Patterns of Force: Deciphering the Geopolitical Landscape of the Eastern Maya Lowlands*

Reconstructing the geopolitical landscape of the eastern Maya lowlands is a difficult task. Not only are there few kingdoms with hieroglyphic inscriptions, but we also have little understanding of the geographic extent of political authority at most sites. Actual borders between kingdoms—or boundaries between competing groups of diplomatically aligned kingdoms—probably did not exist except as fluid zones of contested political and economic influence. While the search for boundaries may prove to be a frustrating on-the-ground exercise, studying the urban designs of cities on a regional scale may lead to the identification of clusters of affiliated kingdoms and, by extension, buffer zones between them. One weapon in the analytical arsenal of site planning studies is to look for evidence of political emulation, which may suggest affiliation. However, this paper proposes that identifying the rare architectural elements, or rare arrangement of elements, that co-occur at nearby sites may provide the best evidence for emulation and/or affiliation. Case studies from northern Belize and northeastern Petén offer an example of this approach. This paper also includes some speculation about how Maya architects acquired and transmitted planning ideas, and cautions that extending a political emulation model over great distances is inherently problematic.

Houk, Brett A. [107] see Herndon, Kelsey

Houle, Jean-Luc (Western Kentucky University)

[313] *Discussant*

House, Romuald [60] see Saintenoy, Thibault

Houston, Gordon and Irakli Simonia (Ilia State University)

[90] *Rock Art as Solar Markers: Defining Cultural Intent*

Interpretation of rock art is one of the great challenges of cognitive archaeology. The most objective interpretations and evidence of intentionality of rock art are preserved in solar markers. We start by defining rock art solar markers and then we will discuss the use of astronomical analysis on rock art to

show how the solar interactions preserve the astronomical knowledge and define the cultural intent. We believe this astronomical evidence supports the intentionality of the culture and individual responsible for inscribing the rock art. We will discuss the concepts of anticipatory, confirmation, and resolving power in relation to rock art and how these in turn are established through horizon astronomy methods. We offer as tool or guide a matrix of intentionality to score rock art panels, which can be used in two ways. First, to grade known solar markers as to cultural intent and secondly, to help identify new potential solar markers. We will demonstrate the matrix concepts based on our investigation of the pictographs at Paint Rock, Texas.

Houston, Stephen [154] see Garrison, Thomas

Houston, Stephen (Brown University)

[162] *Chair*

Howard, Joshua (SUNY University at Buffalo) and Caroline Funk (SUNY University at Buffalo)

[173] *Bone Tools of the Rat Islands*

A study of the Rat Islands was conducted in 2003 and 2009 to examine the Aleut sites found in the area to better understand the subsistence strategies, use of the environment, and the importance of landscape and seascape to the Aleut culture. During this study, due to the excellent preservation of bone at the RAT-081 site, over six thousand faunal remains were recovered including a number of bone tools. The bone tools recovered date from 1000 to 300 years ago and are made up of fish, sea mammals, and bird species. The recovery of bone tools allows for a unique examination of the everyday lives of the coastal Aleut through perishable artifacts that are under most conditions lost in the archaeological record. The poster will discuss the current state of research being undertaken on the Rat Island bone tools in order to better understand Aleut history, use of bone tools, bone tool technology, and subsistence strategies.

Howard, Margaret (Texas Parks & Wildlife)

[199] *Prehistoric Settlement on Devils River State Natural Area, Lower Pecos Texas*

The remarkable stability in technology, material culture, and diet during the 8,000 year Lower Pecos Archaic may mask changes in the cultural landscape over time and space. Two settlement models have been proposed based on distribution of water and plant resources: concentration of populations along rivers with logistical use of the uplands, and foraging by mobile bands. The preponderance of investigations in large sites along the deeply entrenched Rio Grande and lower Pecos River has skewed interpretation toward the sedentary model. Data from the south unit of Devils River State Natural Area are used to test these models on the perennial lower reach of this river, where the terrain is not as steep. A geodatabase from four years of survey covering ca. 8,000 acres, 300 dated projectile points, and rock art distributions are used to shed light on Lower Pecos Archaic population densities, settlement choices, subsistence strategies, and cultural landscapes.

Howe, Jessica and Jodi Barnes (Arkansas Archaeological Survey)

[76] *Pots and Pipes from the Austin Site: Public Archaeology in Southeast Arkansas*

The Austin Site (3DR50) is located in Drew County, Arkansas along Bayou Bartholomew. The site, a late prehistoric Native American cemetery, was heavily looted for pots and no longer exists due to land leveling. Much of what we know about the site comes from one of its pothunters, Curly Birch, as well as scientific excavations performed by Birch and members of the Arkansas Archaeological Society in 1972. Birch donated his collection of pots and pipes to the Arkansas Archaeological Survey. The collection tells a story about the problem of looting, the importance of the Arkansas Archaeological Society, and the archaeology of southeastern Arkansas.

Howe, Mark (US State Department - USIBWC)

[87] *The United States International Boundary and Water Commission: Geoarchaeological Explorations along the US / Mexican Border from the Pacific to the Gulf Of Mexico*

The USIBWC was established in 1848 after the Mexican-American War. The primary duties are to oversee issues along the International Boundary in land, water and treaty issues. As the border infrastructure has aged, attention to archaeology has been more focused for Cultural Resource Management. Over half of the boundary is the Rio Grande River in Texas with the rest consisting of the Colorado River and land, west to the Pacific Ocean from El Paso, Texas. Our projects in the past year

have primarily focused on resource management but also on geoarchaeological investigations. This presentation will address a history of some of the projects we have been working on. These have been geoarchaeological testing at and data recovery from Fort Brown, TX, (1846–1945), Fort Bliss, TX, (1879–1893) and Amistad and Falcon Reservoirs on the Rio Grande. Our final analysis is how sites are affected by the rivers along the border and the mitigation and research measures we are completing. This presentation will show that the USIBWC is focusing on Cultural Resource Management in both water and land use planning along the US / Mexican border with an emphasis on the rich history of the Borderlands.

Howell, Angelina**[331] Unknown Quantities: Critical Impacts of Science in Society**

The principle questions raised in this presentation explore the short and long term impacts of archaeological research on the economic, social and political landscapes of the rural communities in which it is often conducted. Specific data and analysis will illustrate the empiric paths of the economic impacts of archaeological research projects and how these impacts are reflected back out into the economic, social and political systems of local communities. Finally, the presentation outlines basic models for identifying aspects of research that may help define a 'footprint' of activities related to scientific research.

[86] Discussant**[331] Chair****Howell, Mark (winterville mounds park and museum)****[122] Instrument Morphology and Cultural Preferences**

Information on aural preferences for pre-Contact Native American cultures can be partly gained through morphological examinations of archaeologically recovered soundmakers. For instance, unique to some Mesoamerican edgetone instruments, like flutes and whistles, is a ridge placed around the aperture (sometimes called the window), which dramatically affects tone quality, or timbre, by influencing the volume level of sound waves through the control of directionality and force of airflow at the point where the wave is split. The higher the ridge the fewer audible overtones are incorporated into the sound of the fundamental tone, the instrument's lowest pitch. There are many Mesoamerican instrument types that include components affecting sound quality, such that this speaker and others (O'Brien-Rothe, Rodriguez, Boiles, Franco) theorize that acoustic sophistication demonstrated in pre-Contact instrument design was largely aimed at producing sundry timbral effects. If true, there are implications in such a non-Western music affinity, which would be helpful in archaeological interpretations. In my discussion, I will examine ancient Mesoamerican soundmakers to determine what their morphology can tell us about cultural aural preferences in holistic terms, while assessing modern Western ones to determine what their morphology tells us about our own tastes, in music and beyond.

Howey, Meghan (University of New Hampshire)**[338] Sympathetic Magic in Indigenous Consumer Choice during Early Contact in the Northeast and Great Lakes**

Research increasingly shows that from earliest contact with Europeans, indigenous peoples of eastern North America acted not as wholesale receivers of European goods, but as discriminating consumers of these objects. While indigenous people found themselves increasingly involved in a market economy, value was not solely directed by Europeans; it was frequently ascribed to European objects within indigenous frames of reference. Sympathetic magic was one such frame of reference that drove the economic valuation of European goods during early contact. Rather than interpreting magic as a naïve impulse of "primitive" peoples as many early anthropologists did, I argue the use of sympathetic magic in the valuation and consumption of European goods by indigenous peoples was sophisticated, meaningful, and functional. Two vignettes about one particularly popular European good, the kettle, are offered to show indigenous communities deployed both types of sympathetic magic, imitative and contagious, in their consumption of kettles. Through both imitation and contagion, indigenous peoples across the Northeast and Great Lakes used sympathetic magic to direct the consumption of European goods and to make these goods ones that registered and publicized the strength of their desire to exert control over the changing world they found themselves in after contact.

Howie, Linda (The University of Western Ontario), Terry Powis (Kennesaw State University) and Elizabeth Graham (University College London)**[123] Sitting on the Dock of the Bay: Ceramic Connections between Lamanai and the Chetumal Bay**

Area over More Than Two Millennia

The advantageous geographic location of city centers situated in coastal areas and on river systems in northern Belize enabled participation in regional networks of exchange linked to large consumer markets in both the Southern and Northern Lowlands. At sites such as Lamanai, the presence of material goods deriving from geographically distant raw material sources provides evidence of connections to multiple and far-flung localities within the greater Lowland region. The movement of material commodities over these long distances, from their geographic origin to where they were ultimately deposited, over land and by watercraft, must have involved stops at multiple intermediary locations. These stops en-route would have provided additional opportunities to acquire and exchange material goods. These short-distance transactions have received less attention, although they are equally critical to our understanding of trade routes and travel. This paper examines the material evidence of short-distance exchange between the Chetumal Bay area and Lamanai, situated on a river system connecting coastal to inland areas to the south. Our focus is the petrographic evidence of pottery originating from the Bay area at Lamanai, examining patterns in its frequency and variability from Late Preclassic to Spanish Colonial times and identifying changes in patterns of consumption.

Howie, Linda [261] see Moody, John

Howland, Matthew (UCSD Anthropology Department), Thomas Levy (UCSD Anthropology Department) and Falko Kuester (UCSD Qualcomm Institute)**[65] Archaeological Survey and GIS-based Investigation into Site Formation Processes through Balloon Photography and Structure from Motion**

The innovative combination of both new and tried-and-true methods can revolutionize the process of documenting, analyzing, and visualizing spatial archaeological data. New approaches can pay special benefits when surveying and planning excavation at archaeological sites that are relatively poorly-documented. Low-altitude aerial photography combined with photogrammetric Structure from Motion make up a workflow that allows for precise and accurate recording of both photographic and elevation data of archaeological sites with a great deal of speed and efficiency. Through these techniques, the researcher can create spatially-referenced orthophotos and digital elevation models (DEMs), which, among other things, can serve as the basis for investigations into site formation processes. Due to the newly-possible rapidity of creation of these datasets, analyses of certain cultural and natural formation processes can be completed over the course of hours or days and further archaeological investigation can be undertaken based on the results. This paper presents a case study of the application of these methods at two sites Wadi Fidan 61, a Neolithic site, and Khirbet Nuqayb al-Asaymir, an Islamic period site, both located in Southern Jordan and investigated as part of UC San Diego's Edom Lowlands Regional Archaeology Project.

Howryla, Matt [172] see Showalter, Stephanie

Howryla, Matthew (Indiana University of Pennsylvania)**[315] Pennsylvania's Shift from the Pleistocene to the Holocene: Using GIS Models to examine Cultural Continuity between Paleoindian and Early Archaic Peoples**

Recent trends in research have described the first human beings to enter North America not as exclusively big game hunters, but as general foragers that used a plethora of natural resources. Accompanying this research has been the notion of regional variation amongst groups of the earliest North American people. Variation geographically in turn allows archaeologist to study trends of cultural continuity. The aim of this study is to evaluate the possibilities of such continuity between the people living in Pennsylvania in the late Pleistocene and those who lived in the same region in the early Holocene epoch. Pennsylvania utilizes a GIS (PA CRGIS) system to catalogue its cultural resources. Included in this database are locations of many known Paleoindian and Early Archaic sites. Previous work by Dr. Kurt Carr has examined the distribution of many of these earliest sites. Programs such as ARC GIS allow for further investigation into the landscape use patterns of the earliest human beings living in the late Pleistocene and early Holocene periods, and can add greater understanding of how these sites are related within the landscape. Beyond site distribution new variables will be tested to evaluate the cultural relation of Pennsylvania's earliest inhabitants.

Hranicky, William**[133] The Arkfeld Site: An Early Paleoindian Quarry in Frederick County, Virginia**

This paper presents a sample of artifacts and an overview of the Arkfeld paleosite in Virginia which offers an insight to the before and during the Clovis time periods in Virginia and the eastern U.S. The site consists mainly of shale and rhyolite quarry produced implements. The basic lithic method at the site is a blade technology with few bifaces. The site has no classic projectile points and contains artifacts which have not been reported in the literature. The site is classified as before Clovis and has produced numerous bipoints.

Hristova, Polina [230] see Forringer-Beal, Anna

Hritz, Carrie (The Pennsylvania State University)

- [124] *Shifting Land Use: The Role and Impact of Ecological Diversity in Ancient Mesopotamian Landscapes*

At the onset of the 4th millennium B.C., Sumerian civilization in southern Iraq exhibited a level of economic differentiation, socio-political complexity, and urbanization previously unseen anywhere in the ancient world. The processes that began at that time culminated a millennium later in the formation of a powerful, persistent city-state system across southern Mesopotamia in the 3rd millennium B.C. Past anthropological models attempting to explain the emergence of urban societies in this area have relied on a combination of data derived from circumscribed surface survey and later historical records, and emphasized the expansive and complex irrigated agricultural system and activities related to pastoralism as underpinning the broader social, political and economic developments. Recent changes in access to the Iraqi landscape allowing new fieldwork, the emergence of relatively new spatial analysis tools such as GIS, and increasingly high resolution, but low-cost remote sensing datasets enable the exploration of marsh environments and ecological diversity as a complementary and importance component of the Mesopotamian socioeconomic landscape.

Hritz, Carrie [301] see Goodman, Reed

Hronec, Laura (Eastern New Mexico University)

- [267] *An Investigation of Eolian Processes at Blackwater Locality No. 1, Locality X*

Locality X is a Late Prehistoric period lithic artifact scatter located within the east central boundary of Blackwater Draw Locality No. 1 (BWD) and consists primarily of thousands of very small (<1cm) lithic debitage. BWD is located in an area on the Llano Estacado prone to strong winds that could have potentially eroded, transported, and deposited the artifacts at Locality X from denser artifact deposits located upwind at the other localities of BWD. A geoarchaeological approach was used to examine the potential lithic artifact displacement by eolian processes, employing both empirical and experimental methods, including particle size analysis, wind tunnel experiments, and lithic analysis. The results showed that although the lithic artifact assemblage met some expectations for an assemblage deposited by eolian processes, the wind velocity required to entrain and transport the artifacts is greater than the velocity observed for the site; therefore, the lithic artifacts at BWD's Locality X were likely the result of cultural activities and not secondary deposition attributed to eolian processes. Locality X can be considered a primarily cultural manifestation, and stands to contribute to our understanding of human activity at BWD.

Hruby, Zachary (Northern Kentucky University)

- [191] *The Problem of Identity on the Motagua*

The most significant trade route for jade, obsidian, and other riches from Eastern Guatemala to the Maya Lowlands, Central America, and the Caribbean remains the least studied region in Southern Mesoamerica. This presentation describes a recent survey of the Lower Motagua and Rio Dulce river drainages, which constitutes the most complex and extensive frontier between "Classic Maya" and "Non-Maya" sites within the national boundaries of modern Guatemala. Issues of cultural affiliation associated with this cultural inter-zone are addressed in light of recent failures to characterize ethnicity in the archaeological record. Theoretical distinctions between "identity" and "identification" of local occupants are discussed vis-à-vis high-value goods that flowed through their architecturally distinct centers. It is argued, in line with past studies from Quirigua and the Lower Motagua, that the demand for prestige trade

-items spurred on an unprecedented civic expansion in Eastern Guatemala during the Late Classic Period.

Hruby, Zachary [191] see McNeil, Cameron

Hubbard, Duane [79] see Huckell, Bruce

Hubbard, Amelia R. (Department of Sociology and Anthropology Wright State University) and Christopher M. Stojanowski (School of Human Evolution and Social Change, Arizona)

[291] A Biological Approach to Identifying Kin: A Case Study from Modern-Day Coastal Kenya

The analysis of kinship is a complex endeavor. Kin can be interpreted "biologically" as genetically similar due to consanguinity, or "culturally" as spouses or partners (affinal kin) and/or close friends (fictive kin). As such, bioarchaeologists interested in kinship have a unique challenge- how to use biological datasets to evaluate an inherently biocultural construct.

The present study examines the concordance between estimates of biological kinship using paired genetic (nuclear microsatellite genotype) and dental (metric and morphological) data from 298 individuals representing four contemporary coastal Kenyan populations. Imbedded within the larger sample are four known kin groups.

Data from individuals were analyzed via cluster analysis using the CLUSTAN program, which allows users to evaluate both continuous (e.g., dental metric) and discrete (e.g., dental morphology) data simultaneously. Each biological dataset was evaluated independently and then compared to an analysis of the combined data to see if known kin groups could be identified.

Results indicate the identification of kin in archaeological contexts is quite complex and care should be used in ascribing too much relevance to patterns of dissimilarity based on phenotypic data. Though this study focuses on contemporary populations, these findings have important applications for studies of kinship in archaeological populations.

Huckell, Bruce [24] see Holliday, Vance

Huckell, Bruce (University of New Mexico), Duane Hubbard (U.S. National Park Service), Larry Ludwig (U.S. National Park Service), Jacob DeGayner (U.S. National Park Service) and Thaddeus Liebert (University of New Mexico)

[79] Late 19th Century Apache Resistance as Seen from Chiricahua National Monument, Southeastern Arizona

Although written accounts of Chiricahua Apaches are common, few archaeological sites attributed to them have been discovered or investigated. Chiricahua subsistence was founded on hunting and gathering, but raiding, warfare, and trading provided both material goods from Mexican and American sources. Metal tools and goods, in particular, became increasingly important for Apache subsistence, and played a central role in their efforts to resist encroachment on their homelands. Since 2010, a collaborative National Park Service-University of New Mexico Colorado Plateau Cooperative Ecosystem Studies Unit project has been carried out in Chiricahua National Monument, located in the Chiricahua Mountains of southeastern Arizona. After a catastrophic wildfire in 2011, two small Apache sites were discovered after dense shrub communities were severely burned. The sites were subsequently investigated using metal detectors, mapped, collected, and protected from erosion. Recovered metal artifacts suggest that the sites date to the late 1860s-early 1870s, and include a wide array of artifact types. We use this record to explore Chiricahua Apache procurement and use of metal, and raiding, warfare, and trading as strategies to maintain their autonomy and lifeway in the face of post-Civil War American expansion.

Huckert, Chantal (Universidad Veracruzana)

[62] Algunas Figuras en la Vestimenta de las Figurillas Sonrientes en el Museo de Antropología de Xalapa (MAX)

El MAX custodia una colección de "Figurillas Sonrientes" (Clásico tardío, 600-900 EC) procedentes de la tradición alfarera de las culturas de la sub-area centro-sur de Veracruz. Esta ponencia trata sobre algunas temáticas recurrentes de la imaginería plasmada en los atuendos, que constituyen el ámbito representacional de las figurillas, en su mayoría instrumentos musicales, portadoras de un vocabulario o más modestamente de un registro sfigmico que comunica, informa, sobre la calidad social y religiosa de los protagonistas a los que representa y a través de ellos, sobre referentes simbólicos propios de esas

culturas. Tambien considera las conexiones mesoamericanas y argumenta que las figuras o pictogramas de esa sub-area, con caracterfsticas propias, han formado parte de un ensamblaje de imagenes que han transitado por diversas culturas y periodos hasta la colonizaci6n espariola. En particular, se ofrece una muestra de la fauna, la flora, y de los ofidios compuestos que en otro momento formaran parte de un catalogo que busca abarcar la variedad de temas iconograficos y simb6licos en la parafernalia de las Figurillas Sonrientes en el MAX y donde se comprueba lo arriba mencionado.

Huckleberry, Gary (Geoarchaeological Consultant)**[117]** *Discussant***Hudson, Jean (U Wisconsin- Milwaukee), Brian Billman (MOCHE, Inc. and UNC-Chapel Hill) and Jesús Briceño Rosario (ICPAC and El Ministerio de Cultura, Peru)****[104]** *Comparing Fishing Strategies on the North Coast of Peru: Gramalote and Cerro La Virgen*

Vertebrate remains from midden contexts at two north coast sites are compared, with a special focus on fishing strategies. The sites are Gramalote, dated to the Initial Period and interpreted as an autonomous fishing village, and Cerro La Virgen, dated to Chimu-Inca times and interpreted as a town of mixed economic pursuits embedded in a regional polity. Fishing strategies are presented within a framework of ranked goals, allowing exploration of both ecological goals (via ranked energetic efficiency) and social goals (contrasts of family autonomy versus community interdependence). Ethnoarchaeological research with modern Peruvian reed boat fishermen is incorporated in the ranking models.

Hudson, Jean [245] see Billman, Brian

Huff, Jennifer (University of Washington)**[271]** *Settling Down? Understanding Patterns of Mobility in Highland Papua New Guinea through Chronology and Lithic Reduction*

Models of subsistence change and the transition to agriculture for the highlands of Papua New Guinea often imply a concurrent and gradual increase in residential sedentism. However, it is not clear that a model of continuous increase in residential sedentism matches the archaeological record. While standard archaeological analytical methods such as typology of stone tools have often provided insight into changes in subsistence and mobility, the informal flake and core-based technology of the New Guinea highlands is not as tractable to these canonical methods as collections with more formal components. This paper will discuss new results from luminescence dating and measures of lithic reduction intensity—lithic analysis strategy suitable for informal collections—to evaluate models of changes in residential sedentism linked to environmental variability and the adoption of agriculture from the late Pleistocene through the Holocene.

[271] *Chair***Huffman, Thomas (University of the Witwatersrand) and F. Lee Earley (Arapahoe Community College, Littleton, Colorado, R)****[248]** *The Wallace Site: Caddo Rock Art in Southeastern Colorado*

The Wallace complex includes a 12th-13th century hamlet of rectangular lodges, situated on a bluff near Pueblo, Colorado, and a rock art site below the bluff, connected to the hamlet by a midden of 'ritual refuse'. This complex can be attributed to the Upper Republican taxon, and so the people were most likely Northern Caddoan. We use Pawnee ethnography as a general representative of this larger linguistic group to reconstruct the spatial distribution of artifacts and rock art in the chamber. The chamber itself was divided into a West Unit that contained shield-bearing warriors associated with dreams and visions that in turn provided supernatural power for low-level warfare. In contrast, an East Unit emphasized geometric images that most likely referred to the cosmological origins of humanity. This dual organization indicates that the West Unit was associated with doctors and the East Unit with priests.

Huggins, Kathleen (UC San Diego), Aaron Gidding (UCSD) and Thomas Levy (UCSD)**[301]** *Breaking the Ingot Out of the Mold*

This poster presents the analysis of the UCSD Levantine Archaeology Laboratory collection of ceramic molds used in the casting of copper ingots, recovered from Khirbet Hamra Ifdan, an Early Bronze II/III (ca. 3000-2000 B.C.E.) site in Southern Jordan. Useware damages in this collection include fragmentation, thermal stress, and production faults, presenting unique data for ceramic study. Through analysis of

these features, we have attempted to identify the level of standardization in ingot and mold formation. Molds produced at KHI reveal a high degree of ceramic variability, in shape and composition. However, the standardized form of the crescent ingot impressions, and high degree of mold fragmentation, point to a unified manufactory process at this site. Analysis of the ceramic matrix has revealed the possible "engineering" of ceramic faults related to purposeful fragmentation of the casting mold. Through this study, we have attempted to define the craft techniques in use at KHI, and the relationship of these craftspersons within the greater copper industry of the Early Bronze Southern Levant.

Hughes, Richard E. [30] see Etchieson, Meeks

Hughes, Susan (NAVFAC NW), David Grant (NAVFAC NW), Jennifer Gilpin (Historical Research Associates, Seattle, Washington) and Brandy Rinck (SWCA Environmental Consultants, Seattle, Washington)

[125] *The Cattail Creek Site: Digging through Shell Midden and Navy Process*

With a program established in 2009, Navy Region Northwest (Navy) is new to cultural resource management. Challenges of the growing program are exemplified by the recent Cattail Creek project. As compensatory mitigation for wetland destruction, the Navy is restoring the Cattail Creek tidal estuary on Naval Base Kitsap, Bangor west of Seattle, Washington. Construction revealed a shell midden site determined eligible for listing in the National Register of Historic Places. This paper illustrates the challenges of navigating through the Section 106 process, but more importantly, how the project has improved Navy processes, supported the mission, and will contribute to regional science.

Hughes, Ryan (University of Michigan)

[198] *Borderland of Empires: Western Georgia and the Southern Caucasus in the 1st Millennium B.C.E.*

The study of borderlands is essential to understanding the development of polities such as states, kingdoms and empires. More than just giving definition to the edges of polities, borderlands often become the focus of political ideologies and give justification to the limits of a polity's power. In the 1st millennium B.C.E., Western Georgia found itself on the margins of the socio-economic spheres of larger, more developed polities from the Mediterranean, Russian Steppe and Southwestern Asia. Though a geographically isolated borderland, Western Georgia was deeply entangled in the larger economic and political spheres it bordered. This paper presents the archaeological evidence for the emergence of social complexity in Western Georgia in the 1st millennium B.C.E. in the context of borderland studies. Much has been made of the development of a state level polity in Western Georgia owing to four key archaeological indicators: 1) emergence of extreme wealth inequality, 2) production of coinage, 3) settlement stratification and hierarchy, and 4) similarity of archaeological material across the region. Rather than showing evidence of the emergence of a state level polity, it is shown that these changes were the result of borderland processes brought on by increased socio-economic entanglement with larger polities.

Hughes, Richard

[287] *Obsidian Provenance Studies in California and Great Basin Archaeology*

Since the inception of instrument-based analyses in the middle 1960's, research conducted on obsidians erupted in California and the Great Basin has played an important role in the overall development of worldwide provenance studies in archaeology. Early work in California and the Great Basin focused on chemical identifications of archaeologically-significant obsidian which were then employed through artifact analysis to sketch the broad outlines of "exchange networks" in prehistory. Since these early days there has been growing sophistication in archaeological uses of provenance data, including more explicit awareness of the interpretive differences attending views of obsidian "sources" as geochemical vs. spatial entities, appreciation of the importance of segregating material by artifact class for analysis, and more sober considerations of the complexities involved in inferring the behavioral mechanisms responsible for observed distributions. All of these recent changes have contributed to the maturity and development of more anthropologically informed research agendas for obsidian provenance studies.

Hull, Tony [141] see Ambruster, Carol

Hull-Walski, Deborah (Smithsonian Institution)

[239] The National Park Service and the Smithsonian Institution: Partners in Salvage Archaeology
The River Basin Surveys (RBS) of the Smithsonian Institution and the Interagency Archaeological Salvage Program (IASP) began more than 60 years ago as an "emergency" program of archaeological reconnaissance, testing, and excavation in response to the nation's initiative to develop water resources throughout the 48 contiguous states. Under the IASP, the work of the RBS was augmented by the coordinated efforts of scores of colleges and universities, museums, and historical and archaeological societies, in conjunction with the National Park Service (NPS). The RBS assumed major responsibility for field investigations and providing scientific oversight and personnel. The primary role of NPS was as liaison between the construction agencies, cooperating institutions, and the RBS. As a result of the programs work, an estimated 20,000 sites were recorded and over 500 major excavations were conducted to further document significant prehistoric and historic sites prior to inundation. From California to Virginia, field workers collected over three million artifacts and specimens. The RBS and the IASP contributed in innumerable ways to the advancement of knowledge about America's archaeological past, and to the growth of American archaeology as a discipline.

Hulse, Eva (University at Buffalo), Joseph Schuldenrein (Geoarchaeology Research Associates, Inc.) and Rona Winter-Livneh (Geoarchaeology Research Associates, Inc.)

[117] Geoarchaeology of Urban Sediments and Soils

In New York City, urban development and land-building have some notable consequences for CRM efforts. These processes lead to rapid sedimentation, which preserves archaeological resources deep below the surface. Additionally, urban sediments and soils can convey valuable information about past landscapes and the transition from a rural to an urban environment, even when structural remains and artifacts are absent. To illustrate these points, we present a current case study from Manhattan.

Humayun, Jennifer [276] see Seinfeld, Daniel

Hunstiger, Matthew and Joshua Feinbert (Department of Earth Sciences, University of Minnesota)

[209] Analysis of Dorsal Scar Patterns in 3D on Experimental and Middle Paleolithic Debitage

Flake scar directionality has been analyzed to determine how cores are rotated during reduction and production of flakes. Previous studies used two-dimensional directional data to infer reduction technology and how core treatment changed during reduction. This study treats the directionality of scars in three dimensions, allowing directionality to be assessed as a continuous variable, rather than categorical. Approximately 400 flakes from Tabun Types C and D from Jelinek's excavations of the Middle Paleolithic site of Tabun, Israel, housed at the University of Arizona, were scanned using a NextEngine Desktop 3D Scanner HD. These artifacts were compared with experimental assemblages representing different reduction methods (bifacial, levallois, blade, and discoidal). Flake models were produced using Rapidform XOR/XOV software. 3D vector data were taken for readable scars over 0.5 cm. This study characterizes rotational (strike or azimuth) and convexity (dip or inclination) data separately, with the aid of a visualization method called an equal area stereonet frequently used in the geosciences to study the three dimensional orientation of folds and faults, crystallography, and paleomagnetic directional data. These data allow for the comparison of assemblage level variability in directionality between different types of core reduction as well as diachronic change in the Tabun assemblages.

Hunt, Alice (University of Georgia) and Robert Speakman (University of Georgia)

[10] Protocol for the Analysis of Archaeological Ceramics and Sediments by pXRF

Recently, there has been significant interest in the use of portable x-ray fluorescence devices (pXRF) for cultural materials applications, especially ceramics and sediments. Although modern instruments have lower detection limits and better resolution than those of decades past, portable instruments are subject to the same limitations of all ED-XRF instruments, particularly with respect to sample preparation, instrument calibration, and ability to accurately quantify low-Z elements. We have developed an analytical protocol for the accurate and precise pXRF analysis of archaeological ceramics and both as prepared samples and field specimens.

Hunt, Terry [193] see Lipo, Carl

Huntley, Deborah L. [43] see De Smet, Timothy

Hurcombe, Linda**[22] Tended and Untended Resources, Facilities, and Technologies for Plant and Animal Fibers**

Food-getting technologies can be understood as time and resource choices made by different societies. The same approach can be applied to craft-getting technologies because they run alongside and interweave with food choices. Many resources offer both food and craft possibilities and the choices made in one sphere will have direct consequences in the other. Thus the shift from collected to farmed resources for food could be expected to affect strategies for the production of fibers for crafts directly. Movements around a landscape and the seasonality of resources would also create constraints in obtaining craft materials, and then storing and working these into finished items. Wild, tended, and farmed resources can contribute to fiber crafts in complex ways. In this paper, I use ethnographic data from the Pacific NW coast, Mongolia and California to apply ideas to comparative studies of Mesolithic and Neolithic communities in Central and Northwest Europe. Particular attention is paid to different technologies for processing fibrous plants such as tree-bast fibers and nettles that can be retted in water, or processed manually and the way in which collected, plucked and shorn animal fibers likewise offer different qualities and possibilities.

[22] Discussant

Hurd, Kayla [208] see McCormick, Sarah

Hurst, Heather [156] see Russ, Jon

Hurst, Stance (Museum of Texas Tech University)**[280] Discussant****Huster, Angela (Arizona State University)****[140] Material and Social Capital at Postclassic Calixtlahuaca, Mexico**

Archaeologists have developed a number of different methods for measuring household wealth, including production step indices, measures based on the frequency of imported goods, and measures based on the evidence for particular activities, such as bowl/jar ratios. At the Middle-Late Postclassic site of Calixtlahuaca in Central Mexico, these three classes of wealth measurements produce widely differing results. These varying patterns suggest that the occupants of the site shifted the ways in which they chose to invest household capital over time, coming to favor increasingly larger events stressing non-local connections.

Hutson, Scott (University of Kentucky)**[143] Masculinities, Symbolic Violence, and Ritual among the Postclassic Maya**

Ancient Maya leaders commonly legitimized their authority and gained prestige by taking captives on the battlefield. Though women occasionally went to war, Maya artists represented warfare as a masculine activity, and it was through warfare and other activities such as hunting and the ballgame that a particularly athletic and embodied masculinity took shape. This masculinity became hegemonic by the Classic period, coupled with rulership and hierarchical politico-ritual authority. In the Postclassic period, power relations became more heterarchical, and alternative gender identities became more prominent in rituals. Nevertheless, the archaeological record continues to provide instances in which violent masculinities bundled with politico-ritual authority. This paper places new data from the Uci Cansahcab Regional Integration Project, located in northern Yucatan, in context with published data from other studies to discuss the play of multiple masculinities and femininities among the Postclassic Maya.

[305] Chair**Hutson, Jarod (Monrepos Archaeological Research Centre for Human Behavioral Evolution), Aritzia Villaluenga (Monrepos Archaeological Research Centre and Museum), Alejandro García-Moreno (Monrepos Archaeological Research Centre and Museum), Elaine Turner (Monrepos Archaeological Research Centre and Museum) and Sabine Gaudzinski-Windheuser (Monrepos Archaeological Research Centre and Museum)****[278] Leading a Horse to Water: Hominin Activities at the Schöningen 13II-4 "Spear Horizon"**

Preliminary results of a new taphonomic analysis of the large mammalian faunal remains from the Schöningen 13II-4 "Spear Horizon" reveal an accumulation of more than 50 horses within lakeshore

deposits dated to roughly 300,000 years ago. Age and sex profiles of the horse population suggest multiple hunting episodes by Middle Pleistocene hominins. The remains of several other large herbivore species, primarily cervids and bovids, further attest to a more prolonged duration of accumulation rather than a single, mass kill event. The lakeside setting likely attracted large herds of ungulates, and in turn, served as a fitting location for ambush hunting by Middle Pleistocene hominins and other large carnivores. Systematic processing of animal carcasses is clearly indicated as the entire sequence of butchery is preserved, from filleting and disarticulation to the preparation of bones for marrow extraction. Also present is the widespread use of bones for the manufacture and resharpening of stone tools, including bone retouchers, soft hammers, and anvils. Further multi-proxy analyses are scheduled to explore the unique archaeological record at Schöningen and to provide a context for the functional organization of hominin behavior and adaptive mechanisms to Pleistocene interglacial environments in Europe.

Hutson, Scott [305] see Kidder, Barry

Hyde, David [52] see Brewer, Jeffrey

Hyde, David M. (Western State Colorado University)

[292] *Nested Scales of Social Organization and their Economic Implications at Medicinal Trail, a Terraced Community in Northwestern Belize*

The corporate group is a level of social organization between household and community, and is defined by their collective holding of some property or resource. The function of corporate groups is to maintain an administrative and authoritative hierarchy, and direct major decisions for the group. Data collected from Medicinal Trail, a terraced community in northwestern Belize, indicate that the corporate group heads were able to accumulate great wealth and power, with little evidence for overt elite control. This paper provides a discussion of the various nested scales in which people organized themselves at Medicinal Trail—household, corporate group, and community—providing insight into the economic organization of rural communities and their implications for the broader regional economy.

Iankov, Krassimir [337] see Zetina-Gutiérrez, Guadalupe

Iannone, Gyles (Trent University)

[235] *From Pyu to Toungoo (A.D. 200-1599): Modeling Resilience in the Early State Formations of Myanmar/Burma*

Adaptive Cycles and Panarchy Theory have recently emerged as key tools in the transdisciplinary examination of resilience and vulnerability in coupled socio-ecological systems, past and present. These analytical frameworks are, however, only heuristic devices, and specific case studies need to be examined in great detail, using a diachronic perspective, in order to highlight congruencies and divergences from the ideal expectations of these models. It is only through this means that archaeologists are able to generate a more comprehensive understanding of the factors involved in the formation and dissolution of particular complex adaptive systems. The ways in which different case studies map onto the expectations of the ideal models can then be compared using the bundled continua of variation approach in order to advance our general understanding of resilience and vulnerability in past communities. This broader perspective ultimately allows archaeologists to make some suggestions regarding how we might proactively address similar issues in the contemporary world. The rise and fall of various early state formations in Myanmar/Burma are used to illustrate these various points.

[128] *Discussant*

Iannone, Gyles [137] see Barry, Jack

Ibarra Asencios, Bebel

[38] *Funeral Traditions in the Peruvian North Highlands during the Late Intermediate Period (A.D. 1000– 1500): Perspectives from the Marcajirca Site, Huari, Ancash*

The site of Marcajirca is located in the province of Huari-Ancash, in the Peruvian north highlands. The site has a long occupation sequence dating to between A.D. 1020 and 1640 A.D. Marcajirca contains one of the largest quantities of funeral structures in the entire region. At present, archaeological investigation has identified about 35 tombs and 21 funeral caves. The excavation in chullpas and caves combined with

radiocarbon dates has revealed a reuse of the structures over a long period of time. Osteological study suggests that the minimum number of individuals shows that multiple individuals were interred in the tombs. Furthermore, congenital deformities suggest that the individual were biologically related. The presence of at least two types of skull deformation makes Marcajirca interesting for understanding the nature of group ethnic identity before the Spanish times.

Ichikawa, Mitsuo (Center for African Area Studies, Kyoto University)

[73] *Marks on the Landscape for Reconstructing the Past among the Hunter-gatherers in Central Africa*

While the Pygmy hunter-gatherers in Africa marked the landscape often "unintentionally," they extract various "meanings" from the resulting landscape. For example, when they clear the forest to build a camp, the vegetation changes, and such a site can be identified even after several decades from its abandonment. They put to each campsite a specific name, which often derives a large tree standing nearby, a stream from which they fetch water, or the name of a certain person, and remember well the locations of these old campsites. With these camp names, they clearly remember the past events: who were born, died, got sick at these camps, for example. Old campsites are in this way used as reference points for reconstructing their history. Without such references, they may find difficulty in keeping memories of their life history and past events. With old campsites and other human-made marks on the forest landscape, they articulate their past experiences, which might otherwise have been obscured in the monotonous time flown seamlessly. I will describe different types of marks made on the landscape by the Mbuti Pygmies, and discuss the "meanings" they convey to the Mbuti.

Ida, Jennifer [219] see Gagnon, Celeste

Iizuka, Fumie (University of Arizona)

[311] *Earliest Panamanian Pottery (ca. 4,500-3,200 14C yr B.P.): Sedentism and Circulation Patterns*

Following the abundant evidence of agriculture, archaeologists have argued whether the oldest Panamanian pottery, Monagrillo (ca. 4300-3200 14C yr B.P.), emerged among agricultural communities with a high degree of sedentism, or farmers who retained some level of seasonal residential mobility. This study assesses this question by studying the production and circulation of Monagrillo. Pottery and raw materials were examined using petrographic thin sections and geochemistry, laser ablation-inductively coupled plasma mass spectrometry, and portable XRF. The results suggested that pottery was produced on the Pacific side of the northeastern Azuero coast and Pacific foothills near Parita Bay. Pacific foothills pottery was transported to the Caribbean slope. Both Pacific foothills and Azuero produced pottery circulated to the Pacific plains site. It is interpreted that people of sedentary pottery producing communities around Parita Bay often visited the Pacific plains site, carrying pottery. They preferred to make vessels in the seasonally driest Parita Bay area. They transported Pacific foothills vessels to the Caribbean foothills because the Caribbean side of central Panama is almost perennially wet, and that condition is not optimal for pottery production.

Ikehara, Hugo [27] see Chicoine, David

Ikehara, Hugo (University of Pittsburgh, Department of Anthropology)

[150] *Political Change at the End of the Formative Period: A View from the Nepeña Middle Valley*

This paper presents preliminary results of a full coverage pedestrian survey of the middle section (Moro Pocket) of the Nepeña River valley carried out in 2012. The archaeological data obtained by a systematic collection of surface material is confronted with the expectations of current hypotheses explaining the drastic sociopolitical changes occurring at the end of the Formative Period after the disintegration of the Cupisnique-Chavín religious complex. By the exploration of demographic and architectural patterns I reconstruct the trajectory of political change in a restricted area of 89 km² between the first millennium B.C. and the first several centuries of the Common Era.

Ingram, Scott (University of Texas at Arlington), Richard Streeter (University of St Andrews), Laura Comeau (University of Edinburgh) and Andrew Dugmore (University of Edinburgh)

[29] *Climate Extremes for Archaeologists*

Extreme climate events are frequently cited as causal factors in social transformations and changing human trajectories in the archaeological and historical record. Given the explanatory potential of these extreme events, systematic methods of identifying, describing, and comparing climate extremes across

time and space are required. Without such methods and descriptions, climate-human behavior studies cannot investigate why some climate events are temporally associated with changes in human behavior while other events (perhaps similar) are not. Arguments about climatic influences on human history will be more convincing if robust examples of human responses to clearly identified extreme climate events can be offered. In this presentation, a methodology for extreme event identification in the contrasting climatic regimes of the North Atlantic and U.S. Southwest is presented. The approach was developed for non-specialist users of paleoclimatic data, especially those interested in potential human responses to climate extremes. A simple method of identifying how "surprising" an event may have been for people as well as quantitative descriptions of climate extremes (e.g., duration, magnitude, intensity) will be presented. The purpose of the presentation is to stimulate and advance systematic causal investigations of climatic impacts on human behavior with long-term climate and human behavior datasets.

Inomata, Takeshi (University of Arizona)

[128] *Interaction between the Maya Lowlands and the Isthmian Region during the Middle Preclassic Period*

Recent investigations at the lowland Maya site of Ceibal revealed substantial evidence of interaction with groups occupying the Grijalva River basin in Chiapas and the areas beyond. The available data point to close connections among diverse groups. For studies of the Preclassic period, we should not impose or presuppose ethnic or cultural boundaries seen in later times. Instead, we need to examine how diverse identities are created and negotiated through actions of individuals and groups who participated in these webs of interaction.

[27] *Discussant*

Inomata, Takeshi [61] see MacLellan, Jessica

Inoue, Taisuke

[178] *Symbolism of Shark Teeth in Olmec Iconography*

The shark is one of the most common animals in Olmec iconography. Although the Olmec artists are proficient in naturalistic expression, the Olmec shark is always highly stylized and standardized and often fused with other animals and deities by taking advantage of pars pro toto principle. While its frequent occurrence in the Olmec art suggests the importance of the Olmec shark in their religion, little is known about the meaning, symbolism and functions. In this presentation I will focus on the shark tooth motif marked in the celtiform maize ears to investigate the role of the Olmec shark. Archaeologists have long interpreted shark teeth as major paraphernalia for bloodletting rituals; however, I will argue that symbolism of shark teeth is more than a bloodletter. The shark tooth motif in the cardinal celtiform maize ear represents a v-shaped overlap of maize husk and the eye of the personified maize ear. For the Olmecs, shark teeth are strongly associated with the maize cult and clearly played a key role in the development of the cosmology, which also influenced later Mesoamerican religion.

Iriarte, Jose

[39] *Discussant*

Irwin, Jeff

[125] *Chair*

Irwin, Jeff [125] see Larson, Bruce

Isbell, William (SUNY - Binghamton)

[143] *Fierce Killers of the Wari Empire: Professional Soldiers or Real Men?*

Trauma is frequent among the skeletal remains of Wari citizens, revealing a high level of violence during Peru's Middle Horizon. Iconographic representations of armed men associated with aggressive animals, appear in ritual contexts, implying high value on hostility. Humans were decapitated and body parts, especially heads, were processed into ceremonial objects, perhaps war trophies. Scholars have argued that these data document the emergence of warrior associations – constituting a military "class" of hierarchically organized specialists consistent with a V. Gordon Childe model of activity professionalization during Peru's Urban Revolution. However, examination of how gender was

represented in the Andean past implies a long tradition of contrast between male and female identities that sheds a different light upon the iconographic data. Perhaps more than a professional military class, what promoted the apparent increase in militaristic violence was a redefinition of masculinity—and surely femininity as well—idealizing Wari men as fierce and bloodthirsty warriors who killed and maimed in order to display their manhood.

[203] *Discussant*

Isendahl, Christian (University of Gothenburg)

[75] *Past Amazon and Future Earth*

Archaeological and anthropological research in the Amazon region over the last two decades have fundamentally reshaped our understanding of human-environmental relationships and early social complexity in the Neotropics, and continue to offer major stimuli for the ongoing development of historical ecology as a poly-disciplinary research program. In this paper, we summarize some key insights the revised paradigm of the Amazonian past and cultural landscape generate on resilient and sustainable resource management that are both regional and global in scope. We focus on pre-Columbian soil management practices enhancing soil nutrient holding capacity and the cultural management of biodiversity in the Neotropical landscape, emphasizing the study of long-term social-ecological processes, applications of historical ecological research results, and the impacts of these lines of investigation in changing the broader human/environment discourse.

[75] *Chair*

Isla, Johny [154] see Reindel, Markus

Issavi, Justine [277] see Phillips, Harriet

Ives, John (University of Alberta)

[148] *Something Old, Something New: Exploring High Fidelity Archaeological Records in the Promontory Caves, Utah*

Our current interdisciplinary research concerning the Promontory Caves in Utah is focused upon assessing whether or not Apachean ancestors created the Promontory Phase deposits there, as Julian Steward suspected. Yet, the abundance of perishables in the caves is extraordinary even by Great Basin standards. Matters of cultural identity and the abrupt shift in material culture that accompanies the Promontory Phase should not overshadow efforts to answer a range of anthropological questions limited only by our imagination. Steward proved remarkably prescient in his 1930s work in two other respects: estimating the age and duration of the Promontory occupations and assessing the economic focus of the cave occupants. More than 80 AMS dates allow us to show that Promontory Caves 1 and 2 were intensively occupied over a period of one to two human generations ca. A.D. 1240-1290. Equally striking are the evidence for heavy reliance on large game, especially bison, with the virtual absence of evidence for seed processing. Ceramic geochemistry, carbon isotope data, obsidian sourcing and rock art reveal an array of external, sometimes distant interactions. Moccasin size data permit demographic inferences about the Promontory Caves population structure with a precision even mortuary records cannot match.

Izeki, Mutsumi (Meiji University)

[341] *Sociocultural Resilience to Natural Disasters: A Case Study of the Aztec 1506 Drought*

This paper examines an archaeological example of sociocultural resilience to natural disasters by analyzing functions of some major Aztec monumental sculptures related to the 1506 drought. The Aztecs (A.D. 1325 to 1521) recorded in their historical accounts that large-scale droughts occurred every 52 years, which accords with the Aztec traditional calendric cycle. These repeated abnormal weather events have been also attested scientifically by the recent tree-ring analyses. Among the historical droughts those of 1454 and 1506 are the best described in Aztec pictorial manuscripts, Colonial documents and archaeological remains. The year 1454 corresponds to the reign of Motecuzoma I, who, in spite of the fatal damage to the kingdom caused by the disasters, successfully reinforced the political-economic influence of the kingdom over the city-states outside the Basin of Mexico by invading fertile regions, modifying religious practices to justify the militant strategies, and developing technologies in building aqueducts and chinampas. His grandson, Motecuzoma II, who experienced the 1506 drought, not only followed the strategies of his antecedent but also created some monumental sculptures to mythically commemorate both the disaster and victory of the kingdom. These monuments might have a

sociocultural function to reconstruct and repeatedly share the Aztec environmental cognition.

Izquierdo, Ana Luisa

- [227] *La importancia política de las unidades mayas de parentesco en un sistema de gobierno heterárquico en la época Clásica*

Esta ponencia tiene como objetivo mostrar que la organización política maya del Clásico tardío se puede conceptualizar como heterárquica. Por ello las formas de gobierno al interior de las comunidades eran mixtas, es decir había una línea de mando vertical, que ahora ha sido detallada por epigrafistas, arqueólogos e historiadores del arte y una línea de mando horizontal desarrollada en los grupos corporativos, cuyas formas de autoridad y maneras de funcionamiento están por descubrirse. Por ello para desentrañar sus características, además de analizar los datos arqueológicos a la luz de nuevas teorías sociales, se alude a los rasgos de los grupos de parentesco, que aportan la etnohistoria y la etnología.

Izuho, Masami (Tokyo Metropolitan University)

- [114] *Current Older-than-Clovis Debate in the Context of Upper Paleolithic Prehistory in Northeast Asia*
Older-than-Clovis human presence in the Americas currently has been accepted, widely accompanied with progress of geoarchaeological investigations, though fundamental questions still remain on the geochronology, site context, and site formation processes of the site. Here I present an outsider's view on the older-than-Clovis debate, particularly if older-than-Clovis site has consistency, by comparison with archaeological records of Upper Paleolithic in Northeast Asia.

Izuho, Masami [223] see Terry, Karisa

Jackson, Stephen

- [75] *Discussant*

Jackson, Brittany (University of California, Los Angeles)

- [102] *Bioarchaeology, Nutrition, and Urban Food Systems in Roman Britain: A Rural Perspective*
The current analysis centers on nutritional health status, bone robusticity, and dental health in skeletal remains ($n = 73$) from excavations of a rural Romano-British population at Alington Avenue, Farington, Dorchester (A.D. 43-410). By comparing my results to those from other contemporaneous urban and non-urban populations, I discuss nutrition and social difference among Romano-British populations and suggest that the Alington Avenue population experienced relatively good nutrition. I conclude that it is possible that Farington's place as an early farming population with an economy derived primarily from its role in the urban food economy and distance from large urban centers (e.g., coloniae) allowed its citizens to more easily fulfill their nutritive needs.

Jackson, Sarah (University of Cincinnati)

- [164] *Classic Maya Material Meanings (and Modern Archaeological Consequences)*

Ideas about materiality and the material world are variable and locally created, and include culturally-defined assumptions about how the world is organized (e.g., the division between humans and objects). For the Classic Maya of southern Mexico and Central America (ca. A.D. 250-900), we have clues about the distinctive views on the material world that they embraced (e.g., at times attributing personhood to material objects); however, to date we have lacked the details of their cultural model of the material world. This paper proposes a new reconstruction of details of a Classic Maya worldview on materiality, derived from primary source epigraphic and iconographic evidence, with an emphasis on the organization and boundaries of what are considered culturally-meaningful materials, and the relevant qualities thereof. This reconstructed worldview suggests ancient indigenous perspectives on excavated materials, changing our understandings of materials, focusing modern attention on salient qualities of recovered objects, and yielding an ability to describe human-object and object-object networks of relationships. The results of this reconstructed worldview offer innovations in terms of both theoretical models and practical/methodological archaeological approaches, paving the way for transformations in the field in the inclusion and synthesis of multiple perspectives, voices, and types of evidence.

Jackson, Edwin (U Southern Mississippi) and Jessica Kowalski (U Alabama)

- [260] *Tracking the Mississippian Period in the Lower Yazoo Basin: Results of Mound Testing by the Mississippi Mounds Trail Project*

The Lower Yazoo Basin of the Lower Mississippi Valley is postulated to encompass a relatively unitary cultural expression, a conclusion largely based on investigations at the two primary mound centers of the region, Winterville Mounds at the northern end of the basin and the Lake George site in the southern portion. However, there are a number of smaller Mississippian mound centers dispersed along the modern Mississippi River course as well as scattered along one of the main interior waterways, Deer Creek. These minor sites are largely represented by surface collections, these mainly being the product of Philip Phillips survey of the 1940s and published in 1970. In his assessment of these collections, Phillips hinted at a possible cultural division between north and south, one that the available data could not clearly substantiate. Recent testing of a number of key minor mound centers between Winterville and Lake George, afforded by the development of the Mississippi Mound Trail by the Department of Archives and History provides a fresh opportunity to examine both cultural and chronological patterns in the Yazoo Basin during the Mississippian period.

Jackson, Antoinette [283] see Wells, Christian

Jacobs, Mike [336] see Odegaard, Nancy

Jacobson, Jodi (TRC Environmental)

- [320] *Subsistence, Culture, and Environment: Faunal Analysis of the Fish Creek Slough Site (41DL436)*

The Fish Creek Slough Site (41DL436) was identified during TxDOT's cultural resources assessment of a proposed transportation project in Dallas County, Texas. The deeply buried, well-stratified site dated from approximately 1270 A.D. to recent historic times. While a paucity of lithic artifacts were noted during data recovery efforts, over 8700 well-preserved bone fragments were recovered and analyzed by TRC. Approximately 5 percent of the bones recovered were unbroken and over 53 percent of all bone, including that recovered from heavy fraction, was identifiable to class, marking it as one of the best-preserved archaeological faunal assemblages recovered from North Texas. Shifts in species presence and availability, notably bison; human modification of bone; and technological changes in butchery and hunting tools from the late prehistoric to protohistoric to historic periods are examined.

Jacques, Clarisse (PPGA/UFPA-Brasil) and Ângelo Lima (PPGA/UFPA-Brasil)

- [331] *Land Recognition, Identity, and Diverse Understandings of Materiality: Archaeological Practice in a "Quilombola" Community, Brazilian Amazon*

Researchers during fieldwork have commonly been facing situations that challenge our understanding of archaeology as a science that investigates the past. Local communities and different publics through their demands and traditional ways of living call our attention to different ways of understanding the world and interpreting heritage. Through people's daily activities and materialities involved in local practices we can think of archaeology as strongly connected to the present. This presentation aims to discuss approaches that include reflexivity, dialogue, and respect for cultural diversity based on doctoral research that is taking place at an African American community in the Amazon region called Comunidade Quilombola de Cinco Chagas do Matapi. This community is located in a place with archaeological finds related to indigenous and African American history of the Amapá State. Issues about land recognition and identity lead us to a diverse understanding of contemporary materiality and landscape. It is questioned how archaeologists can engage in a collaboration that makes sense to local communities in the context of the Brazilian Amazon region.

Jacquier, Jérémie [201] see Naudinot, Nicolas

Jadot, Elsa [21] see Pereira, Gregory

Jaillet-Wentling, Angela (GAI Consultants, Inc.), Laura Kaufman (GAI Consultants, Inc.) and Amanda Rasmussen (Indiana University of Pennsylvania/PennDOT)

- [304] *Minimum Requirements: Experience and No Expectations?*

For a growing generation of young Cultural Resource Management (CRM) professionals, the catch-22 of

the typical CRM job description can seem unnecessarily daunting. With minimum requirements for supervisory experience and technical expertise, many “new” professionals are as frustrated as the potential employers that cannot seem to find the workforce they require. Providing multiple opportunities for archaeological internships and fieldwork experience, PennDOT is one of the too few employers to explore the different ways to foster the type of potential employees they require for their continued practice in CRM. PennDOT’s central office-based internships and PennDOT Highway Archaeological Survey Team (PHAST), an internally-operated PennDOT archaeological survey crew staffed by graduate and undergraduate students, are two examples of innovative approaches by employers at mentoring and developing a new generation of CRM practitioners, while also providing an invaluable and cost-effective service to the state government and ultimately the public. By taking advantage of opportunities like PHAST and other internship programs, the next generation can begin to prepare itself for its “coming of age,” as it heads into the familiar, yet ever-changing future of CRM.

Jaime-Riveron, Olaf (University of Kentucky)

[204] *Ground Stone Technology in the Southern Huaxteca of Veracruz (Chicantepec Area): A Comparison with the Southern Veracruz Region during the Prehispanic Period*

In this paper a comparison is made between ground stone technologies of the Southern Huaxteca of Veracruz and Southern Veracruz over time. The Formative, Classic, and Postclassic periods (focusing on the Huaxtecs) are compared in terms of acquisition, production, distribution, and consumption of ground stone. The uses of ground stone in monumental-elite as well as quotidian contexts are addressed. Similarities and differences are analyzed in order to obtain a better understanding of adaptation to different landscapes and political-economic processes of these regions inhabited by native peoples of the Gulf Coast of Mexico before the Spanish Conquest.

Jakaitis III, Edward [176] see Meierhoff, James

James, Vivian

[140] *Deer Species at Mayan Postclassic Mayapán*

Two species of deer (Cervidae), white-tailed deer (*Odocoileus virginianus*) and brocket deer (*Mazama americana*) have been identified in the Mayapán faunal assemblage. The size range of the osteological remains from these two deer species does not overlap, resulting in the accurate identification of faunal remains from archaeological contexts. Previous faunal analyses found that some deer bones recovered from Mayapán were of an unexpected size that was between the size ranges of brocket and white-tailed deer. This study used metrical and statistical analysis of Cervidae long bones recovered during excavations in 2008 and 2009 as well as the mortality profile of the sample based on epiphyseal suture closure to determine the presence of a third deer species at Postclassic Mayan Mayapán.

Jameson, John H (ICOMOS ICP)

[134] *Discussant*

Jamieson, Spencer (Simon Fraser University)

[301] *Comparing Methods of Enthesis Analysis: An Example from Early Neolithic Iran*

Traditionally, lesions at the site of muscle attachment (enthesopathies) have been interpreted as musculoskeletal stress markers, and as evidence of specific occupations in past populations. Rather than being an indicator of specific occupation, present consensus focuses on identifying correlations between repetitive motions and high frequencies of lesions. The present study investigates the relationship between gender-based activity patterns and enthesopathies using a skeletal sample of 23 individuals from Ganj Dareh Tepe, a Neolithic village site of sedentary pastoralists in the central Zagros Mountains of Iran, ca. 10,000 BP. The methods of visual, tactile and fractal dimension assessment of enthesis morphology are compared and used to assess the relationship between enthesopathy presence and sex. The entheses from the upper arm and leg are examined for size, rugosity and robusticity using metric and non-metric techniques, while fractal dimensions, obtained through NextEngine laser scanner evaluation, allow for assessment of the relative complexity of the attachment sites. The interpretive challenges and benefits of each method are compared. The sex-based differences in enthesopathy frequency and distribution patterns are discussed. These bioarchaeological data provide specific understanding of the habitual activities of individuals and the lifeways of a population during a transitional period in time.

Janaway, Robert (University of Bradford)**[283] The Development of Forensic Archaeology in the UK: Surviving the Market?**

This paper will review the development of Forensic Archaeology in the UK from its first use in a criminal trial through to the routine use for buried and concealed remains in police investigations. Case studies will be presented to indicate the way in which forensic archaeology is integrated with the work of police and other scientific specialists at the crime scene. The paper will discuss how and why standard UK based professional archaeological practice has been modified to work within a UK based police investigative structure. Finally it will consider how Forensic Archaeology is faring against a background of reduction in police budgets and the formation of a UK forensic science market with commercial competition between forensic service providers.

Janetski, Joel [148] see Louderback, Lisbeth

Jankauskas, Rimantas [102] see Whitmore, Katie

Jansen, Øystein James [325] see Hansen, Gitte

Janson, Rébecca (Montreal University/Bowdoin College)**[58] Iron Age Frontier Landscapes and Complex Societies in the Mandara Mountains (North Cameroon): Plains and Mountain Relationships**

In northern Cameroon, the Mandara Mountains provide a testimony to the geographical and cultural encounter between two worlds: mountain peoples, pagan and 'egalitarian', and those of the surrounding plains, living under the hierarchical control of Islamic states. Through their construction of sixteen imposing dry-stone structures, the people who built the DGB sites (13th to 16th century A.D.) developed mountain landscapes independently of influence from their powerful plains neighbors. However, several clues suggest the existence of a relationship between these two complex cultural areas. The discovery of two new mountain sites in the same area contributes new elements to our understanding of the phenomenon of monumental architecture in the Mandara region. Finally, preliminary results of comparative ceramic analysis from plains and mountain Iron Age sites provide information on the relationship that existed between these two communities.

Janusek, John (Vanderbilt University)**[288] Centering "Complexity": Ritual, Materiality, and Emergent Urbanism in the South-Central Andes**
The term 'complexity' is way overdue for a makeover. It is integrally tied to evolutionary narratives and is easily construed as a stand-in for its problematic conceptual partner, "civilization." In this paper I analyze the concept of "complexity" as an abstract touchstone for evolutionary narratives. I discuss centrality and urbanism as material manifestations of what archaeologists term "complexity" in the prehispanic south-central Andes. I seek to define some of the key elements of emergent centrality and urbanism in this world region. I argue that ritual practice was critical to the production and transformation of centers in the region. By ritual, I refer to charged events that gather together all sorts of activities, be they economic, political, or religious. In addition, I argue that specific material elements of built monuments, including the very material constitution of their stone facades and earthen cores, were critical to their significance and transformation. I argue for a relational and material approach to "complexity," one that emphasizes the ritual production of proto-urban centers as anchors for emergent complexity.**[120] Discussant****Janz, Lisa (University of Arizona)****[313] Discussant****Janzen, Anneke (UC Santa Cruz)****[40] Moving Herds: Ancient Pastoral Mobility in Kenya Assessed through Stable Isotope Analysis**

Specialized pastoralism emerged in Kenya around 3000 years ago and has adapted with changes in the social and ecological landscape to this day. Ethnographic research has documented significant changes in herding strategies among pastoral groups throughout colonial and post-colonial periods. Stable isotope analysis can shed light on how crucial mobility was in maintaining herds before the encroachment of iron-using and –producing peoples. Intra-tooth sequential sampling of enamel of herd animals presents an

isotopic record of diet during tooth formation, and can thus track movements across the landscape. These analyses were conducted on enamel of livestock teeth from several Savanna Pastoral Neolithic sites in the Central Rift Valley and Athi Plains of Kenya. Some sites are clearly the result of specialized pastoralist pursuits, and other sites indicate a mixed economy of pastoralism and hunting-gathering. While carbon stable isotope ratios do not indicate seasonal altitudinal mobility up the sides of the escarpments flanking the Rift Valley, this does not preclude movement of livestock long distances at low elevations. $^{87}\text{Sr}/^{86}\text{Sr}$ ratios can reflect movement across geologically distinct soil complexes, thus showing such mobility. Here, analysis of the strontium isotope composition of tooth enamel provides another line of evidence for pastoral mobility.

[40] *Chair*

Janzen, Anneke [186] see Hildebrand, Elisabeth

Jarrett, Jordan (Glen Canyon NRA/Rainbow Bridge NM), Caitlin Wichlacz (Willamette CRA, Portland, OR) and Andrew Duff (Washington State University)

[321] *The Ceramic Dynamic: A Synthesis of Recent Research on Ceramic Production and Distribution at Three Chaco-era Great House Communities in the Southern Cibola Region of New Mexico*

Recent studies of ceramic composition and technological style on the southern fringes of the Chaco regional system have revealed striking patterns in ceramic production and distribution that also shed light on community organization and regional interaction. Through these and past studies, a strong case has been made that Puebloan and Mogollon people lived together in these communities during the Pueblo II period. Settlements within this region of cultural overlap provide a unique opportunity for the study of identity and interaction along both spatial and historical scales. In this paper, we offer a comparison of studies conducted at three Chaco-era (1050-1130 A.D.) Great House communities in the Southern Cibola region of west-central New Mexico with the aim of synthesizing the results to address these patterns at the level of the broader research area. A suite of analytical methods, including visual temper analysis, analysis of elemental composition via electron microprobe, as well as low-tech analysis of technological style offer several complementary lines of evidence. Our results indicate varied patterns in plainware ceramic production and distribution at sites across the study area. These differing patterns have implications for understanding local and regional social dynamics.

Jarriel, Katherine (Cornell University)

[181] *Terraces and Cycladic Social Landscapes: A Diachronic Perspective*

Stone-wall terraces are dominant anthropogenic features of many Mediterranean agricultural landscapes. In the Cyclades, archaeologists often neglect the study of terraces due to unreliable dating and the assumption that they are modern phenomena (Frederick and Krahotopoulou 2000: 80). When Aegeanists do include discussions of terraces, they tend to describe morphology and function or assess dating techniques (e.g. Price and Nixon 2005; Kizos and Koulouri 2006; Frederick and Krahotopoulou 2000). A consideration of the social and ideological relationships between terraces and the agents of their manufacture offers a new perspective on this major feature of Cycladic islandscapes. This paper takes a diachronic approach to shifting land-use strategies and landscape ideologies of Cycladic populations from the first evidence of terracing (Middle to Late Bronze Age) through the 20th century, when increasing mechanization led to widespread abandonment of 'traditional' terracing. Aerial and satellite photography and survey data reveal the diversity of terrace uses at varying moments in history. Economic, social, and environmental factors influenced how local people acted to modify the countryside, which in turn altered their perception and experience of the landscape. An integrative approach to terraces in their social contexts promises to nuance a major aspect of Cycladic landscapes.

Jarvenpa, Robert and Hetty Jo Brumbach (University at Albany, SUNY)

[73] *Initializing the Landscape: Chipewyan Construction of Meaning in a Recently Occupied Environment*

What happens when hunter-gatherers move into a new territory? Over what period of time, and by what means, do such people make their new environment culturally meaningful for themselves? What kinds of markings, modifications of landscape, and other conventions might be involved in this nascent process? These questions will be addressed by considering the recent history of the Kesyehot'ine group of Chipewyan, hunter-fishers of the subarctic. Prior to the mid-18th century, their ancestors had occupied the forest-tundra ecotone in what is now the Northwest Territories. By the end of that century, however, these people had moved south and southwestward several hundred miles into the full boreal forest and

along the headwaters of the Churchill River in what is now northwestern Saskatchewan. In little more than eight generations, then, the Kesyehot'ine have adapted to a new set of biogeographical and political economic circumstances. Cultural marking or "initializing" this unfamiliar environment, arguably, involved a complex interplay of wayfinding by landscape features, construction of habitations and sites with profound social identity and spiritual resonance, and significant cognitive mapping of the landscape through oral lore linked to place names. Special consideration will be given to the emergence of a mortuary-based pilgrimage complex.

Jarvis, Jonathan**[155] Archaeology, Architecture, and Culture at Merrelltown Cemetery**

Tombstones and other grave markers reflect broader trends in architectural and cultural history. Using the theoretical framework of necrogeography, this study identifies diachronic trends evident in the grave marker morphology at the Merrelltown Cemetery (41TV1716), a Protestant Anglo cemetery of the Upland South tradition in central Texas.

Jazwa, Christopher (Pennsylvania State University), Todd Braje (San Diego State University), Jon Erlandson (University of Oregon) and Douglas Kennett (Pennsylvania State University)**[316] Central Place Foraging and Shellfish Processing on California's Northern Channel Islands**

We examine the processing and transport costs of two shellfish species collected on California's Northern Channel Islands during the Middle Holocene (7500-3500 cal B.P.), red abalone (*Haliotis rufescens*) and California mussel (*Mytilus californianus*), and how these costs can influence archaeological assemblages at coastal and interior settlements. Food resources can be processed in the field or transported back to settlements for processing and preparation. Decisions to field process may be based in part on time constraints and the ratio of meat and shell on the targeted organism. Our experimental data suggest that red abalones are less likely to be transported long distances (~3 km) without field processing. The transportation threshold is farther for California mussels based on published experimental data. Archaeological data from three Middle Holocene sites on Santa Rosa Island, SRI-50, SRI-109, and SRI-338, are consistent with these expectations. Coastal red abalone midden sites (SRI-109 and SRI-338) are dominated by large red abalone shells and California mussels are most abundant at contemporaneous inland sites (e.g., SRI-50). This study suggests that transportation and processing of costs of food resources should be carefully considered when interpreting archaeological faunal assemblages.

Jeane, David (Arkansas Archaeological Society), Frank Schambach (Arkansas Archaeological Survey) and Jami Lockhart (Arkansas Archaeological Survey)**[30] The "Cookhouse" at the Tom Jones Site (3HE40)**

In 2001, under the direction of Dr. Tom Green, the Arkansas Archaeological Survey and the Arkansas Archaeological Society began a three year project that included remote sensing surveys at the Tom Jones site (3HE40), a small fifteenth-century Caddo mound group located precisely on the divide between the Red River and Ouachita River drainages in the Grandview Prairie Wildlife Management Area in southwest Arkansas. These led to the discovery and excavation of the remains of three deliberately burned pole, daub, and thatch buildings. Two of these were probably elite residences of the type generally found at Caddo ceremonial centers. The third was a small, archaeologically unique, "cookhouse" that had stood adjacent to the single platform mound at the site and had evidently been burned with all its contents, which included over twenty pottery vessels and other ceremonial elements, still inside.

Jefferies, Richard [74] see Meyers, Maureen

Jelks, Edward**[239] Archaeological Salvage at Texas Reservoir Projects: 1945-1969**

Between 1945 and 1967 archaeological salvage was carried out at more than 40 reservoir construction projects in Texas as part of the nationwide River Basin Surveys and Interagency Archaeological Salvage program. An estimated 1,600 sites were recorded, and excavations were conducted at scores of them. This paper describes details of this research.

Jenkins, Tara (McMaster University and TMHC)**[28] Contexts, Needs, and Social Messaging: "In Situating" Iroquoian Human Bone Objects**

Typically categorized as trophies, human bone objects recovered from archaeological sites across southern Ontario represent a continuous shared Northern Iroquoian tradition. Human bone was manufactured into items of personal adornment, musical instruments and utilitarian tools. Most were recovered within villages in large middens, interior longhouse refuse pits and other public spaces. My study of archaeological literature assembled an inventory of human bone objects providing detail on provenience and descriptive attributes. The rationale was to investigate human bone objects in their recovery contexts to search for temporal and spatial trends and to provide insight into cultural processes that created the assemblage. To accomplish this, I studied human bone objects in context employing two case studies of contemporary Iroquoian village sites to identify spatial trends and provide interpretative value. I discovered that human bone objects were important indicators of group identity and their disposal signified a terminating group identity, marking new alignments in the social and political structuring of the people. Whether enemy or ancestor, repositioning human bone objects within a broader contextual framework, as opposed to standalone artifacts, allows a more holistic explanation as to why some Iroquoians were deposited in a context considered set apart from "normal" burial practices.

Jenkins, Dennis [148] see Holcomb, Justin

Jenkinson, Anthony [325] see Arbour, Chelsee

Jenks, Kelly (Fort Lewis College)

[168] *A Tale of Two Villages: Considering Land Tenure in the Spanish and American Periods*

When attempting to explain the layout and distribution of settlements, archaeologists often consider geographic limitations, economic needs, and the enduring influence of cultural traditions. A fourth factor—one that may be irrelevant in prehistory but is inescapable in the historical period—is the role of land tenure laws. The influence of these laws is especially evident in the Southwest, where settlements were established during periods of Spanish, Mexican, and American rule. This paper considers the roles of new laws and old traditions in shaping two Hispanic New Mexican villages—one established by a Spanish community land grant, and the other settled by homesteading families.

Jennings, Thomas (University of West Georgia) and Michael Waters (Texas A&M University)

[24] *Paleoindians in Central Texas: Research at the Debra L. Friedkin and Hogeye Sites*

The North Star Archaeological Research Program, created by Joe and Ruth Cramer, has recently supported research at two sites in Central Texas that are providing new insights into Paleoindian archaeology. The Debra L. Friedkin site has yielded stone tools and debitage associated with Pre-Clovis, Clovis, Folsom, and Golondrina occupations. At the Hogeye site, one of the largest Clovis biface caches discovered to date has been found and documented. Through analyses of these collections, we are addressing the question of Clovis origins, identifying regional Clovis technological and adaptive signatures, and tracing changes in post-Clovis Paleoindian technologies.

Jennings, Thomas [263] see Smallwood, Ashley

Jensen, Anne (UIC Science LLC)

[68] *Nuvuk, Walakpa, and Beyond: Heritage and Archaeology on the North Slope of Alaska*

This paper uses recent projects in the Barrow area of Alaska as examples of interaction between the archaeology community and the broader public. The Nuvuk Archaeology Project began in 1998 at the request of the local community and provided opportunities for high school students to participate in archaeology at a rapidly eroding village. The Walakpa Archaeological Salvage Project was initiated in 2013 when a structure was found eroding at Walakpa, causing local concern. Timing made students unavailable, but the expanded use of volunteers to stretch limited funds for a crew was successful. The Inupiat Heritage Center also provided a staff member as part of the crew.

These projects include extensive public engagement efforts. Public and classroom talks are standard, but recent efforts go much further. Large segments of the North Slope community are keenly interested in their heritage, but lack time to participate directly in excavations or preservation efforts. Many people are fascinated by the Arctic. A combination of traditional print, broadcast and new media, including Facebook Groups and Pages, a blog and Twitter is proving to be particularly useful in reaching and engaging these

groups.

Jeremiah, Kristen (SWCA Environmental Consultants)**[232] *The Archaeology of Fort Travis***

Located at the western tip of the Bolivar Peninsula, Galveston County, Texas, Fort Travis is the best preserved coastal military fortification along the Gulf Coast. Active in WWI and WWII, protecting the inlet to Galveston Bay, Fort Travis accommodated troops and interned German prisoners of war. The fort is listed on the NRHP under criteria A and C and is designated as a Texas State Antiquities Landmark. Recent investigations conducted by SWCA Environmental Consultants (SWCA) include metal detecting, subsurface testing, and a thorough inventory of remnant structural features, including 12 concrete building foundations, two water tanks, four batteries, an observation tower, an anti-aircraft gun emplacement, the caretaker's residence, the Old Hwy 87 brick road, and the seawall constructed following the Great Storm of 1900. This poster presents the overall results of SWCA's investigations including features and artifact assemblages identified within the fort.

Jeske, Robert (University of Wisconsin Milwaukee) and Katherine Sterner Miller (University of Wisconsin Milwaukee)**[255] *Microwear Analysis of Bipolar Tools from the Crescent Bay Hunt Club Site (47Je904)***

The Crescent Bay Hunt Club site is an Oneota village, occupied ca. A.D. 1200-1400, near Lake Koshkonong in Southeastern Wisconsin. Microwear analysis of a sample of artifacts from Crescent Bay has demonstrated that, in general, morphofunctional typology has limited value for the assessment of tool function at that site. Triangular artifacts commonly called "Madison Points" sometimes show hide scraping, cutting, and other use wear. Nonretouched debitage commonly shows evidence for hide scraping. One variable that may impact tool use is the method of manufacture and consequent constraints on tool form and size. In this study, both low power and high power microscopy are used on several morphological variants of bipolar tools, including cores and/or pièces esquillées, to determine if a bipolar manufacturing origin is correlated with tool function and/or use at the site.

Jewell, Elizabeth [141] see Ambruster, Carol

Ji, Ping [51] see Zhao, Hao

Jimenez, Elizabeth (Arqueóloga) and Robert Cobean (Doctor)**[120] *Ritual Processions in Ancient Tullan: The Legacy in Stone***

The many sculptural images which are conserved in the ancient city of Tula indicate the existence of at least two types of ritual processions led by kings or nobles, priests, and warriors. Depicted in stone, the processions were placed in buildings of the sacred precinct, which are located on the highest points of the ancient settlement, thus giving the sculpted processions great symbolic value. A specific type of sculpted procession seems to represent personages who have participated in very emotive events (such as military conquests) which were celebrated with the exhibition of the warriors, their weapons, and their uniforms to the public in the principal plaza. Another procession group appears to be composed of symbolic personages, such as warriors who are being transported on the backs of feathered serpents. In these processions, the serpents are probably guides and protectors.

Jimenez, Socorro (Universidad Autónoma de Yucatán), Ronald L. Bishop (Smithsonian Institution) and Erin Sears (University of Kentucky)**[128] *Fluid Boundaries and Shifting Frontiers: Reflections of the Middle Usumacinta***

The Maya sites of Chinikiha, Pomona, Yaxchilan and Piedras Negras, located along the margins of middle Usumacinta, generally are considered polities of the Late Classic Period that conceptually mark the boundary between the western lowlands and the "Petén Usumacinta". However, certain ceramic materials, specifically those common classes, express a changeable mosaic of social, economic and political interactions. Sometimes, these utilitarian ceramic classes can be seen as similar across a wide area. At other times, however, depending on the subclass, properties of form, decoration or paste may be highly variable, elaborating or simplifying according to the specific sociocultural environment and the analytical methodology used in the investigation. A critical question addressed in this paper is whether or not it is possible, based on the pottery, to discern boundaries among the sites considered or between the "Western Lowlands" and the Central Petén. To address this question we discuss the ceramic parameters

that might be used to infer a shared ceramic cultural tradition by these polities and those that differed at various times according to local histories of these riverine Maya centers.

Jimenez, Peter (INAH-Zacatecas)**[339] Aztatlán: Inroads on Its Encroachment**

Thirty years after J. Charles Kelley's seminal paper "Hypothetical Functioning of the Major Postclassic Trade System of West and Northwest Mexico" was presented in the XVII Mesa Redonda of the Sociedad Mexicana de Antropología in Taxco 1983, returning Aztatlán to attention, significant advances have been made concerning its highland manifestations in both the West and Northwest. This presentation will focus on the recent archaeological excavations in the Cerro del Teul in southern Zacatecas pertaining to Aztatlán's Early and Late Postclassic components and compares them with neighboring regions. The concluding section will assess the present evidence for Kelley's proposed Aztatlán connections to Tula via Jalisco and Michoacan, while considering an alternative nexus to the Valley of Puebla-Tlaxcala and the Mixtec regions through the Balsas Depression.

Jiménez González, Rocio Berenice [25] see Alvarado Viñas, Luis

Jiménez-Cano, Nayeli (Universidad Autónoma de Madrid) and Thelma Sierra-Sosa (Instituto Nacional de Antropología e Historia)**[192] Let the Fishes Speak: Prehispanic Maya Fisheries in Xcambó, Yucatán, Mexico.**

The relationship between humanity and the sea during prehispanic times in the Maya area is well supported through iconographical and ethnohistorical sources. However, the nature and importance of fish resource exploitation during the Classic Period (250-900 A.D.), the apogee of Maya history, remains largely unknown. This paper presents evidence of fish remains recovered from Xcambó (250-750 A.D.), an important commercial port located on the north coast of the Yucatán peninsula. Fishing efforts in Xcambó were oriented to catching sharks, snook, and catfish, using particular fishing methods, and they represented an important part in the diet of the ancient Maya. Although it has been proposed that marine resources, including fish, could have been traded and transported from coastal to inland localities, evidence from Xcambó indicates that fishing was an important local subsistence activity.

Joannes-Boyau, Renaud [249] see Orange, Marie

Jochim, Michael (Univ of Cal - Santa Barbara)**[284] Discussant****Johannesson, Erik****[92] Echoes in Eternity: Stone Monuments and Social Memory in Bronze-Iron Age Mongolia**

Funerary monuments are constructs that by their very nature are vehicles for commemorative narratives. Moreover, social memory is typically yoked to expressions of individual and group identity, as well as ostentatious displays of authority and power. Mortuary monuments commemorating deceased leaders thus represent ideal venues to examine potential differences in how social memory was produced in funerary ritual. Here I will discuss how social memory was inscribed in mortuary practice during the Late Bronze-Early Iron Age (ca.1200-200 B.C.) in Mongolia, and subsequent changes associated with the formation of the first nomadic polity in Inner Asia, known as the Xiongnu (ca. 200 B.C.-200 A.D.). I adopt a scalar perspective that emphasizes that monuments produce social memory at different temporal scales simultaneously, which offers insight into how they were envisioned, experienced, and used by those who produced them. By adopting a scalar approach to social memory, I will demonstrate that in comparison to preceding periods, Xiongnu mortuary ideology restricted the capacity to produce commemorative narratives in the longue durée. Whereas previous monument types represent grand architectural narratives relying on flexible funerary ideologies to produce idiosyncratic narratives, Xiongnu monuments are inconspicuous, standardized, and only produce social memory on a small scale.

Johansson, Lindsay (University of Colorado, Boulder)**[262] Faunal Perspectives on the Promontory**

Following excavations in the Promontory Caves and at several open sites in the Provo River Delta region,

Steward (1937) characterized the Promontory culture as large game hunters. He based this on the high number of bison bones recovered within the caves. Excavations at additional Promontory sites along the Wasatch Front contain faunal assemblages which differ significantly from those in the caves, showing that people living at open sites relied more heavily on small game, waterfowl, and aquatic resources than large game. These differences have been mostly attributed to Steward's sampling strategy and lack of screening, but faunal material recovered during 2011 excavations at the caves support Steward's initial assessment: the people living in the caves were hunting large game and little else. Using faunal data from seven sites, I discuss how the faunal assemblages differ and the implications of hunting practices in discussions of Promontory culture.

Johnson, James (University of Pittsburgh)

- [20] *Disassembling Community and Complexity in the Eurasian Bronze Age: Social Transformations during the Middle through Final Bronze Ages, Southern Urals, Russian Federation*

The Middle Bronze Age, in particular the Sintashta period (2100–1750 cal. B.C.), has often been portrayed as the apex of social complexity with the appearance of twenty-two fortified settlements in the southern Urals. In addition, this period is seen as foundation for later cultural developments but with receding tendencies towards complexity. This paper, based on my dissertation research, retroactively explores the emergence of the Sintashta phenomenon and its relation to later developments in the LBA and FBA. The roles of demographic dispersion, changes in visibility and territory, and differentiation in techniques of pottery production are used to highlight the importance of social memory and technical practices in the establishment of new social and political communities in the region and beyond. This paper suggests that current models of complexity may be inadequate to address the social and political changes noted in Bronze Age societies. I focus on the development of and changes to communities at the local and micro-regional scale to evaluate changes "on the ground", rather than speculate on changes noted at the meta- or grand narrative level.

- [20] *Chair*

Johnson, Jay (University of Mississippi) and Bryan Haley (Tulane University)

- [30] *A River Runs Through It: Reassessing Floodplain Adaptation in the Northern Yazoo Basin*

While elevation and soil type have long been recognized as strong predictors of site location in the Yazoo Basin of northwestern Mississippi, little attention has been paid to the impact of annual flooding on the subsistence strategies and social segmentation of late prehistoric populations in the region. Ethnography, historic accounts, ceramic phase distributions, and computer simulations of flooding events will be used in this first assessment.

Johnson, Peri (University of Texas at Austin), Ömür Harmansah (Brown University & The University of Texas at Austin), Ben Marsh (Bucknell University) and Müge Durusu-Tanrıöver (Brown University)

- [41] *Mobility and Settlement before the Lakes and Marshes: Sediment Deposition in the Closed Basins of the Yalburz Yaylası Archaeological Landscape Research Project*

Beginning in the late Ottoman period, new communities settled in the area the Yalburz Project and canals were constructed to drain the waterlogged landscapes of the Çavuşçugöl Basin and the nested İlgin Plain, Bolasan Valley, and Atlantı Plain. In these two closed basins on the western border of the Anatolian Plateau, sediment deposition in the plains and valley floors had turned cultivable areas into lakes and marshes. In 2013 the Yalburz Project concentrated on the drained Kurugöl seasonal lake. The profiles of numerous wells with wedged-shaped trenches facilitated the study of sedimentation in the lake area and the finding of the edges of a Hittite mound and Roman land surfaces under the 30 cm deep sediments of the drained lake dated by the project to the medieval and modern periods. The road from the southwest wound by the Hittite settlement at Uzun Pınar and cemetery of Çallı Ağıl before crossing this plain to the Hittite settlement of Misafırli. After retreat in the Iron Age, this landscape of mobility and settlement starts again in the early Hellenistic period with hollow ways marking the reuse of Hittite roads and forming a northern branch of the common road from Ephesus to the east.

Johnson, Ilana (Sacramento City College)

- [59] *Figures of Moche Past: Examining Identity and Gender in Domestic Artifacts*

Artistic themes and cultural icons depicted on domestic artifacts are reflective of larger social and cultural ideologies, especially those related to gender roles and identity. Although representations of women are rare in Moche elite-sponsored art, they are abundant in household artifacts throughout all time periods.

Additionally, female figurines were one of the main avenues for artistic expression of feminine identity in Moche art. Male figures, on the other hand, are found in the form of decorative whistles and reflect a distinct masculine identity embedded in warrior-related themes. Excavations at Pampa Grande and the Pyramids of Moche have revealed that figurative artifacts were produced in middle-class households, outside the realm of state-sponsored production. They were distributed locally and addressed the needs and desires of the average Moche citizen. Whistles allowed non-elites to actively take part in ceremonies thus fostering a sense of inclusive identity for participants, while figurines allowed women to engage in activities and rituals pertinent to their primary concerns not addressed in the more prominent ceremonies carried out at the temples.

[59] Chair

Johnson, John (Santa Barbara Museum of Natural History), Ernestine Ygnacio-De Soto and Paul Goldsmith

[68] *The Making of "6 Generations": A Collaborative Filmmaking Experience*

Archaeologists who wish to produce video documentaries that appeal to a broad audience have much to learn from professionals in the film industry. One of the challenges in converting a script to film is to engage the audience immediately during the film's introduction. "6 Generations" is a documentary film sponsored by the Santa Barbara Museum of Natural History, which won a special award for "Increasing the Awareness of the Ethnographic Record" and was first runner-up for Best Film at The Archaeology Channel's 2013 International Film and Video Festival. In "6 Generations," Ernestine Ygnacio-De Soto, who collaborated on the script, narrates the history of her Barbareño Chumash family beginning with the Spanish colonial era and continuing down to the present day. Family oral tradition, twentieth ethnographic interviews, and mission records provided the source material, but it took an experienced cinematographer working with a film editor to craft a compelling opening. A comparison between the first attempt at an introduction and the final version illustrates what is needed to draw in the viewer.

Johnson, Erlend (Tulane)

[161] *All Hail the Ajaw? Shifting Political Strategies between Late Formative and Classic Period Sites in the Cucuyagua and Sensenti Valleys of Western Honduras*

The transition between the Late Formative and the Classic period was tumultuous in Copan's Periphery. Late Formative monumental centers in the El Paraiso, La Florida, Sensenti and Cucuyagua valleys were abandoned. Shifts in material culture in these valleys reflect an increasing stylistic influence from the Lowland Maya. Shifts in political organization also occurred. However, the lowland Maya model of centralized power wielded by ruling local lineages was not uniformly adopted. Rather, in some regions political fragmentation and decentralization also occurred. This paper will explore shifts in political organization in Copan's periphery. It will draw on data collected during three seasons of survey in the Cucuyagua and Sensenti valleys, two extensive valleys south of Copan and will explore changes in settlement pattern, site nucleation and monumentality between Late Formative and Classic period sites in both valleys. Data from the Cucuyagua valley indicate an increase in centralization from the Late Formative to the Classic period. However, data from the Sensenti valley suggest greater centralization during the Late Formative period, and fragmentation during the Classic period. Ultimately, these data suggest a greater heterogeneity than previously thought in political forms within Copan's periphery.

[161] Chair

Johnson, Scott [177] see Mehta, Jayur

Johnson, Scott (Washington University in St. Louis)

[177] *Emal, Yucatan: Recent Investigation of this Center of Ancient Maya Salt Production*

The modest site of Emal, Yucatan appears to have been one of the largest centers of ancient Maya salt production. Recent field research has focused on understanding the production and export of this salt, as well as local subsistence strategies and the long-distance trade passing through this site. This report draws data from our recent mapping, surface collecting, and soil sampling to begin to answer questions related to these three research topics. It outlines the method, evidence, and logistics of salt production at Emal, and discusses the methods we are using to understand the production of one of Yucatan's most important exports, as well as the problems we have encountered trying to trace a commodity with almost no archaeological correlates. The report concludes with a look forward to the research questions the project will be tackling in the coming field seasons.

Johnson, Phillip (Texas A&M University)

- [242] *Organization of Basalt Adze Production at the Lau'agae Quarry Complex on Tutuila, American Samoa*

Archaeological research in Samoa and throughout Polynesia has provided evidence for prodigious and potentially specialized basalt adze production on the island of Tutuila, American Samoa. Although there are a multitude of recorded basalt quarries across the island, research on adze production has primarily focused on the western region of the island, and the potential for specialized adze production intended for off-island export. This paper presents the investigation of production, distribution, and consumption of basalt adzes from the Lau'agae basalt quarry complex (AS-21-100) located in far eastern Tutuila.

Technological analyses of debitage, blanks, and preforms collected from two production locales at AS-21-100 were used to investigate the organization and potential standardization of production at the site.

Elemental concentration data derived from EDXRF analysis of basalt artifacts was employed to explore the distribution and consumption of basalt adzes produced at AS-21-100. These data were compared to similar data from other Polynesian basalt adze manufacture sites and evaluated against multiple models of economic specialization to understand the organization of and impetus for adze production in this region of Tutuila.

- [242] *Chair*

Johnson, Kent (SHESC / Arizona State University)

- [291] *Kinship and Heterogeneity of Frailty: A Case Study from Spanish Florida*

Bioarchaeologists have spent considerable effort identifying kin in archaeological sites and generating methods for doing so. Questioning why it is important to do so has been given less emphasis in the literature. In this paper we present data on a kinship analysis from a mission period site in Spanish colonial Florida. Multivariate methods are used to identify kin groups within the church, ground-truthed with archaeological data, and then compared with patterns of stress and health indicators within the site. These analyses demonstrate the presence of family groups within the church cemetery, that some families experienced higher mortality than others during the period in which the church was used for interment, and those families that suffered higher mortality rates also exhibited significantly higher rates of stress, thus reflecting heterogeneity and heritability of frailty within an archaeological sample. Using these data we argue that the identification of kin groups in archaeological sites should be the first step toward a "bioarchaeology of community" that addresses issues of relevance to contemporary society: inter-generational inequality, intra-community economic and political dynamics, and the role of family in determining the life course of individuals.

- [291] *Chair*

Johnston, Christopher (Colorado State University), Jason LaBelle (Colorado State University) and Todd Surrovell (University of Wyoming)

- [23] *Picks, Shovels, and Computers: Data Mining the Alpine Archaeological Record of the Colorado Rocky Mountains, USA*

The prehistoric record of the Colorado alpine ecosystem is well known in regards to Altithermal refugia and communal hunting, among other topics. Much of this knowledge is due to the efforts of the late Jim Benedict, with his work based in the Indian Peaks and Rocky Mountain National Park, the mountainous regions west of Boulder. However, the Southern Rocky Mountains contain other ranges, ecologically distinct from that of the Colorado Front Range. As part of an ongoing baseline investigation, this project summarizes over 2,200 prehistoric and 5,000 historic archaeological sites located above 3000 m in Colorado. Classifying the Colorado mountains into 26 zones, we statistically analyze the abundance and types of sites to identify land use patterns related to prehistoric subsistence and mobility, in addition to gaps in the present data. Rather than demonstrating a normative "mountain adaptation", ancient peoples exhibited diversity in their use of Colorado ranges.

Johnston, Philip (Harvard University)

- [332] *Production Practices and Colonial Societies: Phoenician and Indigenous Potters at Castillo de Doña Blanca (Spain)*

In this talk I will argue that producers constitute a crucial demographic for the study of social change in colonial settings, with a focus on my examination pottery production at the Phoenician colony of El Castillo de Doña Blanca (Spain) using petrography, NAA, and pXRF. Over the past two decades, comparative archaeological research on pre- and proto-historic colonies has placed heavy emphasis on mundane and conspicuous consumption practices, and on the way consumption patterns reflect processes of social renewal and genesis in colonial settings. This focus on consumption has left the

social consequences of another important colonial economic sphere – production – relatively unexplored. Drawing from a rich tradition of comparative archaeological research on specialized production and technology, and from ethnographic studies of production activities in traditional societies, archaeologists today are in a position to precisely reconstruct the social and material contexts of many ancient production activities. In the study of colonial settings, such reconstructions can provide a basis for identifying and describing producer communities, for describing the social boundaries and technology exchange, and for investigating the consequences of the colonial setting on their activities.

Jolie, Edward (Mercyhurst University)**[202] Matting Matters in Chaco Canyon, the American Southwest, and Mesoamerica**

Due in large part to its perishability, woven matting has long been a neglected artifact type in Southwestern archaeology. Early archaeologists noted it, but few collected anything but the largest or best preserved fragments. Matting assemblages of significant size were unavailable until excavations at sites such as Pueblo Bonito and Aztec Ruins produced dozens of examples, but these remained unstudied for decades. Although ubiquitous in mortuary contexts, poor preservation and a perception that matting reveals little about ancient peoples except that they worked, slept, and were buried on mats has only contributed to their neglect. This presentation revisits the subject of woven matting and its importance to pre-Hispanic peoples of the Colorado Plateau during the Pueblo era by drawing on insights obtained from the reanalysis of matting from Pueblo Bonito and Aztec Ruins. Consideration of technological stylistic variation in conjunction with evidence for matting's likely symbolic content suggests that matting had heretofore underappreciated significance in Chaco Canyon and beyond, with further implications for our understanding of certain ceramic decorative motifs and the influence of Mesoamerican belief systems.

Jolie, Edward A. [336] see Urana, Lauren

Jones, Travis, Daniel Bigman (Georgia State University) and Jeff Speakman (The University of Georgia)**[13] Testing Alternative Methods for Unmarked Burial Identification**

One of the most popular applications of near-surface geophysical survey in archaeology is the identification of unmarked burials and the delimitation of cemetery boundaries. Traditionally, archaeologists have utilized ground-penetrating radar, electromagnetic induction, resistivity, and, in some cases, magnetometry to survey sensitive historic remains located in cemeteries. Despite the success of these techniques, the archaeological community should continue to develop additional non-invasive strategies for the identification of unmarked graves. This poster presents the results of an experimental study at the Prior Family Cemetery located in Morgan County Georgia. We compare field magnetic susceptibility measurements, lab magnetic susceptibility measurements, and total phosphate counts from a variety of different locations including known burials, suspected burials identified by ground-penetrating radar, and non-burial areas. Our study indicates that field and lab susceptibility can distinguish between burials and non-burials in this soil context and are useful supplements to traditional geophysical techniques. However, the utility of total phosphate in measuring variation between burials and non-burials is limited.

Jones, Olivia (Groningen Institute of Archaeology, University of Groningen, The Netherlands)**[28] Piles of Bones: Materiality as an Aid to Assess Meaning from Commingled Confusion**

Commingled human remains are found in diverse combinations and contexts; how can researchers analyze and understand these assemblages? In this paper, the specific question is: how can bioarchaeologists interpret a large enclosed tomb, in which disarticulated and commingled human remains are placed in piles? The case study derives from a Late Bronze Age, approximately 1550 B.C., stone tomb (Petroto, in southern Greece) in which one level of the tomb floor consists of piles of human remains placed near the eastern edge of the tomb. Are these piles the result of purposeful human action? Why are the dead placed in this way? The context and human remains are examined to determine the actions involved in the secondary burial(s). The case study is placed in its wider context: norms and variation of secondary treatment in Mycenaean tradition. Lastly, by viewing "the body as artifact" and utilizing materiality theory, researchers can interpret the piles of human remains as indicative of complex ideology, symbolic use of the dead and the lived experiences of tomb reuse. The social theory of materiality can be an important tool for interpreting bone commingling and placement as culturally

meaningful and purposeful in the lives of the Mycenaean people.

Jones, Eric (Wake Forest University)

- [34] *Multiscalar Settlement Ecology Study of Late Pre-Contact Piedmont Village Tradition Communities in North Carolina*

This research uses regional and local survey data and site-level excavation results to explore the settlement location choices for Piedmont Village Tradition (PVT) communities and households from A.D. 1200 to 1600. Analysis of regional settlement patterns in the North Carolina Piedmont with reconstructed past landscapes provides a general baseline for determining what factors were influencing PVT community decisions of where to live. An analysis of settlements in the upper Yadkin River Valley (UYRV), allows for the exploration of local variability within the regional patterns as well as community-specific variability with regard to settlement size and sociopolitical organization. Discovery of a potential structure at the 31YD173 site also allows us to examine location choices at the household scale. The results of these recent investigations enable an explanation of PVT settlement location choice, they shed light on what those findings tell us about cultural patterning and development, and they demonstrate the benefits of multiscalar settlement ecology research.

Jones, Bradford (Texas Historical Commission)

- [95] *The Aranama and the Art of War: Local Knowledge, Colonial Practice, and Lithic Technology in Late Prehistoric and Spanish Colonial South Texas*

The establishment by the Spanish colonial government of a presidio and mission along the lower Guadalupe River in the south coastal plain of Texas in the 1720s redefined the daily lives and material traditions of local Aranama groups. From an archaeological perspective, this includes the not unexpected decline in the diversity and use of lithic tool assemblages compared to preceding periods. However the manufacture of lithic projectile points likely persisted at least until the secularization of the Texas missions in early 19th century, but with an early and distinct stylistic shift to the use of what regionally are referred to as Guerrero points. This paper focuses on historically contextualizing Aranama projectile point use in order to explore how local lithic technologies and projectile point styles were re-imagined by the convergence of local and Spanish colonial knowledge and practices, particularly warfare.

Jones, Martin (University of Cambridge)

- [99] *Discussant*

Jones, Ashley, Robert J. Hard (University of Texas at San Antonio), Cynthia M. Munoz (Center for Archaeological Research, University of Texas at San Antonio), Raymond P. Mauldin (Center for Archaeological Research, University of Texas at San Antonio) and Maria Elisa Villalpando Canchola (Centro Instituto Nacional de Antropología (INAH))

- [103] *Stable Carbon and Nitrogen Isotope Analysis from La Playa, Sonora, Mexico*

The La Playa site (SON F:10:3) represents a massive Early Agricultural period (1600 B.C.-A.D. 200) settlement in northern Sonora that includes a large mortuary component and evidence of substantial early reliance on agriculture, including irrigation features. Bone samples from 14 individuals from the osteological collections at the Centro Instituto Nacional de Antropología (INAH) in Hermosillo were processed at the Center for Archaeological Research, University of Texas at San Antonio for 13C and 15N collagen and 13C apatite stable isotopes. The sample is representative of the San Pedro phase (1200 B.C.-800 B.C.), the Cienga phase (800 B.C. - A.D. 150), and the Ceramic period (A.D. 200-A.D. 800). The results indicate that 13C and 15N values are consistently elevated throughout the sequence. Substantial use of C4 and CAM plants, including wild resources and maize, is inferred. The potential sources of the elevated 15N values are discussed.

Jones, Terrah (UCLA Cotsen Institute of Archaeology), Benjamin Nigra (UCLA Cotsen Institute of Archaeology) and Jacob Bongers (UCLA Cotsen Institute of Archaeology)

- [105] *Paints, Dyes, and Ochers: Red Pigment Analysis from Late Chincha Valley Mortuary Contexts*

Tombs, bones, and paint, three things that when combined often indicate deliberate mortuary practices that can be associated with many different cultural groups. During a small scale intensive survey of the Chincha Valley, Peru, a team of UCLA and San Marcos archaeologists stumbled upon a series of these signs. Within this survey, that included the identification of over 70 sites, researchers observed at almost every mortuary site the application of red pigment to human skeletal remains. The repeated occurrences of this phenomenon within mortuary contexts is not unusual, however, the abundance of cases for this

particular practice within the mid-section of the Chincha Valley is staggering. As a result, UCLA researchers seek to both identify the composition of the red pigment through XRD and Raman analysis and to ascertain the significance of this pigment application in the broader mortuary practices of the Chincha Valley.

Jones, Ian (University of California – San Diego)

[127] *Outdoor Miners: The Last Day of Work at a Medieval Copper Producing Village in Southern Jordan*

In the late 12th century A.D., a small settlement dedicated to copper production was founded in the copper-rich Faynan district of southern Jordan. This site, now known as Khirbat Nuqayb al-Asaymir (KNA), was the center of the latest copper industry in the region. In order to better understand this relatively modest episode of copper production, the UC San Diego Edom Lowlands Regional Archaeology Project conducted excavations at the site in 2011 and 2012. These have provided significant insight into the daily lives and work of the site's occupants. During the 2011 excavation season, our team uncovered a copper-smelting workshop, evidently still in use at the time of its abandonment. Piles of charcoal, ready to be charged into a well-preserved furnace, and lumps of partially processed copper waiting to be refined hint at the work left unfinished. They also provide a unique opportunity to reconstruct specifically how copper was produced at KNA. This paper uses data from this workshop, as well as several late 12th-early 13th century A.D. domestic contexts excavated during the 2012 field season, to present a snapshot of the daily life of copper miners and smelters in medieval Jordan, which until now was not well-understood.

[127] Chair

Jones, Terrah [146] see Nigra, Benjamin

Jones, Matthew (University of Nottingham), Lisa Maher (University of California, Berkeley), Tobias Richter (University of Copenhagen), Danielle Macdonald (University of Toronto) and Louise Martin (University College London)

[149] *Human-Environment Interactions through the Epipaleolithic of Eastern Jordan*

The multidisciplinary approach of the Epipaleolithic Foragers in Azraq Project has given humans and the (ir) environment equal importance in reconstructing the prehistoric landscapes of, what is today, the desert of eastern Jordan. Working at three separate locations, we have attempted to integrate archaeological sites directly into the local offsite stratigraphy and, therefore, the evidence of the environment in which the sites exist today and existed in the past. The wider Levant has seen much interest in the Epipaleolithic and the correlation of societal change with large-scale patterns of post glacial climate transitions. With increased data availability, "big picture" hypotheses become increasingly questionable. To avoid their continued entrenchment, we advocate a local, bottom up approach to theory and practice. Based on observing the pressing environmental issues in the region today, we assess the human- environment relationships of the Epipaleolithic in terms of resource sustainability. Resources, cultural as well as physical in nature, vary based on supply and demand, allowing or restricting human habitation patterns. In this regard, periods of resource and human population stasis are as important as periods of change in understanding past human relationships with the environment.

Jones, Geoffrey (Archaeo-Physics, LLC)

[196] *Data Sampling Strategies in Geophysical Survey of Historic Cemeteries*

Geophysical mapping is an important tool for study and preservation of cemeteries, but human burials can be very challenging targets for detection. Historic cemeteries in the Euro-American tradition share commonalities of patterning that must be considered in geophysical survey design. Data sampling strategies that consider the scale, composition, and patterning of cemetery features and their environment will provide optimal resolution. Consideration of research objectives and funding also informs sampling strategy, and cost-efficiency is achieved by balancing these needs and limitations. The different types of instrumentation that might be used differ in their resolution, response, and rates of survey. GPR, electrical resistance, magnetometry, and Lidar are considered, each with its unique implications for sampling strategy.

Jones, Emily Lena (University of New Mexico)

[286] *Coming to Terms with Imperfection: Comparative Zooarchaeology in Early Historic New Mexico*
Many questions to which zooarchaeology is applied are regional in scale; for instance, was there

resource depression in artiodactyl populations, or can we see evidence of climate impacts on these same populations? While single-site analyses can provide insight into such questions, evidence from a suite of sites across the region of interest will allow a stronger argument. But comparing data from different archaeological contexts is notoriously difficult: differences in site function, site formation, excavation history, and (in some cases) data recording can make comparative studies a challenge. In this paper, I use examples from an ongoing comparative project in early historic New Mexico to illustrate both the problems and the potential of comparative zooarchaeology.

Jones, Kevin (Ancient Places Consulting)**[314]** Moderator**Jordan, Stacey (AECOM)**

[7] *The Emerging Archaeology of Ford Dry Lake: Recent Results from California's Chuckwalla Valley*
Ford Dry Lake, located in California's eastern Colorado Desert, is part of a system of ephemeral Holocene playa lakes that supported prehistoric peoples across the southwestern United States. Periodically infilling to support habitats that sustained natural resources suitable for human exploitation, these playas were connected by networks of trails that carried goods and people from the interior deserts and Colorado River to the California coast. While broad swaths of the desert were examined by Malcolm Rogers in the early 20th century, recent archaeological research at Ford Dry Lake is bringing new data to light in an area that has not been comprehensively studied in the past. Pedestrian surveys, controlled grading, geoarchaeological trenching, and artifact analysis are yielding important information about the geomorphological history of the area and the human use of this locale in the prehistoric era. LIDAR, soil analysis, patterns of flaked and ground stone deposition, and ethnographic research combine to illustrate the use history of this local environment and provide comparative data for other playa geographies. This continuing work will develop a landscape-level picture of the Ford Dry Lake area which can be integrated into a more refined region-wide understanding of prehistoric land use in the southwest.

Jordan, James [80] see Bates, Brian

Jordan, Jillian (University of New Mexico) and Keith Prufer (University of New Mexico)**[138]** *Ceramic Petrographic Analyses at Uxbenka, Belize*

Uxbenká, an Early Classic to Late Classic period Maya polity, is the most extensively excavated site in southern Belize. Recent ceramic analyses have succeeded in refining our understanding of the extent and duration of occupation at Uxbenka (through the creation of a ceramic chronology based on attributes of style and form) as well as its position in regional interaction spheres. The chronological data is corroborated by an independent, high-precision AMS radiocarbon chronology. To date, little effort has focused on paste variation and attributes of ceramic technology. Macroscopic analyses suggest a technological shift around the 5th century A.D. This poster presents results of petrographic analyses on a sample of 20 ceramic rim sherds derived from stratified, site core contexts. The goal of these analyses is to explore macroscopic technological variability using microscopic techniques and to determine the extent of technological change between the Early Classic and Late Classic Periods.

Josephs, Richard [220] see Roper, Donna

Joslin, Terry (Central Coast Archaeological Research Consultants), Jennifer Perry (California State University Channel Islands) and Michael Glassow (University of California, Santa Barbara)**[246]** *From Black Point to Fraser Point: Fishing and Coastal Sedentism on Western Santa Cruz Island*

Why did sociopolitical complexity develop among hunter-gatherers? Intensive agriculture, with its ability to generate food surpluses, is one of the pathways to such complexity. Among California coastal communities, however, other factors were at work. On the California Channel Islands, sedentism—often perceived as a unidirectional process of responding to shifting environmental and demographic circumstances—is strongly correlated with intensive fishing and social ranking. Whereas Middle Holocene fishing strategies are more diversified in the use of nearshore environments; Late Holocene procurement is characterized by intensified strategies and expansion into offshore, pelagic environments, facilitated by the introduction of shell fishhooks and plank canoes. Archaeological data from western and eastern Santa Cruz Island provide insights into intra-island settlement and subsistence variability. Despite the

abundance of chert and other lucrative resources on the eastern end, a comparatively higher density of substantial midden deposits occurs on western Santa Cruz Island. This difference may stem from environmental factors such as dependable freshwater, kelp forest fishing grounds, and shorelines providing access to boat launches. Documenting regional settlement variability serves as the basis for developing an interpretive framework that will contribute to understanding sedentism, intensive fishing, and hunter-gatherer complexity more holistically in coastal settings.

Joyce, Arthur [8] see Brzezinski, Jeffrey

Joyce, Rosemary (University California Berkeley)

[190] *Honduras as an Object of Archaeology*

Honduran archaeology has been shaped since the late nineteenth century by a number of broad agendas, all of them converging to ask questions concerned with how and why most societies in Honduras remained less advanced, complex, or stratified than their immediate western neighbors, including the Maya of Copan. One outcome of these views of the significance of Honduran archaeology has been a less sustained attention to how Honduran societies related to those of neighbors to the east and south, in lower Central America. In this presentation I build on my recent arguments concerning how to think about Central America as an object of archaeological investigation, exploring what taking Central America as the focus does for understanding prehispanic Honduras. Relatively restrained inequality; patronage of craft skills; the significance of spirituality as an integrating force; and a greater importance of social relations, including marriage alliance, than of political relations, especially those that are hierarchical, allow for a more comprehensive discussion of societies across prehispanic Honduras-- from Copan to Nicaragua. A corollary of this argument is that the units of analysis appropriate to understanding prehispanic Honduras will be multiple, overlapping, and will exist at multiple scales, best captured by modeling as networks.

[126] *Discussant*

Joyce, Arthur (University of Colorado at Boulder)

[279] *Oaxaca's Formative-Period Cities and their Implications for Early Urbanism in Mesoamerica*

This paper takes a comparative perspective to consider the emergence of urbanism in later Formative Oaxaca (500 B.C.-A.D. 250). At this time throughout many regions of Oaxaca the archaeological record indicates population aggregation at sites including Monte Albán, Rio Viejo, Yucuita, Huamelulpan, Cerro Jazmin, Monte Negro, and Cerro de la Minas among many others. The size of these communities came to dwarf earlier settlements. These urban centers also exhibit evidence for an increase in the scale of public, ceremonial architecture and spaces that were the locus of communal rituals and political administration. Despite these similarities, Late/Terminal Formative centers exhibit considerable variability in aspects of their layout and organization, expressions of inequality and political hierarchy, and evidence for the nature of interaction both with people of outlying settlements and those in more distant regions. The history of these urban centers also varies. Most were relatively short-lived and were de-populated after only a few hundred years. Monte Albán, however, continued as a demographic, political, ceremonial, and economic center until the end of the Classic period. This paper describes the diversity of later Formative urban centers in Oaxaca and considers the ways in which they can be considered to have been urban formations.

Juengst, Sara (UNC-Chapel Hill)

[64] *Ritual Relationships: Communities and Connections in the Formative Lake Titicaca Basin*

The Formative Period (1500 B.C.-A.D. 200) in the Titicaca Basin was a time of important social and economic changes, such as the establishment of sedentary settlements and long distance trade routes, increasing horticultural investment, and an emerging regional ritual tradition. While archaeologists have described these changes, there has been little success disentangling the impacts of these changes on local populations. How did increased regional integration affect local communities and their relationships to each other? What impact did the Yaya-Mama Religious Tradition have on Formative Period communities? Who were the people buried at temples and what was their relationship to others in the lake basin? Were they local, autonomous individuals or drawn from different populations? This paper will report preliminary findings from several sites around the Copacabana peninsula, using health, diet, and biodistance analyses as measures of community relationships and interactions. By combining these multiple lines of evidence, we can reconstruct the daily lives of peninsular populations and see whether different burial communities shared food, disease, habits, and genetics between themselves in life.

Alternatively, burial communities may be drawing individuals from disparate living communities, which would have significant impacts for interpretation of the increased regional integration of this period.

[64] Chair

Junker, Laura (University of Illinois Chicago)

[145] *Archaeological and Historical Perspectives on “Urbanism” in Early Historic Southeast Asia*

Early historic Southeast Asian states and chiefdoms of Southeast Asia, lying at the intersection of sea and land routes linking the expanding empires of China and northeast Asia, India, East Africa, and the Middle East from the mid-first millennium A.D., challenge many traditional assumptions about the relationship between urbanism, high regional population concentrations, centralized and hierarchical socio-political structures, the ideological /religious foundations for “cities,” and the types of political economies necessary to sustain urban centers. In early Southeast Asia, hyper-large primate centers (typically housing well over 20% of the regional population) grew as trade ports or gateways to “low-density,” ethnically diverse hinterlands only loosely integrated into polity centers. These polity centers were not generally defined in terms of fixed geographic territories, but leaders and would-be leaders relied on the shifting control of labor, resources, and alliance through political gifting, religious pageantry, slave-raiding, and militarism to maintain their often relatively ephemeral regional influence and economic ascendancy. This paper presents an overview of this pre-modern Southeast Asia form of “urbanism” using several case studies from both mainland and island Southeast Asia to illustrate how these organizational features are reflected in an archaeological record that often lacks visible site architecture and perishable technologies.

Kabata, Shigeru, Tatsuya Murakami (Tulane University), Julieta Margarita López J. and José Juan Chávez V.

[112] *Impacto Social del sitio Tlalancaleca en el Altiplano Central durante el Clásico temprano*

El sitio arqueológico de Tlalancaleca en Puebla fue uno de los centros más grandes del Altiplano Central durante el Formativo tardío y terminal, y es conocido por la presencia de cultura material heredada por Teotihuacan. Para esclarecer la dinámica de la transición de Tlalancaleca hacia Teotihuacan, es necesario enfocar las investigaciones en la continuidad y la discontinuidad cultural entre estos dos sitios. A partir de investigaciones realizadas en los años 2012 y 2013 en Tlalancaleca, donde se recuperaron tiestos de Anaranjado Delgado, suponemos que este sitio puede haber tenido cierta ocupación en el Clásico temprano. Por lo cual, nos surgen interrogantes: ¿Es posible que ambos sitios coexistieran en cierto periodo histórico? Por otra parte, con base en los datos de los materiales líticos recuperados en Tlalancaleca, cerca del 50% de la obsidiana de este sitio ha sido identificada como procedente del yacimiento de Pachuca. Se sabe que dicho yacimiento que fue controlado por el Estado teotihuacano, entonces ¿Es posible que Tlalancaleca tuviera un papel como nodo de intercambio para Teotihuacan? Los objetivos principales de nuestro proyecto en Tlalancaleca intentarán contestar dichas preguntas considerando la perspectiva de la continuidad histórica. En esta ponencia presentaremos algunos resultados preliminares de dicho proyecto.

Kadowaki, Seiji (Nagoya University) and Yoshihiro Nishiaki (The University of Tokyo)

[236] *Middle Epipaleolithic Technological Variability in the Northern Levant: New Data from the Middle Euphrates*

This paper presents Epipaleolithic assemblages from two sites (Wadi Kharar 16K and 16AT') discovered by our survey of steppic areas stretching to the south of the middle Euphrates. The surveyed area (10 km x 20 km) on the Bishri Plateau is cut by a number of wadis, along which we located more than 100 spots associated with Paleolithic artifacts on the surface of the terraces. We conducted both random and systematic surface collections at some sites with high artifact density. Site 16AT' consists of three lithic clusters, two of which comprise Epipaleolithic artifacts with some Upper Paleolithic tools. Retouched tools from this site are dominated by microliths, particularly trapeze-rectangles, which are not associated with the microburin technique. These features are consistent with those of already known Middle Epipaleolithic assemblages from adjacent areas (e.g., Palmyra Site 50 and El-Kowm). On the other hand, microliths from Site 16K are characterized by broad scalene bladelets made through the microburin technique, as indicated by the recovery of microburins and La Mouillah point. We compare these technological characteristics with those of Layers 8-3 at Yabrud III and the Mushabian to discuss the technological variability during the Middle Epipaleolithic in the northern Levant.

Kahn, Jennifer (The College of William and Mary)

[85] *Monumental Architecture, Ceremonial Nodes, and Ritual Specialists: Avenues to Social Complexity in the Society Island Chiefdoms (Central Eastern Polynesia)*

In complex societies, political consolidation often went hand in hand with increased efforts by elites to consolidate other aspects of socio-economic power. One strategy is to appropriate ritual spaces, ideas, and practices. My case study from the complex Society Islands chiefdoms (Central Eastern Polynesia) focuses on the materialization of ideology at the community level, concentrating on the role of monumental temple sites. Spatio-chronological analyses of temples document the enlargement and elaboration of temple architecture through time. The role of ritual specialists, particularly priests, becomes more pronounced and is materialized on the landscape with the construction of priests' residences and specialized houses for storing ritual paraphernalia near temple sites. In later prehistory, aggregate ritual centers constructed by competing elite lineages allowed for manipulation of the political economy and integration of community economic practices within the regional ritual calendar. Aggregate complexes served as ceremonial nodes, or centers of economic, ritual, and political activities where elites and ritual specialists engaged in both sacred and secular activities, leading to a more formalized socio-political hierarchy. Similar trends are discussed for Tonga and Hawai'i, where the onset of large monumental ritual construction correlates with the intensification of chiefly power and authority.

Kaiser, Luke (University of North Carolina Greensboro)**[181]** *Renovating Architectural Theories of Minoan Fortifications*

The history of Minoan socioeconomic interpretations has relied heavily on the theory of a "Pax Minoica," developed by the father of Minoan archaeology, Sir Arthur Evans. However, more recently, there has been a trend towards interpreting some Minoan structures as enclosure walls, towers, bastions, and guard houses which adds a more militaristic aspect to the traditional interpretations of a peace-loving Minoan culture. During the Bronze Age, the eastern Mediterranean was rife with warfare. Therefore, a militarized Minoan culture lies within the scope of reason. Contrarily, to subscribe to the notion of a bellicose Minoan society in the absence of significant evidence of a standing military or participation in a land war in the Mediterranean would be to oversimplify their development into a world power in the Aegean during the 2nd millennium B.C. These two opposing theories create a dualistic model that places the Minoans into a more moderate sociopolitical pattern that avoids labeling them as either pacifists or warmongerers exclusively. Additionally, this multi-faceted approach, when applied to the supposed fortifications of the Minoans, provides a much deeper interpretation of their manipulation of landscape and architecture.

Kakaliouras, Ann (Whittier College)**[64]** *Theory in the Bioarchaeology of Community: Potentials, Pitfalls, and the "Population Problem"*

Recent bioarchaeological work has moved the discipline intriguingly closer to current archaeological and sociocultural theory, particularly research framing human relationships as affective, not just adaptational. Perceiving past peoples and their remains as subjects in relation to others—their contemporaries, descendant communities, and bioarchaeologists themselves—may mark the emergence of a true post-processual Bioarchaeology. The category "community," though, has a long and troubled history within Anthropology proper, having been over-used and under-defined for much of the 20th century. A renaissance of anthropological concern for and focus on "communities" demands a thorough and critical analysis of our very particular purposes for utilizing the concept. Specifically, bioarchaeologists have a "population problem;" that is, the field's historical orientation toward samples and populations, itself an artifact of New Physical Anthropology's jettison of individualistic approaches, represents both a tension and a pivot point for exploring other theoretical frameworks in the field. Further, relationships between bioarchaeologists and descendant communities remain complex and sometimes fraught with suspicion that researchers objectify past people by defining them as populations. In this paper, then, using disciplinary histories, archival research, and current sociocultural theory, I sketch a theoretical, contextual, and ethical map for efforts toward a "Bioarchaeology of Community."

Kamnikar, Kelly (Mississippi State University), Amber Plemons (Mississippi State University), Nicholas Herrmann (Mississippi State University), Derek Anderson (Mississippi State University) and Molly Zuckerman (Mississippi State University)**[232]** *Forensic Methods Applied in Bioarchaeological Contexts: The Gale Family Cemetery*

Many technological methods from fields such as odontology, toxicology, pathology and biology have been used in forensic sciences for analysis of material and biological evidence. However, these methods have not been uniformly applied in bioarchaeological or forensic anthropological contexts. In this presentation, we show the importance of applying methods rooted in forensic sciences, like Scanning

Electron Microscopy (SEM), Energy Dispersive Spectrometry (EDS) and isotopic techniques, when analyzing historic burials in the Southeast and interpreting their results. We compare osteological data from three cast iron coffins and caskets dating to the mid-19th century in Mississippi to understand life histories. Two burials are from the small rural Gale Family Cemetery near Jackson, Mississippi and the third is a single cast iron coffin burial from Monroe County, Mississippi. We demonstrate the utility of transition analysis (TA) aging, a method developed in bioarchaeology and refined by recent forensic anthropology research. TA is beneficial when sample size is limited as it provides an unbiased age range based on multiple criteria. By combining methods from both subfields, as well as those developed in other areas of forensic science, information generated from the limited sample size may supplement our understanding of the individuals in their historical context.

Kamp, Kathryn (Grinnell College)**[115]** *Discussant***Kamp-Whittaker, April (Arizona State University)****[328]** *Archaeology of Childhood and the Concept of Personhood*

Recent studies have begun to apply the concept of personhood to the archaeological record as part of the continuing attempt to examine socially constructed roles. Research on children at Amache, a WWII Japanese Internment Camp, is used to explore how the concept of personhood can enrich the archaeology of children by eliminating a broadly-defined focus on "children" or "childhood". This paper will examine whether it is possible to identify the impact of gender, age, and other social and economic variables on the archaeological record to interpret the varying activities and social roles of children.

Kandler, Anne (City University London) and Stephen Shennan (University College London)**[187]** *A Non-equilibrium Framework for Analyzing Cultural Change*

Neutral evolution is a frequently used model to analyze changes in frequencies of cultural variants over time. Here we present a non-equilibrium neutral model which accounts for temporally varying population sizes and mutation rates and makes it possible to analyze the cultural system under consideration at any point in time. This framework gives an indication whether observed changes in the frequency distributions of a set of cultural variants between two time points are consistent with the random copying hypothesis. We find that the likelihood of the existence of the observed assemblage at the end of the considered time period (expressed by the probability of the observed number of cultural variants present in the population during the whole period under neutral evolution) is a powerful indicator of departures from neutrality. Further, we study the effects of frequency-dependent selection on the evolutionary trajectories and present a case study of change in the decoration of pottery in early Neolithic Central Europe. Based on the framework developed we show that neutral evolution is not an adequate description of the observed changes in frequency.

Kane, Susan, Sam Carrier (Oberlin College) and Hillary Conley (Florida State University)**[180]** *Studies of Black-gloss Pottery from Monte Pallano (Italy) I: Archaeological Setting and Macro-morphology*

This is the first of a series of four papers that report multi-faceted studies of a collection of 200 sherds of black-gloss pottery (a type of fineware that was used for dining and wine consumption from the 5th century B.C.E.-1st century B.C.E.) excavated from the Monte Pallano ridge in the Abruzzo region of eastern Italy. The study region includes two distinct areas: a hilltop settlement and a nearby sanctuary precinct. Some of the ceramics were made locally; others made elsewhere. The studies apply three different methodologies: macro morphological examination (this paper), petrography (Agostini), and x-ray fluorescence (Conley). Traditionally, pottery analysis begins with classification of the sherds into fabric groups based upon macroscopic examination, i.e. creation of a fabric series. Effectively the analyst considers the physical attributes of the sherds and groups them based upon a subjective assessment of their similarities. Individual analysts may well classify the same assemblage into different groups, some using a relatively large number ("splitters") and others using a smaller number ("lumpers"). Here the analysis begins with a quantification of physical characteristics (Munsell color, texture, compactness, hardness, inclusions, and voids) and applies multivariate statistical techniques to establish the groups used in subsequent analysis.

[180] *Chair*

Kane, Susan [180] see Carrier, Sam

Kansa, Sarah (AAI / Open Context)

[286] Documenting and Disseminating Zooarchaeological Data in the Digital Age

Thirty years ago, Caroline Grigson wrote what was to become a landmark essay providing guidelines for reporting animal bone analyses in archaeology (Grigson 1978). Grigson aimed to improve the quality and comparability of information scholars shared and to ensure that it was sufficient for future analyses and interpretations. She saw data presentation as “the most important part of a zooarchaeological report” and recognized that unless data is “published or archived in full, much of the value of the excavation will be lost” (Grigson 1978, 122). Although zooarchaeologists have long-recognized that full description is critically important, the limits of conventional publication have usually prevented sharing such detailed information. Lack of full disclosure of data, and of the methodological procedures used in its collection and analysis, means that vast amounts of documentation are lost between data collection and its ultimate dissemination. The Web offers new opportunities to efficiently and comprehensively document and disseminate our work, but simply archiving datasets is not enough. We discuss how the implementation of systems of formalized data publication and peer review, such as those in development with Open Context (<http://opencontext.org>), can create comprehensive, well-documented datasets that are more comprehensible and useful to our peers and future researchers.

[1] Discussant

Kansa, Eric (Open Context / UC Berkeley)

[81] Navigating and Visualizing Archaeological Data on Vastly Different Scales

Archaeological research can focus on scales ranging from observations on individual objects to macro phenomena that span millennia and continents. Such scalar differences pose a great challenge in digital data dissemination, particularly in finding and visualizing relevant data. This poster presents common data indexing strategies to hierarchically nest time-span and geographic coordinates on very different levels of temporal and geospatial resolution. The approach presented here simplifies interface, visualization, and interoperability and will be demonstrated with Open Context (<http://opencontext.org>). This poster illustrates applications on micro-scale data from within individual archaeological sites as well as continental scale site-file data from the Digital Index of North American Archaeology (DINAA). DINAA aggregates site-file data from multiple State Historical Preservation Offices (SHPOs). The nested indexing strategy demonstrated here enables visualization and discovery at a level of spatial resolution that does not compromise site location security, but is useful for map visualization of multiple dimensions of data. **[36] Discussant**

Kansa, Eric [36] see Wells, Joshua

Kantner, John (University of North Florida)

[56] Borderlands in the Chaco World: The Case of the Dutton Plateau

Archaeologists have long struggled to define the character and range of influence of Chaco Canyon, an impressive monumental site located in the San Juan Basin of the northern U.S. Southwest. Often imprecisely referred to as the “Chaco phenomenon” with some undefined form of authority across a vaguely delimited “Chaco world,” Chaco Canyon is variously seen as the seat of a powerful state, the location of a widely revered ceremonial complex, and/or the center of a cooperative economic system. This paper proposes that viewing the broad Chaco landscape as a series of shifting borderland zones with fluid ethnic, political, economic, and religious boundaries may help to explain why Chaco Canyon has proven so difficult to characterize. The paper focuses specifically on the Dutton Plateau, the topographic feature that marks the southern edge of the San Juan Basin, and explores geographical, economic, and cultural evidence demonstrating the complex and fluid nature of this borderlands area.

[247] Discussant

Kantor, Loni (Arizona State University)

[200] Words and Things: Archaeological Insights from Indigenous Languages

The hypothesis of language relativity holds that languages differ in the ways they encode objective experience, and that people sort out and distinguish things and experiences in large part according to the categories provided by the language they speak. It stands to reason, therefore, that indigenous language categories for things, insofar as they differ from our own, may offer unique perspectives on the

archaeological record. In this paper I examine linguistic categories pertaining to the landscape in Wixárika (Huichol) and Náhuatl, and I assess how they may enhance our interpretations of ancient sites. The findings presented here indicate that landscape-related linguistic categories in both languages have the potential to shed further light not only on the configuration of ancient settlement systems, but their symbolism as well.

Kappelman, John [109] see Kay, Marvin

Kappelman, John (University of Texas at Austin), Lawrence Todd (University of Texas at Austin), Jim Feathers (University of Washington), Anne Skinner (Williams College) and Hong Wang (Illinois State Geological Survey)

[201] Ages of Late Middle Stone Age Sites at Shinfa in the Horn of Africa

Anatomically modern Homo sapiens left Africa during the Middle Stone Age (MSA). Although the dispersal point is broadly believed to be the Horn of Africa, with a route either north within Africa (Nile River or Red Sea coast), or east across the Red Sea at the Bab el Mandeb Strait, few sites are known from this region. We report a series of late MSA sites in the Horn on the lowland slope of Ethiopia's northwestern plateau along the upper reaches of the Shinfa River, a Blue Nile tributary. These open air sites are usually in proximity to ancient river channels. Absolute dating using optically stimulated luminescence (OSL) of feldspars, electron spin resonance (ESR) on mammal teeth, and accelerator mass spectrometry carbon dating (AMS 14C) on ostrich eggshell (OES) together show a consistent pattern of ages, with river incision producing younger terrace deposits. A series of AMS 14C dates at SM1, an excavated locality, show that this site dates from 31–46 cal ka BP, while OSL and ESR dates suggest older occupations at higher terraces. These ages permit comparisons with local and global climatic records and provide support for the idea that these late MSA populations were riverine-based foragers.

Kara, Alex (Boston University) and Lauren Santini (Harvard University)

[295] A Fistful of Data: Quantitative, Exploratory Analysis of Combined Remote Sensing and Archaeological Data

Imagery captured by satellite and airborne sensors has seen such widespread use in landscape archaeology that these data are now conventional to the discipline. However, the amount and complexity of information in multivariate raster files can be overwhelming, and applying this imagery to understanding past human behavior remains a challenge. Identifying the contributions of ancient human activity, represented as GIS vector files, to remotely sensed data further complicates analysis. Classification algorithms and more customized models have been used to extract concealed patterns from raw pixel values, but such rigid methods tend to diminish human interpretation and generalize over important data. This paper presents a versatile framework for quantitative, exploratory analysis that prioritizes both the interpretation and integration of data collected by fieldwork and remote platforms. This approach implements techniques established by applications within community ecology, and a case study of the region surrounding the ancient Maya sites of San Bartolo and Xultun, located in northeastern Petén, Guatemala, demonstrates their potential.

Karasik, Avshalom (Israel Antiquities Authority)

[65] The Digital Era: Archaeological Documentation and Analysis at the Israel Antiquities Authority

As the largest archaeological organization that oversees around 300 excavations per year, the Israel Antiquities Authority visualizes the near future as the turning point from old traditional documentation methods into the digital era. The remarkable advantages of new technologies are self-evident and have been presented several times in the past. However, the huge amount of data accumulated annually at the IAA calls for a systematic and complete solution that goes beyond the feasibility test of scanning archaeological artifacts in 3D. The presentation will report on the innovative activity of a new lab – 'The National Laboratory for Digital Documentation of Archaeological Artifacts' – that was initiated last year by the Israel antiquities authority. The lab is running in parallel and with close connections with the 'Computerized Archaeology Laboratory' at the Hebrew University of Jerusalem. The mutual purpose of the twin laboratories is to harness mathematical and computational methods to support archaeological research, documentation, and visualization. The laboratory is equipped with modern, high precision scanners which provide digital models of archaeological finds. We apply and continue to develop several tools and algorithms which are used routinely as the ultimate procedure for the analysis, publication and digital storage of the finds.

Karbula, James (William Self Associates, Inc. (WSA))

- [169] *The Lucas Gusher Spindletop Oil Field National Historic Landmark Archaeological Investigations of the Golden Triangle Storage Project 90-Acre Central Storage Site, Beaumont, Jefferson County, Texas*

There are several unique aspects to the archaeological investigations of the Golden Triangle Storage (GTS) Project 90-acre Central Storage Site on the Spindletop Oil Field National Historic Landmark (NHL, nominated 1979), Beaumont, Jefferson County, Texas. Resulting from the explosion of oil spewing from the Lucas Gusher on Spindletop Hill in January 1901, many of the world's leading oil companies got their start in the energy business and forever shaped the future of world energy production. Since 2008, William Self Associates, Inc. (WSA), on behalf of GTS, has conducted historic research and 21 separate archaeological field investigations including three mitigation projects. WSA identified 11 Archaeological Sensitivity Zones (ASZ's) on the Spindletop Oil Field consisting of industrial and residential archaeological remains, and eight standing historic-age wooden tanks. The project included an extensive public involvement phase with local television media, the Boy Scouts of America and the Jefferson County Historical Commission. Project awards include the 2011 Texas Historical Commission (THC) Award of Merit in Archaeology, the 2012 Council of Texas Archaeologists (CTA) E. Mott Davis Award for Excellence in Public Outreach, and nomination of the project in 2013 as a Section 106 Success Story by the Advisory Council on Historic Preservation.

Kardamaki, Eleftheria [5] see Day, Peter

Kardulias, P. Nick [11] see Mazin, Anna

Kardulias, Paul (College of Wooster), Nigel Brush (Ashland University), Roger Rowe (Wayne County Historical Society) and Gregory Wiles (College of Wooster)

- [266] *Prehistoric Earthworks in Wayne County, Ohio*

Ohio is home to an impressive number of major earthworks that include burial mounds, geometric structures, and enclosures. Among the key sites known to all students of prehistory are Serpent Mound, Adena Mound, the Newark Group, the Chillicothe Group (Mound City), and Ft. Ancient. The majority of the sites, and much of the archaeological interest, are concentrated in the southern half of the state, the heartland of the Adena and Hopewell cultures of the Early and Middle Woodland periods (1000 B.C.-AD 500). However, a significant number of the more than 4000 earthworks are found in other parts of Ohio. An examination of the earthworks found in Wayne County (located in the northeastern part of the state) and their artifacts is useful for understanding regional efforts at mound construction outside the core area. This presentation discusses the variety of features, their common elements, their distribution in the county, and the types of artifacts they contain. Many of the earthworks probably served as ceremonial markers and gathering places in a landscape thinly populated by people.

Kari, James (Alaska Native Language Center) and Ben Potter (University of Alaska Fairbanks, Department of Anthropology)

- [160] *The Prehistoric Implications of The Proto-Dene Lex Loci*

Dene is largest language family in area of Native North America. The model that Kari refers to as the Proto-Dene Lex Loci ('words of location') is based upon linguistic and ethnogeographic data from 11 contiguous Alaska Dene languages that support long-term continuous and largely exclusive Dene occupation of most of Central Alaska. Watershed tenure and place name planning by early Dene bands can be detected by an array of ethnogeographic devices. Dene place names are astoundingly analyzable and hence constantly informative. These include a rule-driven sign+generic generative geography capacity; shared multilingual place names; and occasional founding place names, boundary-marking place names, or patterned duplications in place names. Proto-Dene geographic navigation is framed in a nine-point polyhedral riverine directional system. Potter comments that archaeological patterning between middle Holocene (Northern Archaic tradition) and late Holocene (Dene/Athabaskan tradition) suggests continuity among Subarctic Alaskan material cultural patterns as well as significant change around 1000 cal BP. In the context of Edward Vajda's (2010) Dene-Yeniseian historical linguistic hypothesis, Na-Dene presence in North America at 12000 BP invites scrutiny.

Karkanas, Panagiotis [332] see Pullen, Daniel

Kasper, Kimberly (Rhodes College) and Russell Handsman (Mashantucket Pequot Museum and

Research Center)

- [152] *The Duality of a 21st Century Tribal Museum: Archaeological Research and Museum Stakeholders at the Mashantucket Pequot Museum and Research Center*

Since opening its doors in 1998, the Mashantucket Pequot Museum and Research Center has identified as both a tribal center and a museum committed to challenging the public's conventional understandings of Native history in New England. Within each stakeholder arena, archaeological research continues to provide a critical pathway for recovering and illuminating the experiences of reservation life. In this paper, two internal case studies illustrate the complexity that exists within the museum's dual identity as it integrates new information "with, for and by" the tribe and public. The first focuses on the materiality of late 18th-century Pequot house sites and a recently developed low-cost but high impact, I-Pad-based program for museum patrons. The second reflects on how archaeobotanical studies, from 17th and 18th century Mashantucket historic sites, are incorporated into an ongoing project to nurture and enrich the storytelling tradition in the tribal community. For each project, there are two different audiences, two different types of archaeological material studies, and two very different approaches for collaborative engagement – co-existing in a single institution. That duality may not be present in other tribal museums but it is both foundational and essential to MPMRC's mission to (re)construct Native American histories.

Kassabaum, Megan (University of North Carolina, Chapel Hill)

- [260] *Food and Feast: Analysis of Plant and Animal Remains from Feltus*

This paper presents the results of faunal and botanical analyses of feasting deposits at Feltus, a well-preserved Coles Creek (A.D. 700 – 1200) site in Jefferson County, Mississippi. Though it once consisted of four mounds surrounding an open plaza, excavations have shown that the most intense activity at Feltus took place before the mounds were constructed. During this early period, and extending into the period of mound construction, the site hosted ritual gatherings focused on feasting. Here, I explore the nature of that feasting through the plant and animals that were consumed. However, abundant bear remains in the deposits signify the importance of looking beyond the dietary value of certain species. Bears have been potent ritual symbols since people first entered North America, and their meaning has stayed remarkably constant—bears are food providers, they are kin to humans in a different way than other animals, and they have the ability to communicate and navigate between the human and spirit worlds. Their abundance, combined with the otherwise everyday nature of the food remains at Feltus, suggests that these events were communal in nature and functioned to stimulate group cohesion and a sense of identity and equality with participating community members.

- [260] *Chair*

Kate, Emily (The College of Wooster), J. Heath Anderson (Minnesota State University, Mankato) and Olivia Navarro-Farr (The College of Wooster)

- [140] *A Preliminary Analysis of Epiclassic Burials at Cerro Magoni*

This paper discusses the results of preliminary osteological analyses conducted on 14 burials recovered from excavations at the site of Cerro Magoni in the Mezquital Valley of Mexico. The project, directed by J. Heath Anderson, was initiated in order to conduct a topographical survey and several test excavations. The resulting data helped establish the chronological period during which Cerro Magoni was occupied while addressing questions of cultural continuity, population migration, and socioeconomic and political structure. It is currently hypothesized that the site dates to the Epiclassic period, following the decline of Teotihuacan but before the rise of Tula Grande. This is supported by the discovery of Coyotlatelco pottery throughout the excavation area. Included in the present analyses is a summary of the location of these interments within the site and with respect to one another. Preliminary interpretations about the cultural significance of practices such as bundling and ancestor veneration are also discussed.

Katz, Jared (University of California, Riverside)

- [164] *The Chicahuaztli: The Power of a Precolumbian Rattle Staff*

Music is an important cultural element found throughout Mesoamerica. By studying particular instruments, we can begin to understand the role an instrument played within a society, and can then use our understanding of that instrument to further our analysis of the various iconographic scenes in which the instrument appears. I will focus on one of the instruments found in ancient Mesoamerica, the chicahuaztli. The chicahuaztli is a type of rattle staff that could only be used in elite religious ceremonies. This paper will focus on depictions of the chicahuaztli found in various precolumbian codices including the Codex Borgia, the Vaticanus B, the Fejérvary- Mayer, the Dresden, and the Madrid. By exploring the various aspects of the chicahuaztli I hope to achieve several goals: first, I intend to highlight the significance this musical instrument held in precolumbian Mesoamerican societies; second, I will explain

the role this instrument played and the deities associated with it; and third, I will demonstrate how the presence of the chicahuaztli can facilitate the understanding of several iconographic scenes within the codices. The chicahuaztli became more than just an instrument, it became an iconographic element.

Katz, Gregory

[211] *Quartz Procurement and Reduction in the Potomac Fall Zone: A View from Langley, Virginia*
The Louis Berger Group, Inc. recently conducted an archaeological survey and evaluation of Langley Fork Park in Fairfax County, Virginia. Two prehistoric quartz quarry workshops (44FX3635 and 44FX3637) were identified in the survey and were subjected to intensive research and excavation. Analysis of site data and curated collections indicates that the sites are part of a geographically diffuse, less-intensive industry of quartz procurement that focused primarily on non-bedrock sources. Chronological patterns are apparent. In addition to standard archaeological sampling, a geophysical survey was used to aid in identifying quarry features at the sites and was successful at locating a hearth dated to ca. 2260 B.P. Intrisite analysis found clusters of workshop activities with primary materials being collected from surface exposures and then reduced into early-stage bifaces. While fine-grained analysis of the sites is illuminating, understanding of the sites is only possible by appreciating the quartz industry on the macro-scale.

Katzenberg, M. Anne [144] see Offenbecker, Adrienne

Kauffman, Greg

[12] *Stable Isotope Analysis of a Middle Woodland Population from North-central Kansas*
This study examines the paleodiet and temporality of a Middle Woodland group from five sites in north-central Kansas. This goal was accomplished by submitting 21 samples for stable isotope ratios analysis (SIRA) and 12 samples for bone collagen AMS radiocarbon dating. Results of AMS radiocarbon dating indicated a temporal range of cal. 349 B.C. to A.D. 376. Results of SIRA indicated mixed dietary patterns. Through visual assessment and statistical analyses, it was determined that their dietary patterns formed two clusters. Results were interpreted in terms of flora and fauna from the archaeological record of nearby contemporaneous sites. Other causal factors for stable isotope distribution were taken into account, including paleopathology, sex and age, time, social stratification, and multiple group usage. Based on the evidence available, it was determined that stable isotope ratio distribution was caused by limited nutritional stress, and a varied consumption of fauna and flora.

Kaufman, Brett (Cotsen Institute of Archaeology, UCLA)

[41] *Colonialism Contextualized: From Punic African Empire to Roman Subjects at the Urban Mound of Zita, Southern Tunisia*

The evolutionary history of Carthage is characterized by stages such as the Phoenician establishment of this Tyrian colony and its contact with the indigenous Numidian populations (~814-580 B.C.E.), the transformation of the colony at Carthage to an imperial capital (~580-264 B.C.E.), and eventually its collapse and defeat after over a century of war with Rome (~264-146 B.C.E.). Although the destruction of Carthage as a political center marked the end of at least a millennium of autonomous Phoenician-Punic cultural continuity, minimal research has been conducted on the assimilatory or resistive mechanisms adopted by the remnant African Punic populations that persisted for centuries under Roman rule. In 2013, the first archaeological research was conducted at the urban mound of Zita, providing evidence for both Carthaginian and Roman phases. Survey results from the first season have demonstrated an occupation horizon of ~500 B.C.E.–300 C.E., and excavations at the Punic/Neo-Punic child sacrifice precinct indicate that the Neo-Punic population continued to preserve Near Eastern ideological traditions despite their political incorporation into the Roman Republic and Empire.

Kaufman, Daniel, Mina Weinstein-Evron (The Zinman Institute of Archaeology, University of Haifa), Reuven Yeshurun (The Zinman Institute of Archaeology, University of Haifa), Valentina Caracuta (Max Plank Center for Integrative Archaeology and Anthropology) and Elisabetta Boaretto (Max Plank Center for Integrative Archaeology and Anthropology)

[84] *Lunate Seriation along the Natufian Sequence of el-Wad: Implications for Intra-Natufian Cultural Change*

The Natufian culture of the southern Levant represents the transition from mobile hunting-gathering groups to the first Neolithic agricultural societies. While the general chronological span for the Natufian is now well established (15,000-11,500 cal B.P.), most of the major sites remain poorly dated, particularly

with regard to its sub-phasing. The culture was divided into two phases based on seriation of the lunates. The early phase was characterized by Helwan retouched lunates with minimal use of microburin technique and the late phase typified by small, abruptly retouch lunates and more regular use of microburin technique. This passage is also claimed to be marked by changes in various socio-cultural features such as degrees of mobility, architecture and burial practices. However, placing this transition within the stratigraphic sequence and its timing has proven elusive. We present here the detailed stratigraphic sequence of a large sample of lunates and microburins together with a series of radiocarbon determinations from a variety of contexts including living floors, structures and burials from our recent excavations at el-Wad Terrace and discuss their contribution to the understanding of the nature and timing of this transition and its possible relationship to various socio-cultural and paleoenvironmental factors.

Kaufman, Laura [304] see Jaijlet-Wentling, Angela

Kaufmann, Cristian [6] see Álvarez, María

Kawano, Masanori (Meiji University)

[226] *Nature of Authority during the Kofun Period from the Standpoint of Iron Agricultural Tools*

Iron was a strategic and scarce resource during the Kofun Period (middle third to early seventh centuries A.D.) when a state-level society emerged. For this reason, analyses of the ownership of iron are effective in approach to chiefs' control over commoners and the nature of their authority. I have analyzed social ranking system as evidenced by mortuary practices and the practical and ritual uses of iron agricultural tools, and observed the following: 1) in the Early Kofun Period (third and fourth centuries) the ownership of iron remained in the hands of high-ranking chiefs who loaned out iron tools to commoners; 2) in the fifth century and after low-ranking elites came to be in charge of loaning out iron tools to commoners, and high-ranking chiefs no longer interacted with commoners. The first is based on non-discoveries of iron tools at ordinary settlements and discoveries of large quantities of iron tools in elite burial mounds. The second is based on the observation that, while non-practical iron tools for ritual use are discovered in high-ranking burial mounds, practical iron tools are discovered in low-ranking burial mounds.

Kawell, Spencer

[138] *Lithic Tool Production in a Domestic Context: Analysis of Group B's Lithic Assemblage at the Minor Center of Waybilc*

Since its inception, the Social Archaeology Research Program (SARP) has focused research on understanding the roles minor centers play within larger city-state systems of the Maya. During SARP's 2012 field season excavations were conducted at the site of Waybil, a minor center situated approximately 1.92 km southwest of Minanha in the North Vaca Plateau of Belize. Specifically, Group B located just west of Waybil's epicenter was the focus of excavations, resulting in the recovery of a large assemblage of lithic artifacts. The proportion of these lithics to other artifact classes as well as the density at which they were recovered would seem to indicate that this area of the site was likely used for lithic production. The activities surrounding the production of these lithics may very well enhance our understanding of how minor centers functioned in a larger city-state system. To garner a better understanding of Waybil as a minor center as well as its relationship with Minanha, an analysis of the lithic assemblage was conducted this past field season with aims to address such issues. The results from that study will be presented as well as their implications for the role of Waybil in the greater Minanha regional system.

Kay, Marvin (University of Arkansas), Yonatan Sahle (University of California-Berkeley), John Kappelman (University of Texas) and Larry Todd (Colorado State University)

[109] *Ethiopia MSA Production Chains Early and Late: Gademotta, Aduma, and Shinfa*

Middle Stone Age Ethiopia exhibits technological continuity over time and space. Beginning with its early representation at Gademotta at >279,000 B.P., the overall production chain is dominated by Levallois manufacturing techniques. This continues in later time to places not so heavily invested in primary resource acquisition, whether or not the toolstone is obsidian. Here we compare the production chains exhibited at Aduma and Shinfa, which represent occupations near or at the end of the MSA, with that from Gademotta. Shinfa stands out for the diversity of local, or proximate, stream bar chipped stone sources and the opportunistic, rational production strategies dealing with either bipolar cobble reduction or unifacial and bifacial marginal retouch of tabular pieces. Aduma is material source size-dependent too

with basalt items being local and big; obsidian distant and quite small. Even so, Aduma has general size overlap with basalt and cryptocrystalline silicate points from Shinfa. Other parallels are the Levallois micro-disc cores, and Levallois or bipolar core reduction at Aduma and Shinfa. Regardless of the sites, the point engineering design is consistent: the intent was to develop and maintain a longitudinal plano-convex profile for ease of penetration, and to return to this form whenever possible.

Keach, Levi (University of Nevada, Las Vegas)

- [332] *Stone Blades and Social Space: Describing and Interpreting Two Stone Blade Caches at Neolithic Ais Giorkis, Cyprus*

Ais Giorkis is an early Neolithic site dated to ca. 7,800 cal. B.C. It is uniquely located in the uplands of western Cyprus. During the 2013 field season, two caches of fine chert blades were discovered. The first cache was composed of 58 blades and three core trimming elements, while the second cache was composed of 26 blades and two shell beads. Both caches have been analyzed, with the second cache receiving refit analysis as well. The results of refit analysis demonstrate that the second blade cache was composed primarily of blades from two large cores of locally available chert. Both of these caches were found in the area northwest of the largest structure currently known at the site, an oval platform. This paper will compare the blades of the caches against each other, as well as blades found in other contexts at Ais Giorkis. In addition to providing descriptive data, this paper will explore the potential implications of these caches on our understanding of social space at Ais Giorkis.

Kee, Jan [334] see Plew, Mark

Keeler, Peter (University of Texas, Austin) and Cherra Wyllie (University of Hartford)

- [192] *AFTER XOC: Beyond the Olmec*

The supernatural Shark Monster played a key role in Gulf Olmec religion. Archaeologist Philip J. Arnold III (2005) relates these predators to creation mythology and makes the case that sharks and their habitat have been overlooked in studies of Olmec iconography. Picking up after the Formative period, where Arnold left off, we examine shark imagery in Veracruz during the Epi-Olmec and Classic periods at Cerro de las Mesas, Las Higueras, and throughout the Gulf Coast in the context of contemporary regional beliefs. The Eastern Sea is associated with women and creation. In this presentation we also look at ways that these perceptions took shape in Classic Veracruz iconography as part of a gradual change in the visual record within a firmly established conceptual structure and cosmology.

Keene, Joshua (CSFA, Texas A&M University)

- [324] *Technological and Obsidian Source Analysis of Lithic Artifacts from Veratic Rockshelter (10CL3), Southeastern Idaho*

Veratic Rockshelter (10CL3), located in the Birch Creek Valley on the northern border of the Snake River Plain, has long been considered among the most significant prehistoric sites in southeastern Idaho. Initially excavated by Earl Swanson in 1961, this site produced over a thousand stone tools from stratified contexts, including hundreds of diagnostic projectile points ranging from the late prehistoric to the late Paleoindian period. Swanson's original age of the deepest Haskett component is $10,340 \pm 830$ 14C B.P. (WSU-760), making it potentially the oldest known stemmed point site in the region. This initial study combines a recent re-evaluation of the chronometric association of stratigraphic layers at the site with an in-depth analysis of over 1100 artifacts from ten occupation horizons. Artifact types and occupation horizons are also compared with pXRF data to compare tool material with obsidian sources from the Snake River Plain to understand material preferences by artifact type as well as through time. The ultimate goal of this project is to compile a diachronic analysis of technology, subsistence, and mobility variation from Veratic Rockshelter and apply it to what is currently known of Snake River Plain prehistory.

Kehoe, Alice (University of Wisconsin-Milwaukee)

- [214] *Wrong Words*

American archaeologists seem mired in inaccurate colonialist terminology: garden beds for agricultural fields; forager for scheduled resource harvesters; shaman for priests; chiefdom for cacicazgos, kingdoms, or states governed parliament-style by councils with executive administrators; "prehistory" for pre-colonial histories (thanks, Peter Schmidt); and (thanks, Severin Fowles) "religion" for assumed "sacred" separate from mundane. All these terms derive from 19th-century imperial colonialist discourse, and they are racist and inaccurate. Historicizing American archaeology requires purging our discourse of inappropriate colonialist terms.

Keller, Angela (AECOM)

[252] *Subtle Traces: Identifying Activity in the Plazas of Actuncan, Belize*

Formal plazas constitute the majority of public space in Maya centers and yet, until quite recently, plazas have not received the same investigative attention as the impressive pyramids and palaces that surround them. This neglect is largely due to the difficulty of investigating public plazas, which typically contain few artifactual or structural indications of their ancient use. Although the identification of activity in ancient plazas is technically challenging, a dedicated investigation of plazas is nonetheless essential to our understanding of how centers functioned in Maya society. Public plazas were the venues for the bulk of a center's daily activities from ritual, dance, and sacrifice to market trade and the settling of disputes. This paper presents the results of two seasons of plaza-focused fieldwork at the site of Actuncan, Belize combining rapid systematic data collection, soil chemistry analysis, macro- and micro-artifact analysis, remote sensing, and targeted excavations. This research program has allowed us to detect subtle patterns that may reflect distinctive past practices in the plazas of Actuncan.

Kellett, Lucas (University of Maine at Farmington)

[34] *Chanka Settlement Ecology: Disentangling Settlement Decision Making Processes during a Time of Risk in the Andean Highlands*

This paper presents results from recent survey and excavation work from the Andahuaylas region of southern Peru to explore the prehistoric settlement ecology of the Chanka ethnic group. This paper attempts to disentangle settlement decision making processes made by local Chanka populations as they reorganized their settlement arrangements during the Late Intermediate Period (A.D. 1000-1400), a period characterized by a heightened level of environmental, economic and political risk. While traditional models emphasize the salient effect that localized warfare had on settlement decision making during this time, this paper broadens the discussion by considering the role that a major drought and its impacts may have had on the integration and spatial patterning of settlement and subsistence strategies. Using GIS, this paper examines the spatial arrangement of densely occupied residential settlements, as well as subsistence production loci (agricultural, pastoral and agro-pastoral sites), and it attempts to identify and to quantify the importance that a range of cultural and environmental factors had on Chanka settlement patterns.

[34] *Chair*

Kelley, Jane [144] see Offenbecker, Adrienne

Kellner, Corina M. [15] see Whalen, Verity

Kelly, Robert (University of Wyoming)

[16] *Discussant*

[201] *Chair*

Kelly, Kenneth [58] see Rousseau, Vincent

Kelly, Kenneth (University of South Carolina)

[108] *Entangled Traders: Archaeological Research at Three 19th Century Slave Trade Localities on the Rio Pongo, Guinea, West Africa*

Following the “abolition” of the slave trade in 1807/8 by Denmark, Britain, and the United States, the trade in captive Africans underwent substantial realignments as the now largely “illegal” slave trade continued to service the ongoing demands from Brazil, the Spanish Caribbean, and to a lesser extent, the French West Indies and the United States. The focus of the slave trade shifted from the well-known, and highly visible, forts and castles of the Gold and Slave coasts, and entered a new phase of decentralized trade as American, European, and even African American traders established trading posts on the sheltered rivers of present-day Guinea. By entering into economic and biological relations with local elites, the traders profited from the “landlord-stranger relationship” to develop enduring settlements that continued to engage in the slave trade as late as the 1860s. This paper discusses survey and excavations at three important slave trade ports on the Rio Pongo, and reports the results of this first historical archaeological research program in Guinea.

Kelly, Sophia (Arizona State University) and Kostalena Michelaki (Arizona State University)

[143] *Pre-Classic to Classic Period Shifts in the Economic Participation of Women in Hohokam Society*

This paper addresses changes in women's participation in the Hohokam economy during the Hohokam Pre-Classic to Classic period transition (ca. A.D. 1100). It explores how women's productive activities may have been differentially affected by dramatic shifts in the regional economy and in residential relationships. In a matter of years, the Hohokam economy transformed from a system reliant on the concentrated production and widespread distribution of specialist-produced pottery to a series of bounded economic spheres centered on irrigation communities. At the same time, Hohokam domestic arrangements changed from open pit house courtyard groups to habitation structures situated within walled compounds. This study combines ceramic sourcing data with extant research on Hohokam communities to investigate changes in female extra-household social and economic interactions. Results indicate that women, who are generally considered the authors of specialist-produced pottery, would have experienced a marked shift in their productive activities. Female tasks, which are generally situated in proximity to domestic spaces, may have become more conscripted and secluded with compound architecture.

Kelly, John (Washington University), Davide Dominici (University of Bologna, Italy), Imma Valese (University of Bologna, Italy) and James Brown (Northwestern University)

[251] *The Embedded Nature and Context of Symbols in the Cahokia Cosmogram*

Following the theme of this session on iconography and ideology, we examine the configuration of Cahokia as expressed in its urban epicenter, and the manner in which this cosmogram accentuates various symbolic elements also evident in other more portable media. Cahokia and other Mississippian towns not only express the multi-layered nature of the cosmos but also provide the cultural context for symbols fundamental to various institutions and cults and practices related to them. This presentation draws on the recent investigations in the Cahokia's East and West Plazas conducted by Washington University and the University of Bologna as an ongoing effort to better understand this incipient urban center, and to better understand how Cahokia is central to our visions of those other worlds.

Kelsoe, Camilla (University of Pittsburgh), Julia Clark (University of Pittsburgh) and Loukas Barton (University of Pittsburgh)

[23] *The Logic of Ceramic Technology in Marginal Environments: Implications for Mobile Life*

Explanations for the use of pots as beneficial tools permeate the literature of technological diffusion and change. Many arguments focus on the economic merits of pots as critical elements of subsistence in marginal environments, but waver on the relative importance of key variables, specifically return rates associated with resource extraction, investments associated with raw material acquisition and tool production, and trade-offs arising from opportunity costs and scheduling conflicts. For example, while durable pots produce greater returns over time, they likely require significant initial investment. On the other hand, production of expedient, and even 'disposable,' pots requires comparatively little investment, but offers little promise of long-term utility. The most efficient production strategy may therefore be predicted by environmental and social constraints, including access to raw materials and fuel, dietary needs, and residential mobility. We adapt an established model of technological investment to operationalize differences between expedient and durable wares under a range of ecological and social conditions. This study has important implications for the use of pottery in mobile populations faced with seasonal scheduling conflicts, tool transport, and both resource variability and uncertainty.

Kelvin, Laura [326] see Hodgetts, Lisa

Kemp, Leonard

[248] *Integrating/Interpreting Community Ritual Space (Bedrock Mortar Station) and Individual Ritual Space (Shelter) at White Rock Shelters, El Paso, Texas*

The integration of the archaeological record to rock art is critical to the understanding of the site. Chippendale's archaeological approach of formal and informal methods is utilized to give a preliminary interpretation of the White Rock shelters site in El Paso, Texas. The spatial distribution of features and the concept of visual prominence are used to quantify the location and position of rock art relative to bedrock mortar features suggesting mutuality. Informal methods are employed to suggest context to this relationship. In so doing, this multiple approach to White Rock shelters suggest that shelters with bedrock mortars and rock art were used for both community and individual ritual purposes.

Kemp, Brian M. [289] see Kohler, Tim

Kendall, Aaron (CUNY Graduate Center)

[29] *Early Medieval Exchange and Communication Networks in Iceland and Greenland*

A quantitative approach exploring the utility of complex network theory is used to address exchange and communication between Norse farm sites in Iceland and Greenland. For this preliminary analysis the artifact assemblages from settlement sites in Iceland and Greenland are compared within the potential framework of an exchange network. Comparing Norse farms of various size and rank with emphasis on the non-local material component allows for testing of the strength of ties that may have existed between farms. Preliminary results indicate that early medieval farms on these islands may have exhibited more tenuous exchange and communication links than previously understood, thus making any existing networks vulnerable to systemic collapse.

Kennedy, Richard [44] see Willhite, Brenton

Kennedy, Sarah (University of Florida) and Nathaniel VanValkenburgh (University of Vermont)

[231] *Daily Life in a Reducción: Spanish Colonial Resettlement at Carrizales (Zaña Valley, Peru)*

During the late 16th Century, Peru's sixth viceroy, Francisco de Toledo, ordered that all native settlements be destroyed and their inhabitants resettled into a series of planned towns called reducciones (reductions). Primary sources offer little about the effects of the reducción movement on indigenous populations. Thus, the archaeological study of reducción settlements can provide critical insight into how forced resettlement impacted daily life. This poster presents faunal data from the reducción site of Carrizales on the North Coast of Peru (Zaña Valley). The site contains contexts from both the Late Pre-Hispanic Period and the Early Colonial Period. We compare remains of meat consumption from both occupations to assess changes in household economies presumably due to 1) colonial mita, the Spanish imposed forced labor system; 2) the introduction of small domesticated Eurasian animals; and/or 3) the incorporation of Spanish tools during the food preparation process. The pursuit of these lines of research contribute to a better understanding of reducción's impact on Peru's indigenous populations and serve as a valuable case study of how imperial design projects impact the daily life of their subjects.

Kennedy, John (SWCA Environmental Consultants) and Paul Burnett (SWCA Environmental Consultants)

[265] *The Carter Site (48NA1425): Data Recovery Excavations at a Multicomponent Open Camp in Central Wyoming*

The Carter Site (48NA1425) is a multicomponent site located around a terrace of an intermittent stream in central Wyoming. The site is best known for its abundant Late Prehistoric ceramic component recovered during excavations in 1996. These ceramics share an affinity to Uncompahgre Brown Ware from the southern Rocky Mountains and northern Colorado Plateau and hint towards long-distance cultural interactions. In 2012, excavations of over 100 square meters near the previous excavation area added only one ceramic sherd. Three hearth features were documented, including a large pronghorn roasting pit. Other artifacts include butchered faunal remains from bison, pronghorn, and a large carnivore, as well as a sizable number of lithic artifacts. Additionally, an update to the surface record identified Paleoindian and Late Archaic surface manifestations. Here we present a summary of the 2012 findings in the context of the previous work conducted at this site. The picture that emerges is a series of spatially discrete Late Prehistoric occupation areas that are buried in a distinct terrace deposit surrounded by uplands that were periodically occupied throughout prehistory.

Kennedy Richardson, Karimah (Autry - Southwest Museum of American Indian/UCR)

[142] *Shared Collection Management Issues, Policies, and Goals for Improvement*

The Southwest Museum Collection at the Autry National Center has received much commentary from many academics, researchers, community members, and the public about its management policies regarding collections of human remains. Collection management practices have changed over the years since the museum's conception in the early 1900s. Due to changes in archaeological staff and museum professionals, the collection has become misunderstood. Much has been said about the collection without placing it in context. The work I have begun with the Catalina Island Museum collection, as well as others, shows that the Southwest Museum Collection condition is not unique, and there are many institutions in

southern California with shared museum collection policies and shared collections that are also currently rectifying collection practices of the past. I present the shared policies and collections management practices that will be applied to the Catalina Island Museum human remains collection as well as to the Southwest Museum Collection.

[142] Chair

Kennedy-Richardson, Karimah [142] see Teeter, Wendy

Kennerty, Michael [236] see Munro, Natalie

Kennet, Derek [67] see Caine, Alyson

Kennett, Douglas [13] see Culleton, Brendan

Kennett, Douglas (Penn State)

[158] *Climate Change and the Integration and Disintegration of Postclassic Period Maya Polities*
Multiple proxy climate records across the Maya region now indicate that a series of multi-decadal droughts contributed to the asynchronous disintegration of Classic Period polities in the central and southern lowlands between AD 750 and 900. Smaller polities persisted in more coastal locations around the perimeter of the Yucatan Peninsula and in the Northern Lowlands where two centralized states reached their height of power during the Postclassic Period: Chichen Itza (A.D. 950–1000) and Mayapan (A.D. 1100–1448). In this paper we examine the development, resilience, and disintegration of these more centralized polities with the available archaeological and historical data and an integrated climatic record reliant upon atmospheric modeling and proxy climate records for the region. We also examine the economic, social, and political effects of a multi-decadal drought recorded in the Yucatan between AD 1530 and 1560. Based on these historical observations we conclude that multi-decadal droughts in the Northern lowlands undermined agricultural productivity, led to widespread famine and infectious disease, and the depopulation of towns and cities; mechanisms that would have destabilized more centralized polities during extended periods of drought earlier in the Postclassic Period between A.D. 1000 and 1100 (Chichen Itza) and A.D. 1325 and 1448 (Mayapan).

[85] Discussant

Kerig, Tim (Institute of Archaeology UCL)

[187] *Population Dynamics and the Flow of Knowledge and Substances: A New Perspective on Flint Mining and the earliest Metallurgy in Neolithic Europe*

The paper aims to explain variation in the intensity of flint mining activity and the earliest metallurgy in Europe areas north of the Alps. It will be shown that the development of both industries is strikingly correlated in time. Instead of interpreting this as an indication of direct interconnections (e.g., in a shared market), flint mining and the exchange of copper will both be shown as being effects of / responses to changing population densities. The positive as well as the negative growth of Neolithic populations caused major transformations in the economic networks regulating the flow of technology and raw materials. The population density is derived from the EUROEVOL proxy of summed calibrated radiocarbon date probabilities. The model of the exploitation of Neolithic flint mines is likewise based on summed calibrated radiocarbon date probabilities as proxy for the industry's activity, while copper use is approached by making use of quantities of copper finds mapped in narrow time slices from all over the area.

Kessler, Nicholas (University of Arizona) and Ronald Towner (University of Arizona)

[176] *Anthropogenic Landscape Change: Documenting the Effects of Small-scale Historic Logging in Western New Mexico*

Archaeological features related to mid-20th Century logging were documented in the El Malpais National Conservation Area (EMNCA), New Mexico. These features include extensive slab piles (generated during the cutting of logs into rough lumber), outbuildings, living quarters, and artifact scatters. Logging was an important part of the western New Mexico economy during the first quarter of the 20th Century, but logging within this area has been little recognized by archaeologists and historians. We utilize dendrochronological, documentary, archaeological, and geomorphological information to illuminate the nature and scale of landscape change related to historic logging in the area. Based on our data, trees

were felled over a brief period during the mid-1940s by local residents. Processing was probably conducted using mobile equipment. Based on the size of the slab piles at the site, these activities significantly reduced ponderosa pine numbers from the logged parcels. More research is needed to determine specific ecological consequences of this relatively small-scale operation, but understanding the details and duration of timber harvesting at all landscape scales is a crucial step toward reconstructing accurate records of historic anthropogenic environmental change.

Ketchum, Sheena (Indiana University)

[301] *The Anatolian Double Horns of Consecration? Potstands at Neolithic and Chalcolithic Çatalhöyük, Turkey*

The excavations at Çatalhöyük have uncovered an abundance of potstand artifacts which are often rectangular or rounded vertical well-fired clay objects with one or two protruding horn-like points. The potstands have been strongly associated with pottery vessels and cooking, both in terms of their primary context and the interpretation of their use and function. Potstands were likely used in groups of three or four to support the round-bottomed pottery vessels. During the latest Neolithic occupations, at Çatalhöyük, evidence suggests a shift away from the use of interior fixed architectural fire installations for cooking, towards the use of ceramic vessels balanced on potstands, placed over short-term temporary hearth features. The changes in cooking techniques are indicative of shifting patterns in daily life that may have been dramatic. This poster investigates these changes, examining the potstand use, manufacture, typologies, styles, and their relative chronology to gain a better understanding of the gradual transition from Ceramic Neolithic to Early Chalcolithic Çatalhöyük and the temporality of potstands. It poses the question: how did transformed cooking practices alter daily life and rhythms at Çatalhöyük? Without the potstand, where would you stand the pot?

Ketron, Caroline

[131] *Variability in North American Paleoindian Lithic Artifact Transport*

That early Paleoindians are highly mobile and preferred high-quality toolstone seems apparent from the record. But to what degree is the lithic procurement behavior of early Paleoindian populations different from that of later populations? How does the distribution of fluted points from their geologic sources compare with that of later periods such as the Archaic? Using an expanded sample of fluted points from North America, I calculate the frequency of fluted points distributed in various directions from their geologic sources to see if significant directional patterns are present throughout North America. I then evaluate these results against raw material availability and paleoenvironmental variations across the continent, to see which patterns are specifically Paleoindian. For example, do point distributions and directions of fluted points from their geologic sources correspond to changes in resource availability or conform to least-cost pathways? How much are the directional trends influenced by the distribution of lithic sources on the landscape? Finally, I compare a sample of early Paleoindian fluted points to a sample of late Paleoindian points and early Archaic points, to continent scale diachronic trends in lithic resource procurement.

Keur, Mitchell [210] see Hall, John

Key, Alastair, Ignacio de la Torre (University College London) and W. James Stemp (Keene State College)

[335] *Is Loading a Significantly Influential Factor in the Development of Lithic Microwear? An Experimental Test Using LSCM*

Lithic microwear develops as a result of abrasive friction between a stone tool's working edge and the surface of a worked material. Variation in the loading (i.e., force) applied to a stone tool during its use alters the amount of friction created between these two materials and should subsequently either increase or decrease the level of any wear accrued. To date, however, no comprehensive account of the interaction between variable working loads and wear development has been undertaken. If such a relationship does exist, it may be possible to calculate the loading levels applied to stone tool artifacts during their use. Here, we use 30 basalt flakes knapped from raw materials collected in Olduvai Gorge, Tanzania, in a controlled experimental cutting task of standardized duration. Loading levels are recorded throughout with each flake being used consistently with a predetermined load, ranging between 150g - 4.5kg. Laser scanning confocal microscopy (LSCM), coupled with appropriate statistical analysis software, is used to mathematically document the surface texture of the flakes to determine whether variation in loading does in fact significantly affect the amount of wear on the flake surfaces.

Keyes, Cassandra [7] see Murrell, Jesse

Kiahtipes, Christopher (Southern Methodist University, Department of Anthropology), Karen Lupo (Southern Methodist University, Department of Anthropology), Dave Schmitt and Alfred Jean-Paul Ndanga (Université de Bangui, CURDHACA)

[40] Forest, Field, and Fuel: Changing Landscape Use in Iron Age Central Africa

Tropical rain forests play an important role in the diffusion of novel technologies and the expansion of sociopolitical authority during the Iron Age in Central Africa. Rain forests not only provide the basis for the flexible subsistence activities upon which these societies are based, but they also serve as a source of nutrients for agricultural plots and fuel for the production of iron. Archaeological evidence for prehistoric subsistence and iron-production activities in this biome are limited by the taphonomic and logistical challenges presented by tropical vegetation. Acidic soils, high levels of biotic activity, and dense vegetation cover significantly constrain the effectiveness of archaeological survey and excavation. This presentation evaluates changing landscape use during the Iron Age in the Ngoro Forest Reserve, Central African Republic using paleoenvironmental evidence collected from deposits associated with known site clusters. This evidence underscores important links between sociopolitical organization and landscape use that contextualizes regional archaeological phenomena. These results also provide an empirical basis for unpacking the ecological impacts of technological and social change in order to facilitate a clearer understanding of how prehistoric societies shaped modern biomes.

Kidder, Barry [264] see Nealis, Stuart

Kidder, Barry (University of Kentucky), Joseph Stevenson (University of Miami) and Scott Hutson (University of Kentucky)

[305] Transformations at a Secondary Center: Survey, Mapping and Excavation at Ucanha

Ucanha is one of two sites with public architecture found along causeway connecting Ucí and Cansahcab. Settlement survey conducted at the site shows that it covered 2.5km² at its apogee in the Early Classic period, making it twice as large as Kancab, the other site with public architecture between Ucí and Cansahcab. Beyond the central plaza, most of the architecture consists of domestic megalithic platforms though the site contains a variety of large features not seen elsewhere in the region. Although the site is similar in layout to Kancab, the site is also unique due to the presence of walls and other features circling the main plaza. These features restricted access to the main plaza either for defensive purposes or to partition a sacred place. Excavations in the central plaza of Ucanha show that the site was occupied by the end of the Middle Preclassic thereby suggesting this lived place was demarcated before the construction of the causeway. Interestingly, the ceramic data from megalithic platforms indicate they were most intensively used during the Late Classic and perhaps were loci for feasting episodes.

Kidwell, Jasmine (Eastern New Mexico University)

[267] A GIS-Based Approach to Modeling the Geomorphology of the Outlet Channel at the Blackwater Draw Site, NM

The Clovis-type site (the Blackwater Draw site) lies within a natural basin that once served as a catchment for flowing springs and stream waters during the Late Pleistocene, providing a water source for the occupants of the Southern High Plains. During episodes of high effective moisture, water flowed out of the basin through an outlet channel into Blackwater Draw. Coinciding with the increasingly mesic conditions of the Younger Dryas, the flowing waters of the outlet channel were obstructed and a pond formed within the basin; the causes of which are unknown. To trace the geomorphologic changes in the outlet channel, this research utilizes GIS-based spatial interpolation to create a series of topographic paleo-surface models from core data collected by C. Vance Haynes, as well as additional data from recent excavations. The geomorphologic changes represented by the surface models, combined with climatological data, may eventually provide a means to understanding the causal agents responsible for the formation of the pond. Additionally, more precise modeling contributes to understanding the parallels of a changing landscape and the human adaptive response at not only the Blackwater Draw site, but across the Southern High Plains.

Kieffer, C. L. (University of New Mexico, Maxwell Museum)

[33] Tombs, Burials, Cemeteries, and Sacrifice: A Historical Perspective on the Changing Interpretations of Human Remains in the Karstic Maya Landscape

Archaeological interpretations of human skeletal material found in caves have changed over time. Prior to the 1990s, skeletal material discovered in caves was generally assumed to represent deliberate burial. This interpretation fit logically with the almost universal acceptance of cave function as being primarily habitational. The development of a Mesoamerican Cave Paradigm over the past thirty years has discredited the idea of cave habitation. In its place, the ritual use of caves has been stressed. The implications of the cave paradigm have not been lost on cave bioarchaeology. The paradigm has led to a wider consideration of the types of mortuary rituals that occur in Maya caves. The types of rituals that have been interpreted from the archaeological record, documented ethnographically and recorded ethnohistorically include various types of burials, ancestor veneration, and lineage burial. However, it is only recently that the possibility of sacrifice has been considered. This paper will review the major contributions that made way for this paradigmatic shift for bioarchaeological interpretations made from skeletal material discovered in caves.

[70] Chair

Kielhofer, Jennifer (University of Arizona)

[235] *Geoarchaeological Investigations at Yangguanzhai, a Middle Neolithic Site in North-Central China* This paper presents the results of the first soil-stratigraphic investigation at Yangguanzhai (YGZ), a Middle Neolithic site (~5,500 cal years B.P.) in the Wei River Valley (WRV) of north-central China. Three main soil units are identified. The deepest is a grayish colored Ab horizon, which contains an abundance of Neolithic pottery sherds and may represent agricultural topsoil generated during initial Neolithic occupations. Overlying the Ab horizon is the most well-developed buried soil in these profiles (B2), which is thick, dark brown, and contains evidence of intensive Neolithic occupation. Finally, the uppermost buried soil is light brown, less structurally developed and contains Han dynasty artifacts. Between these buried soils is unweathered sediment, perhaps the result of heightened overbank deposition onto the floodplain and thus indicative of landscape instability in the lower WRV. Based on field observations and corresponding laboratory analysis, it is clear that YGZ inhabitants experienced several shifts in landscape stability and paleoenvironmental conditions, as the site underwent at least three cycles of sediment deposition followed by pedogenesis over the Middle and Late Holocene. Additionally, an interval of landscape instability may have prompted site abandonment between the Neolithic and Han periods, as ~3,000 years are missing in the archaeological record.

Kilby, David (Eastern New Mexico University)

[267] *Current Research and Investigations at Blackwater Draw, NM*

Blackwater Draw Locality 1, a.k.a. the Clovis site, is widely recognized as one of the most significant archaeological sites in North America. BWD is actually a series of sites representing a hunting and camp area used throughout the Late Pleistocene and much of the Holocene. Archaeological investigations at BWD over the last 80 years have revealed an extensive stratigraphic record that established a sequence of archaeological cultures for the Southern Plains and the Southwest, including Clovis, Folsom, Agate Basin, Plainview, Angostura, and Cody as well as Archaic and later prehistoric cultures. This poster describes four avenues of current research by ENMU at BWD that build upon this history and investigate new discoveries: (1) renewed excavations of a Late Paleoindian bison kill in "Isequilla's Pit," (2) investigations into the age and cultural affiliation of the newly discovered Locality X, (3) laboratory excavation of a block of Folsom-age sediment and bone salvaged in the 1960's, and (4) intensive paleoenvironmental research on BWD and a newly discovered Pleistocene locality to the north. This poster serves as an introduction to the other posters in this symposium, which present aspects of these projects in more detail.

[267] Chair

Killgrove, Kristina (University of West Florida) and Sarah Bond (Marquette University)

[64] *Communities of Foreigners in Roman Cemeteries (1st-3rd Centuries A.D.)*

In spite of the massive influx of immigrants into Rome during the Imperial period, there is little information and much debate regarding their demography, living conditions, lifestyles, and burial practices. A growing trend in isotope analysis of human remains from Imperial-era cemeteries, however, presents a new data set for investigation of possible ethnic communities in Rome. Statistical tools available within ArcGIS 10.1 provide a way to objectively isolate spatial patterns in isotope data from individual graves within a cemetery. Using Moran's I, for example, a statistically significant result ($p < 0.05$; $z = -2.28$) was found in the strontium isotope values in the Casal Bertone cemetery, which indicates anomalously high values tend to be clustered near low values. Further analysis of the data with Anselin's Local Moran pinpoints

the location of the low/high strontium clusters in the cemetery. The challenge here is in interpreting the patterns in these osteological data against the historical backdrop of Imperial Rome. At Casal Bertone, spatial correlation in strontium isotope values may reflect a burial community of non-local Romans. This paper integrates osteological, spatial, and historical data to argue that previously unresolved questions about ethnic communities in Rome can be explored using new techniques.

Killick, David [271] see Chiu, Scarlett

Killoran, Peter (University of Wisconsin-Whitewater) and David Pollack (University of Kentucky, Kentucky Archaeology Survey)

[28] *Social Invisibility, Beatification of Death: Investigations of Large Unmarked Early to Mid-Nineteenth Century Cemeteries in Central Kentucky Urban Contexts.*

Urban contexts can provide a challenge to researchers investigating historic cemeteries. Changes in land use patterns and an absence of historic records can result in a cemetery being rediscovered during construction. Within early historic cemeteries burial plots also were often reused. Both instances can result in the comingling and fragmentation of human remains. Two large Cemeteries, one in Frankfort and the other in Lexington, highlight some of the issues in dealing with commingled remains. We will address how we have addressed some of these issues. The markerless Frankfort cemetery can be interpreted in the context of attitudes toward the working poor in the 1800 to the 1840's and even today. Analysis of the remains, however, challenges those presumptions. A second case of Eastern States Mental Hospital is presented to contrast how the remains of those institutionalized are treated during the Beautification of Death movement. Descriptions of the "pleasure grounds" are contrasted with the burial context of the actual remains recovered. Each is illustrative of social constructions of death and the resultant recovery of mortuary remains.

Kim, Nam C. [129] see Neubauer, Fernanda

Kimmerle, Erin [283] see Wells, Christian

Kimura, Birgitta (Santa Fe College), Hilary Knodel (Santa Fe College), Michelle Turner (Santa Fe College), Michelle LeFebvre (University of Florida) and Susan deFrance (University of Florida)

[139] *Ancient Guinea Pig DNA as a Proxy for Human Migration in the Caribbean.*

There are three main models about the human colonization and migration into the Caribbean during the Ceramic Age; north from the Orinoco basin into the Lesser Antilles, into the Greater Antilles followed by a southward movement, and long-term interaction between Columbia and the Caribbean. It is known that guinea pigs were brought into the area by humans sometime after A.D. 500. Studying the genetics of ancient guinea pig DNA can thus shed light on the human migration patterns. We have obtained 5 guinea pig mandibles from pre-Columbian sites in the Caribbean and extracted and amplified mitochondrial DNA from 4 of them. We will clone and sequence parts of the cytochrome b gene and d-loop to investigate the genetic differences between individuals on different islands, which should help to pinpoint the movement of the domesticated species over time. That data can then be used as a proxy for human migration.

King, Stacie (Indiana University) and Elizabeth Konwest (Indiana University)

[72] *New Materials – New Technologies? Postclassic and Early Colonial Technological Transitions in the Nejapa Region of Oaxaca, Mexico*

The Nejapa region of Oaxaca, Mexico, has been continuously occupied since the Middle Formative period (800 B.C.). Although there were technological changes over time, no changes were as great as those seen across the Postclassic (A.D. 800-1521) and Early Colonial (A.D. 1521-1650) transition. By comparing two sites on either side of this transition, we aim to show how Spanish colonialism impacted the raw materials that people had access to and/or chose to use for cutting tools, building materials, and costume ornaments. While certain materials were replaced (metal vs. stone cutting tools, adobe vs. stone fill construction, imported glass beads vs. locally-made stone beads), the new technologies still fit within the lifeways of Nejapa's native peoples. At the same time, some technologies remained largely unchanged, such as ceramic paste production and the use of stucco in construction. The adoption of new materials and technologies and the continued use of others demonstrate simultaneous restrictions in choice and the availability of opportunities within the politico-economic structures of colonialism. The technological changes also condition how current residents of the region view the past and acknowledge

ancestors, creating a gulf between notions of tradition and modernity.

King, Julia

- [80] *Archaeology Practicum: Teaching Undergraduates the Pleasures and Problems of Working with Archaeological Collections*

Archaeology field skills are taught in any number of field schools in the Middle Atlantic, but post-fieldwork skills can be a bit more challenging to pick up at the undergraduate level. St. Mary's College of Maryland, a four-year public honors college emphasizing experiential learning, recently inaugurated a required course, Archaeology Practicum, to address this need. Partnering with the Maryland Archaeological Conservation Laboratory, the state's curation facility, students in Archaeology Practicum adopt and process an orphaned collection (including washing, labeling, and cataloging); research the materials; write, edit, and produce a major report; and prepare materials for long-term curation. Students learn important curatorial and research skills and responsibilities, new findings are generated about abandoned collections, and collections once considered of little use are made available to the broader professional community.

King, Eleanor (Howard University)

- [96] *Heritage and the Underrepresented: The Perspective from Howard University*

Heritage studies programs are gaining in popularity worldwide as universities increasingly tap into this burgeoning interdisciplinary field. In the U.S. alone over a dozen universities now offer graduate degrees in heritage studies or feature centers that facilitate interdisciplinary collaboration on heritage issues. These programs all define "heritage" somewhat differently and have varying emphases, for example, museum studies or architecture. At its most fundamental, however, heritage has to do with identity; it is our link to our past and to who we are today. It is from that perspective that it makes the most sense to minorities and other underrepresented students, who otherwise have no reason to enter into heritage fields like archaeology, which are perceived as servicing largely majority—and wealthy—agendas and values. For many first-generation-in-college students, too, these fields lack visible career trajectories leading towards specific jobs. At Howard a successful undergraduate archaeology program was terminated because administrators could not see the significance of archaeology for identity nor its possibilities for employment. New work is now underway, however, to develop a program focusing on heritage as identity. Professionalizing heritage education would help give frame and substance to such programs, while providing a path for all students towards viable careers.

- [292] *Discussant*

- [292] *Chair*

King, Robert (Bureau of Land Management) and Jeanne Moe (Bureau of Land Management)

- [96] *Heritage Education at the 2013 National Boy Scout Jamboree: A Report on an Opportunity Taken*

In July 2013 four determined federal employees, including two each from the Bureau of Land Management and the National Park Service, and a dedicated private archaeological contractor, helped 250 Boy Scouts earn requirements for the Archaeology Merit Badge at the 2013 National Boy Scout Jamboree in West Virginia. It was a wonderful opportunity to teach certain basic information about archaeology while instilling a conservation ethic and an appreciation of what archaeologists do to preserve the nation's past. Planning for this participation began with observations made at the 2010 National Boy Scout Jamboree of how the Archaeology Merit Badge could be better taught. This paper tells what happened in 2013 and encourages seizing other such great opportunities to provide Heritage Education.

King, Jason [157] see Herrmann, Jason

King, Jason (Center for American Archaeology)

- [291] *Relatedness and Ideology in Middle and Late Woodland Period Societies in the Lower Illinois Valley*

Kinship, or relatedness, is a fundamental dimension of social life, structuring and structured by the diverse range of interactions and practices that constitute it. These relations are not solely intergenerational genetic connections; they are culturally constituted over space and time, and may manifest differently depending upon context. Mortuary rituals are one such context in which relatedness may be constructed and represented by social actors. In this paper, I use mortuary and biological

distance data from Middle (50 cal B.C. – cal AD 400) and Late Woodland (cal AD 400-1000) Lower Illinois Valley sites to investigate the interconnection between funerary practices, relatedness, and ideology over time. Emphasis is placed upon the manner in which these practices produced and materialized indigenous conceptions of relatedness between the living and dead, and amongst the living. Temporal change is then linked to transformations in ideas of community membership and associated ideology.

Kinyera-Okeny, C [17] see Basell, Laura

Kirakosian, Katie (UMass Amherst)

[74] *"Soon the Archaeological World Will Hear from New England": Maurice Robbins and the Remaking of Massachusetts Archaeology*

Although an electrical engineer by trade, Maurice "Doc" Robbins was at the center of Massachusetts archaeology for most of the 20th century. By 1945 he had helped found the Massachusetts Archaeological Society (MAS) and the Bronson Museum. His most notable fieldwork was at the Wapanucket site, where he led intermittent excavations with fellow MAS members from the late 1930s to 1960s. He also published *The Amateur Archaeologist's Handbook* (1964), an influential albeit controversial book. Later in his career, Robbins sponsored legislation that ultimately led to the Massachusetts Historical Commission's creation in 1969. He served as its first Commissioner (1969-1972) and was also the first Massachusetts State Archaeologist (1972-1979). Throughout his career, he worked to stop looting in the state, which may explain his desire to see an archaeological society started that could connect amateur and professional archaeologists. Robbins' overall success was due in great part to the personal and professional relationships that he maintained throughout his life. He was not the only influential figure in Massachusetts however, which led to disagreement and conflict on various fronts. Through primary and secondary sources, this presentation offers a glimpse of Robbins the man, who helped begin an important chapter in Massachusetts archaeology.

[274] *Discussant*

Kirakosian, Katie [218] see Chilton, Elizabeth

Kissel, Marc (University of Wisconsin) and Matthew Piscitelli (University of Illinois at Chicago)

[299] *Evidence of Interpersonal Violence in Pleistocene Populations: Introducing a New Skeletal Database of Modern Humans to Test Theories on the Origins of Warfare*

The origins of warfare have been argued to extend far into our evolutionary history; however, the actual skeletal evidence of interpersonal violence is quite sparse. Here, we report on the creation of a comprehensive database that contains data on skeletal remains of *H. sapiens* securely dated to before 10,000 cal B.C. We show that even with a very liberal definition of conflict those sites most often cited in the literature as evidence of "warfare" do not support the assertion of a violent past. This catalog of over 450 sites not only allows for the testing of how pervasive warfare was in the past, but it is the only known, global collection of the remains of modern humans. This database and its eventual online publication in a Wiki-format will provide an exceptional resource available to answer a wide range of anthropological questions.

Kissinger, Krystal (Cal State University, Northridge)

[174] *Whiskey Did Not Build the Aqueduct: New Insights on the Builders of the Los Angeles Aqueduct*
The building of the first Los Angeles Aqueduct was a momentous task requiring a tremendous amount of labor. From 1907 to 1913 a total of 57 construction camps were erected along the 225 mile path of the aqueduct. Work camp settings such as these can offer unique contexts for historical archaeologists to explore instances of struggle, exploitation and resistance among workers. Additionally, archaeological research at work camp sites can answer questions about the forces that united or divided workers under the conditions of a temporary work community. Previous research on the Alabama Gates aqueduct construction camp has indicated that the camp layout served to divide workers based on their perceived higher or lower class position. Worker responses to these types of scientific management strategies played a vital role in the foundation of class identities and the negotiation of improved working conditions over time. This poster will discuss the archaeology of construction camps along the Los Angeles Aqueduct with a particular focus on the more ephemeral camps situated in its southern sections.

Kistler, Logan (Penn State University)**[99]** *Discussant*

Kiura, Purity [249] see Dillian, Carolyn

Kivimaki, Sanna (University of Helsinki)**[310]** *Migration and/or New Adaptive Possibilities? Population Growth and Decreasing Residential Mobility in Eastern Finland during 4500-3500 B.C.E.*

In about 3900 B.C.E., the waters of the massive Ancient Lake Saimaa in eastern Finland burst through its end moraine, forming a new outlet, the Vuoksi River. Consequently, the water level sank by about 2-4 meters. Shortly after that, the archaeological record in Finland shows signs of new cultural traits. These changes are visible in the style of pottery, burial customs, house building traditions and in the substantial increase in exotic materials which indicate new, long-distance trade networks. This paper is based on a case study restricted to the period 4500–3500 B.C.E. The study area covers about 5,600 km² in the northern parts of Ancient Lake Saimaa. The focus is on the changes in population numbers, in long-term patterns of residential mobility, and in subsistence strategies. The following questions are considered: Did a new group of hunter-gatherers migrate from the contemporary Russian side of the border to Finland at the beginning of the 4th millennium B.C.E.? Or did the changes come as a consequence of local developments due to a climatic optimum? Did the formation of the River Vuoksi offer new adaptive possibilities? Did a “travelers and processors” kind of competitive situation between hunter-gatherer groups affect their subsistence strategies?

Klarich, Elizabeth (Smith College), Abigail Levine (University of California Los Angeles) and Carol Schultze (Historical Research Associates)**[194]** *Abundant Exotics and Cavalier Crafting: Obsidian Use and Emerging Complexity in the Northern Lake Titicaca Basin*

During the Middle and Late Formative periods (500 B.C.- A.D. 300), Taraco and Pukara became major centers in the northern Lake Titicaca Basin of Peru. Recent research has revealed similar economic patterns for both sites, which include the importation of obsidian from the Chivay source located 200 km to the west. Although it is exotic to the basin, obsidian is ubiquitous in recently excavated contexts at both Taraco and Pukara, and its purposeful accumulation corresponds with increased investment in corporate architecture and supra-household food sharing. Additionally, analysis of obsidian debitage indicates that “cavalier” craftspeople made few attempts to conserve or recycle obsidian during the preliminary stages of manufacture, a pattern that has been linked with resource abundance. We argue that this intentionally wasteful behavior further reflects the status of these centers as primary nodes in region-wide obsidian exchange networks, and may have contributed to their attractiveness as places to settle during the Formative period. These results highlight the significance of abundant exotics in the formation of regional centers and multi-community polities, and underscore the importance of monitoring patterns of production and use in the analysis of exotic goods.

Klassen, Sarah (Arizona State University) and Joyce White (University of Pennsylvania Museum)**[235]** *Modeling Relative Access to Arable Land in the Mekong Basin, Laos*

The middle Mekong river basin rests in an intermediate position between China to the north, Vietnam to the northeast, and Thailand to the southwest. This location places the basin at the crux of a longstanding archaeological debate regarding the routes for the introduction of agriculture to Southeast Asia. This paper intends to provide a greater understanding of the origins of agriculture in Southeast Asia by looking at relative access to arable landscapes in the Mekong basin in the vicinity of Luang Prabang in northern Laos. Initial assessment of landscape variability in the Mekong basin, using topographic wetness indexes, suggests that there may have been a transition to lowland horticulture from highland foraging during the Middle to Late Holocene. In this paper, we use GIS software to create a more robust model of access to arable land of sites in our database in terms of relative rice and millet outputs. These relative outputs are then used in an inter-site comparison of over 80 Middle and Late Holocene sites based on the arability of their surrounding landscapes to help assess and infer cropping practices by early plant cultivating societies in the region.

Klaus, Haagen (George Mason University)**[28]** *The Social Bioarchaeology of Commingled Remains: Theoretical, Methodological, and Interpretive Approaches from Colonial Peru*

In recent years, greater engagement with disarticulated and commingled human remains in archaeological settings have increasingly shed light on the interactions between the living and the dead and the frequently exotic formation processes underlining these complex depositional contexts. In this paper, I review the evidence of commingling in the Colonial-era cemeteries of Eten and Morrope, Lambayeque, Peru. Archaeothanatological study of more than 800 burial contexts between the two sites carefully reconstructed mortuary programs, and reveal highly contrasting patterns of commingling, spanning ossuaries, secondary burials serving as 'offerings' to the recently deceased, and reburial of thousands of individual skeletal elements.

Quantitative and social interpretations of the internal organization, selectivity, and distribution of commingled contexts indicate the relationships between the living and the dead were very different in these two nearby native communities. These funerary practices were shaped by unexpectedly dynamic social, political, and economic factors in Colonial northern Peru -- thus shedding light on how contextualized and theoretical approaches towards commingled remains provide key perspectives on ideology, meaning, social structure, agency, and lived experiences in the past.

Klehm, Carla (Washington University - St. Louis)

[205] *Can Small Sites Stem the Spread of Inequality? Khubu la Dintša and Local Dynamics in Iron Age Botswana*

The polity of Bosutswe (700-1700 A.D.), located near the Kalahari Desert, linked trade from the Indian Ocean to the African interior. Surrounding Bosutswe were smaller hilltop settlements, which supplied it with food and domesticates, managed grazing and agricultural lands, provided raw materials such as lithics, and served as settlement areas for traders coming from around the region. Khubu la Dintša (1220- 1420 A.D.) is one of these smaller sites. 1220-1420 A.D. was a time of spatial and material distinction between elite and non-elite at Bosutswe; however, KLD also had numerous prestige items. The connections between the Bosutswe elite and the occupants of KLD were significant enough to warrant social and political alliances that allowed access to status goods. Long-distance trade, the development of a prestige goods economy, its coexistence with traditional forms of status, environmental limitations, shifting herding strategies, and regional dynamics provided opportunities for KLD. As social ties were necessary to secure economic relationships, inclusion into elite identity constrained the degree to which inequality was developed in the hinterland. The exclusivity of the elite identity at Bosutswe and inclusion of hinterland people provide a dynamic look at the social, political, and economic dimensions of social complexity on the Kalahari frontier.

[205] Chair

Kleinpeter, Kenneth [270] see Seidemann, Ryan

Klokler, Daniela (Universidade Federal de Sergipe - UFS)

[129] *Fishing for "Lucky Stones": Presence of Otoliths in Brazilian Shell Mound Sites*

Otoliths are concretions of aragonite located in fish neurocrania. They have been used by many populations as charms, medicine, and raw material for jewelry. These elements are commonly found in shell mound and midden sites, and are usually seen as just standard components of the fish skeleton, being deposited as a by-product of fish processing and consumption. Research at one cemetery unveils new hypotheses for use of otoliths by coastal populations.

Klucas, Eric [47] see Graves, William

Knabb, Kyle (University of California, San Diego)

[198] *Avoiding 'state-ness' in Iron Age (1200-586 B.C.E.) southern Jordan: Settlement patterns from marginal landscapes associated with autonomous social organization*

Iron Age polities of southern Jordan have been variously portrayed as states, chiefdoms, and other complex political formations. While most archaeological studies of this region have focused on the relative 'state-ness' of regional Edomite polity formation, other forms of sociopolitical organization near the edges of these polities have taken a backseat to issues of the state. This paper uses survey data from a 2009 survey of the Wadi al-Feidh in southern Jordan to examine the relationship between regional states and local communities living in politically and environmentally marginal zones. Employing an intensive survey methodology, surveyors recorded a wide range of both sites and 'off-site' features previously unrecognized in the rough and rocky landscape of the Wadi al-Feidh. Overall, these findings suggest that

Iron Age communities strived to maintain relative autonomy from the state through their choice in settlement locations, subsistence practices, and local social organization.

[198] Chair

Knack, Jeni and Sarah Nava

[142] *The Effects of People and Nature Upon One of Santa Catalina Island's Largest Villages*

First historically recorded 1602, the largest prehistoric village site on Santa Catalina Island, at the location of what is known today as Two Harbors, has been explored repeatedly since the late 1800s. These projects have been documented through maps, which delineate the boundaries of this important village, yet the perimeters have been drastically changed from one researcher to another. This paper will discuss the differences that can be discerned between the various historic maps, and it will explore the impact of both humans and natural erosion processes upon the site. Digitizing the historic maps made by previous researchers utilizing the geoprocessing capabilities of ArcGIS software enables comparisons of these maps to be made not only with each other, but with survey data collected during the 2013 field season of the Pimu/Catalina Island Archaeology Project (PCIAP), providing a more accurate and detailed depiction of the village.

Knack, Jeni [316] see Nava, Sarah

Knapp, A Bernard (University of Glasgow)

[127] *Seafaring and Seafarers: Quotidian Events and Centennial Patterns on Bronze Age Cyprus*

A renowned Australian archaeologist once stated that "The Cypriote has never been a great sea-farer ... nor has he been a keen fisherman, until the coming of dynamite". While that may to some extent have been correct about seafarers in the Early Bronze Age, by the Late Bronze Age this was certainly not the case. From Middle Bronze Age models of boats to Late Bronze Age shipwrecks, as well as a wide range of other material and documentary evidence from or about Late Bronze Age Cyprus, it is clear that people on the island at that time had become deeply involved in maritime activities as part of their everyday, actions that became patterns which set standards for production and exchange throughout the Late Bronze Age. This paper discusses a range of relevant evidence that calls into question not just the statement quoted, but the views - spoken or unspoken - of many other archaeologists working in the Late Bronze Age Mediterranean.

Knapp, Ashleigh (Texas State University - San Marcos)

[199] *Little Sotol: A Longterm Archaic Earth Oven Facility on Dead Man's Creek*

The Little Sotol site (41VV2037) located in the Lower Pecos Canyonlands of southwest Texas is an Archaic earth oven facility where occupants baked lechuguilla bulbs and sotol hearts with hot rocks. The site consists of a two-meter-deep burned rock midden in front of two small limestone caves overlooking a secondary tributary within Dead Man's Creek canyon, which drains into the lower Devils River.

Macrobotanical remains of lechuguilla and sotol, plant processing tools, and remnant earth oven beds were identified within burned rock midden and cave components. Radiocarbon assays range from approximately 5000 B.C. to A.D. 1200. The 6000-year record of burned rock discard preserved at the Little Sotol site allows for the examination of change in the utilization of earth oven technology over time. It is argued that the higher degree of fracture in burned rocks relates to the increased intensity of plant processing in earth ovens. The increased landuse intensity from the end of the Early Archaic to the Terminal Archaic periods fits the model of continental demographic pressure. The Little Sotol site demonstrates the dynamic relationship between populations and the landscape, and the changing role of earth oven technology over time.

Knaub, Colene [102] see Riegert, Dorothy

Kneifel, Rebekah (University of Montana)

[175] *Fire Modified Rocks Illuminated: Material Selectivity of FMR at Bridge River Housepit 54*

The Bridge River housepit village, located in the Middle Fraser Canyon of British Columbia, dates to approximately 1,800 to 100 B.P. Dr. Anna Prentiss from the University of Montana has been hosting field school excavations at the site since 2003 to learn about the history of the entire village. Housepit 54 has been open for two consecutive field seasons. During the first season in 2012, the University of Montana field school excavated the Fur Trade Era occupation. On the Fur Trade floor was a fire modified rock

midden. Fire modified rock (FMR) studies provide the opportunity to address a range of questions beyond simple cooking practices. The archaeological record shows that certain raw materials were more commonly used for heating. Identification of variation in FMR provides insight into decision-making associated with the establishment and use of household cooking features. FMR analysis of Fur Trade era Housepit 54 provides an opportunity to examine variability in the production and use of thermally altered rock.

Kneip, Andreas [129] see DeBlasis, Paulo

Knell, Edward (California State University, Fullerton) and Matthew E. Hill (University of Iowa)

[166] Late Paleoindian Cody Complex Tool Assemblage Variability

Archaeologists are acutely aware that the types of tools found at sites vary considerably across time and space. For example, some assemblages are dominated by projectile points and others mostly have retouched flakes. Why this variability occurs at the site level is sometimes clear and other times it is not. More interesting though, is how and why tool assemblages vary at the regional-scale. In this paper we present results of a pattern recognition-based study that evaluates how late Paleoindian Cody complex tool assemblages from 34 sites and components of sites in the Northern and Northwestern Great Plains varied by site type, season of site occupation and environmental zone (i.e., plains grasslands, foothills-mountains, alluvial valleys), and the effects these had on tool assemblage composition. Through this study we gain important insights regarding the causes of tool type variation and, ultimately, how Cody complex hunter-gatherers organized their lithic technology and land-use strategies.

Knierim, Rebekka and René L. Vellanoweth (California State University, Los Angeles)

[163] Residue Analyses from a Ceremonial Stone Mortar on San Nicolas Island, California

Excavations at the Tule Creek Village site (CA-SNI-25) on San Nicolas Island have revealed a ceremonial complex dating to the Late Holocene. Features including faunal burials, a hearth row, ritual implements such as crystals, ochre, effigies and pendants; and discrete refuse pits surrounded by culturally sterile dune sand comprise much of this area. Additionally, a stacked stone feature was recovered less than one meter from a juvenile double dog burial. This stone feature consists of a sandstone mortar inverted over an unmodified piece of basalt resting on a serpentinite disc pestle. Results from several residue analyses reveal that a mixture of raw fish and mussel was prepared in the sandstone mortar. As partially digested fish bones were located in the stomach areas of the nearby double dog burial, we suggest that the implements in the stone feature may have been used to administer food to the dogs shortly before their deaths. These recent findings may thus help to shed more light on the important though little understood role of dogs in ritual practices among the people of the California Channel Islands.

Knight, Vernon J. [11] see Smith, Karen

Knight, Charles (University of Vermont)

[91] The Production of Biface Blanks as Part of Macrocore and Polyhedral Core Reduction Sequences at the Zaragoza-Oyameles Obsidian Source Area, Puebla, Mexico

Intensive, systematic surface survey of the Zaragoza-Oyameles region in Puebla, Mexico, has identified variation in the methods of obsidian extraction and the commodities produced. Reduction sites at and away from the quarries indicate that intensive macrocore, polyhedral core, and biface production was carried out. Non-quarry sites and non-site areas have also resulted in the collection of significant numbers of projectile points, scrapers, ceramics, and ground stone. While the locations of bifacial production loci are typically separate from core production loci, there is strong evidence to suggest that the production of at least one type of biface blank was part of the core reduction sequence, indicating that a type of linked-sequencing was practiced in the source area. Material from one obsidian extraction area in particular was utilized for both core-blade and bifacial reduction. An analysis of surfacedebitage recovered from several contexts associated with this extraction area is presented to investigate the connection between core-blade and bifacial reduction at the Zaragoza-Oyameles obsidian source area.

Knipper, Corina [246] see Fisher, Lynn

Knodel, Hilary [139] see Kimura, Birgitta

Knoll, Michelle [317] see Boomgarden, Shannon

Knoll, Michelle

[317] *The Identification of Genetic Variation in Ancient Maize: Preliminary Results*

The assignment of archaeological maize to modern-day races based on morphological characteristics is being viewed with increased skepticism in light of recent advances in ancient DNA (aDNA) technology. However, rather than attempting to match ancient variants to modern indigenous races, it is proposed here that comparing haplotypes of ancient variants would be a more informative endeavor. Despite the fragmentary nature of aDNA, it is possible to extract enough intact segments to develop haplotypes that could identify variation within and between populations. This study focuses on single nucleotide polymorphisms (SNPs) on the plastid genome. Maize cobs selected for this pilot study are from Range Creek Canyon and Glen Canyon, Utah. Specimens were processed in the O'Rourke Ancient DNA Laboratory at the University of Utah. This poster will review the project's main objectives, methodology, and results.

Knorr, Melissa [330] see Harrison-Buck, Eleanor

Knox, Kelsey (University of Colorado, Denver) and Julien Riel-Salvatore (University of Colorado, Denver)

[299] *Neandertal Sexual Division of Labor Revisited*

Sexual division of labor (SDL) is nearly universal among ethnographically documented foraging societies. Recently, it has been argued on largely archaeological grounds that Neanderthals lacked SDL, a distinction that may have played a significant role in their extinction during OIS 3. An absence of SDL among Neanderthals has also been used to reconstruct dimensions of their social organization as well as of their psychology. Using the expectations outlined in these studies, this paper reviews evidence published over the last decade to evaluate its impact on the view that Neanderthals lacked SDL. Using new information about 1) nutrition and hunting strategies; 2) trauma patterns; 3) evidence for complex technology; and 4) spatial organization of sites, we suggest that it is now more difficult to argue that Neanderthals lacked SDL, which has important implications for how we should think about their disappearance as a distinct population, as well as for the timing and ultimate origins of SDL during the evolution of the genus Homo.

Knudson, Kelly (Arizona State University)

[303] *Integrating Identities in the South Central Andes: A Model for Examining Intersections of Biological and Cultural Identities through Bioarchaeology and Biogeochemistry*

Integrating social theory with sophisticated methods, bioarchaeologists are well equipped to investigate the complex relationships between biological and cultural identities in the past. Here, we explore the integration of various identities during the Andean Middle Horizon (~A.D. 500-1100) and Late Intermediate Periods (~A.D. 1100-1400), focusing on the San Pedro de Atacama oasis of northern Chile. These periods encompass the expansion and collapse of the Tiwanaku polity as well as environmental change, including a severe drought. By combining multiple lines of bioarchaeological and biogeochemical evidence, we examine how biological and cultural identities were utilized and modified during this tumultuous time. Here we explore this question using evidence from cranial modification practices and the mortuary assemblage, both culturally constructed, and from discrete traits and isotopic analyses, which provide insights into the biological relationships and geographic origins. These data reveal a population where cultural identities were often constructed in opposition to as well as in accordance with underlying biological and geographic differences. As such, this integration of multiple lines of bioarchaeological and biogeochemical evidence with social theory has the potential to provide a complex and nuanced view of biological and cultural identities in the past.

[203] *Discussant*

Knudson, Ruthann (Knudson Assoc., GFCMSU, FMPI)

[239] *Women in the River Basin Archaeological Salvage Workplace*

Women were ever-present during the U. S. river basin archaeological salvage workplace in the late 1940s through 1960s, even if most of the fieldwork was done by those lean bronzed young men shown in the photos. Women were active in the Southeast, Texas, Plains, Southwest, and Columbia Plateau. They did 75% of the work (especially artifact washing, cataloguing, record keeping, drafting and photography,

typing, and editing) to get from site identification to a finished report, even if few of them were report authors. Many of them, including Nettie Kessler Adams, Janet Goldenstein Ahler, Emily Blasingham, Carol Condie, Hester Davis, Dena Dincauze, Catherine (Kay) Sweeney Fowler, Elizabeth Galligan, Madge Gordon Gleeson, Barbara Grater, Ruth Gruhn, Delores (Dee) Bellamy Gunnerson, Amy Evelyn Harvey, Ann Monseth Irwin, Judy Jelks, Ann Stofer Johnson, Jane Holden Kelley, June Finley Lipe, Margaret M. Lyneis, Mary Elizabeth King, Carolyn M. Osborne, Stephanie Holschlag Rodeffer, Martha Ann Rolingson, Mary Kiehl Russo, Polly Dix Schaafsma, Mary Anne Stein, Dee Ann Suhm Story, Kathryn Anne Toepel, Jacqueline (Jackie) Loy Adams Turner, Claudine Weatherford, Joyce Wike, and others not named here became the foundation for cultural resource management across the U. S. in the 1970s and beyond.

Knüsel, Christopher [28] see Haddow, Scott

Ko, Eunbyul and June-Jeong Lee (Department of Archaeology and Art History, Seoul N)

[41] *Head and Legs for Dead People, Meat for Mourners: Animal Sacrifice Practice of the Xingnu Tombs at Duurlig Nars in Mongolia*

The purpose of this research is reconstructing the animal sacrifice practice at the Xingnu mortuary rite during the 1st century A.D. and revealing the socio-political meaning of the practice. Practices of animal sacrifice by the Xingnu people have been detected through faunal assemblage from tombs at Duurlig Nars in eastern Mongolia. From the T2 tomb, which is the largest of the group, 306 horse bones, 288 sheep bones, and one cattle bone were yielded. Most of horse bones (MNI 13) and sheep bones (MNI 25) were placed on the top of the coffin in the very unique way. Head and forearm bones (from radius to phalanges) were arranged in an X shape, and the other parts of body were never found. After comparing this faunal assemblages with that from other small tombs from the site, we suggest that horses and sheep were rather sacrificed as offerings during the mortuary rite, than offered as food for the dead. It seems that the meat from sacrificed animals were distributed to the mourners and consumed during the rite as a part of communal eating. Heads and forearms have symbolic meaning for the afterlife of the dead and were displayed in special way.

Kober, Brent [43] see Craig, Douglas

Kobti, Ziad (University of Windsor), Lokesh Patil (University of Windsor), Devin White (Oak Ridge National Laboratory), R. Kyle Bocinsky (Washington State University) and Stefani A. Crabtree (Washington State University)

[289] *Modeling Long-Distance Migration in the Village Ecodynamics Project*

While for more than a century archaeologists and sociologists have been studying short- and long-distance mobility in societies, tracking prehistoric migration networks remains a challenge. This paper aims to model long distance migration in the Village Ecodynamics Project (VEP) agent-based modeling framework. The VEP developed a multi-agent computer simulation to model the settlement, subsistence, economic, and sociopolitical dynamics of Pueblo societies in the central Mesa Verde and northern Rio Grande from A.D. 600 to 1600. The yearly potential maize productivity dataplanes in the simulation, and its representation of vegetation, water, and animal resources provide a virtual test-bed for studying the long-distance movement of households (agents) between the two areas. Our approach for generating the mobility patterns and paths of the socially connected households with extensive exchange networks combines the FETE approach by White and Barber along with a method for adjusting the calculation of the most probable routes, taking into account direction, duration, defense, and dependency factors. This 4-D method improves the realism of the human migration by including the prior estimation of challenges along the journey. Paths that may seem difficult because of their challenging terrain may be selected by a migrating group for their added security.

Kocer, Jacqueline

[42] *Gallina Identity: Examining Projectile Point Style and Raw Material Choices in the Shadow of Chacoan Complexity*

The Gallina (A.D. 1050-1300) of northwestern New Mexico exhibit a suite of artifacts distinct from those of the contemporaneous Ancestral Puebloan world. Projectile point style and morphology can be used to understand group identity and complexity through the examination of specialization and standardization. In contrast to the homogenous nature of Chacoan assemblages, the Gallina exhibit more variety in

projectile point styles including those that may have been recycled from Paleoindian or Archaic contexts. Comparing this behavior and stylistic variation between samples from Pueblo Alto and Gallina demonstrates the degree to which the Gallina differed from their socially stratified neighbors. Furthermore, raw material choices evidenced through visual sourcing and XRF highlight contrasts in stone tool procurement between the two culture areas. In order to examine identity within the Gallina themselves, western, central and eastern site assemblages are also compared. Ultimately, spatial proximity to Chaco may impact identity between these occupation zones.

Koenig, Charles [199] see Black, Stephen

Koenig, Charles (Texas State University - San Marcos, Texas) and Stephen Black (Texas State University - San Marcos, Texas)

[199] *Dead Man's Delight: New Approaches to Excavating, Mapping, and Sampling Burned Rock Middens*

Burned rock middens—earth oven facilities—occur in various regions across North America and the world. The cultural processes creating a sizeable BRM (hundreds of earth oven construction and use cycles) result in massive palimpsests – nearly homogenized masses of ash, charcoal, FCR, and other detritus often representing thousands of years of intermittent use. These palimpsest features are key to understanding the prehistoric record, yet very time consuming to excavate using traditional archaeological approaches. Therefore, we asked: what can and should be learned from these features; and, how can we expediently excavate and sample BRMs to obtain needed data? In 2012, Texas State University excavated three BRMs along Dead Man's Creek, a Devils River tributary in southwest Texas, to develop an effective excavation methodology to collect data to address how much food was processed and over what span(s) of time? Our approach involved: 1) trenching BRMs and excavating in natural layers; 2) excavating "rock columns" to quantify the amount of FCR; 3) flotation to recover economic species for radiocarbon dating; and 4) Structure from Motion photogrammetry for mapping. These techniques proved effective for quickly excavating, mapping, and sampling BRMs, as well as estimating the amount of processed food.

Koerner, Shannon [220] see Giles, Bretton

Kohler, Tim (WSU/SFI/CCAC)

[289] *Prolegomenon: VEP II, Almost in Retrospect*

The Village Ecodynamics Project in toto, now in its 12th year, was originally concerned with only one, and now two relatively small study areas in the southwestern United States. The questions we were asking, however—and which we address in the subsequent papers—have been explicitly posed in the broader context of demographic and environmental change in the Southwest as a whole. In this prologue to the final VEP symposium, we provide the macro-regional context for the papers that follow. This context includes (1) reconstructions for temperatures over the last 2000 years in the northern hemisphere; (2) crude birth rates and life expectancies proxied from sets of human remains for the entire Southwest; (3) the architectural tree-ring record for the Colorado Plateau and its relationship to the reconstructed demographic profiles in our study areas; (4) osteological records of violence for the VEP study areas, compared with previews of demographic and paleoproduction reconstructions to be presented in the papers that follow; and (5) data sources permitting the inference of migration from Southwest Colorado to the northern Rio Grande in the AD 1200s in conjunction with the general depopulation of the northern Southwest.

[289] *Chair*

Kohler, Tim [289] see Crabtree, Stefani

Kohut, Lauren (Vanderbilt University)

[150] *Scales of Analysis and Spaces of Interaction: Understanding Conflict and Alliance during the Late Intermediate Period in the Colca Valley, Peru*

Widespread fortification during the Late Intermediate Period (LIP, A.D. 100 –1450) in the highland Andes has traditionally been interpreted as evidence of internecine warfare and regional fragmentation. However, much of what we know about the LIP is derived from large regional surveys, a scale that is insufficient for examining the local patterns of integration and affiliation that formed the basis of daily life

for communities during this period. This paper presents preliminary results from a micro-regional survey of hilltop fortifications (pukaras) in the Colca Valley and argues that within these broader patterns of fragmentation, there is evidence of alliance and affiliation. Drawing on spatial analysis, architectural mapping and ceramic data, I suggest that fortifications in the Colca Valley were integrated into a valley-wide alliance network. These physical spaces both protected communities from external threat and linked households through quotidian social and economic practices. Additionally, fortifications likely served as nodes of inter-site communication, further coordinating settlements in response to defensive need. While fortification during the LIP signals fragmentation at a regional scale, this paper brings together multiple lines of evidence to focus on the meso-scale practices of affiliation and cooperation that existed within broader patterns of regional fragmentation.

[150] *Chair*

Kokel, Christie [252] see Lytle, Whitney

Kolar, Miriam (Five College Digital Humanities Fellow)

[122] *Archaeological Psychoacoustics and Auralizations: Theoretical Concerns; Practical Examples*
Archaeoacoustics provides a channel through which experiential aspects of past human life might be accessed. Knowledge of physical dynamics, derived from the material remnants of past places, objects, and other artifacts of human actions, enables present-day evaluation of ephemera such as sound. Psychoacoustics, the science of sonic perception and cognition, can be employed in archaeological research to estimate human experiential implications of acoustic dynamics of environments, spaces, and objects. Experiential estimations may be made by applying findings from relevant experimental studies, or by conducting site-contextualized subjective experiments, either in situ where conditions permit testing, or in the lab using computational simulations known as "auralizations." Although such sonic reconstructions are potentially useful as research tools and for knowledge sharing, as with any virtualization of reality, interpretative and presentational factors are problematically intertwined. Auralization might, therefore, be considered a "mode of engagement" with archaeological data. To illustrate theoretical concerns, methodologies, and applications, case-study examples are given here, based on data from acoustic measurements and auditory localization experiments conducted within the ceremonial architecture at the Andean Formative complex of Chavín de Huántar, Perú.

[122] *Chair*

Kolb, Michael (Strata Morph Geoexploration, Inc.), John Richards (University of Wisconsin-Milwaukee), Thomas Zych (University of Wisconsin-Milwaukee) and Jennifer Picard (University of Wisconsin-Milwaukee)

[264] *The Core of the Problem: Soil-Geomorphic Studies at the Aztalan Site*

This poster illustrates the preliminary results of a program of soil coring and soil geomorphic characterization conducted at Aztalan State Park and National Historic Landmark in southeastern Wisconsin. The park harbors the remains of a Late Woodland/Mississippian palisaded mound and village complex dated to A.D. 1050-1250 that includes two reconstructed platform mounds, remnants of a third unreconstructed platform, and a natural knoll-like feature. Although the site has been the subject of archaeological investigations for more than 150 years, no large scale subsurface sampling for the purposes of geomorphic characterization has been conducted. The coring program reported here was designed to address this need. A truck-mounted Geoprobe was used to sample selected depositional environments in several different site locales. First, deposits adjacent to the west bank of the Crawfish River were sampled in order to determine the extent of anthropogenic filling identified during excavations conducted in 2011. Second, intact portions of the two reconstructed platforms, the single unreconstructed remnant, and the knoll were sampled also. Finally, additional cores were extracted from several other site areas to test for the presence of remnant aboriginal borrow pits and to aid compilation of a general soil-geomorphic characterization of the site.

Kolvet, Renee (Engineering and Environment, Inc.)

[282] *Social Isolation and the Civilian Conservation Corps (CCC): Case Studies from Nevada*

Agriculture has been critical to our nation's development. Following the Gold Rush, Americans migrated en masse to the semi-arid West to mine or farm the land, despite limited water resources. By the early 20th century, overgrazing and repeated droughts and erosion had severely compromised the public domain in the West. The CCC (1933-1942), a popular New Deal Program, was created by President Franklin D. Roosevelt during the depths of the Great Depression to rehabilitate the land and provide jobs

for unemployed young men. The CCC in Nevada helped federal agencies impound snow melt, slow ravaging flood waters, and tap new sources of water. Main camps were usually built in proximity to railheads; however small, temporary (spike) camps were established near watersheds, and in remote valleys and wooded mountains. Social isolation was an ongoing problem for enrollees from eastern cities and urban areas. Away from their families, recreational amenities, friends, and women, many men suffered from loneliness and boredom. This paper examines a handful of remote sites and the extra challenges faced by enrollees and camp administrators (i.e., the Army) entrusted with their welfare.

Komes, Lindsey (Northern Illinois University) and Winifred Creamer (Northern Illinois University)**[10] LA-ICPMS Analysis of Clay and Ceramics from San Marcos Pueblo**

Laser ablation – inductively coupled plasma mass spectrometry will be used to analyze the clay used to make pottery at San Marcos Pueblo and a sample of clay from a nearby source. San Marcos Pueblo is an archaeological site in the Galisteo Basin, New Mexico, near Santa Fe. Helene Warren (1979) stated that San Marcos was a production center for glaze C pottery. By testing the various elements present in the clay of sherds from the site and comparing them with the clay sample, I can determine whether the clay from the glaze C ceramics matches the clay source sample, confirming Warren's view. Testing samples of all glaze ware present at the site (A-E) will make it possible to see whether ceramics are likely to have been produced at San Marcos during all periods of occupation, or only during Glaze C times. These results complement existing analyses of Rio Grande glaze wares.

Koncelova, Marketa [299] see Kvetina, Petr

Kondyli, Fotini (Brown University)**[36] Beyond the Map: Exploring Socio-economic Networks on a Byzantine Island**

Beyond eye-catching maps and complicated graphs, digital landscapes allow us to explore and visualize networks of connectivity between individuals, social groups and political entities in the past. I study possible connections among people and places in the Byzantine world, placing emphasis on non-elite communities and their role in socio-economic and political networks. Focusing on the island of Lemnos in the northern Aegean, I consider different avenues of connectivity that vary from social practices, such as marriages and inheritance patterns, to defensibility, accessibility and visual contact among sites, and to economic and political affiliations among different social groups. To study and visualize these multi-scaled and constantly shifting networks, I employ a variety of spatial analysis tools and methodologies, such as GIS-based applications, connectivity and network theory. My analysis is equally informed by survey data on the region, medieval census, ethnography and old maps. The digital visualization of Byzantine Lemnos highlights multi-layered and complex relations among individuals, and among sites and different social groups. It further emphasizes individual choices and group strategies in population movement, spatial organization and exploitation of the landscape. Finally, it permits a better understanding of the island's participation in the political and socio-economic networks of the Mediterranean.

Konwest, Elizabeth [72] see King, Stacie

Konwest, Elizabeth (Indiana University, Bloomington)**[293] Exploring Community: Recent Excavations in Nejapa, Oaxaca**

During 2013 field investigations as part of the Proyecto Arqueológico Nejapa/Tavela (directed by Stacie M. King), I led excavation teams at a group of sites located in the Nejapa Valley of Oaxaca, Mexico. The chosen sites are located within one kilometer of each other and based on ceramic surface collections and test pit data, all date to the Postclassic period (A.D. 900-1521). By targeting residential architecture, I hope to further investigate findings from previous field seasons that indicate that a shared community identity connected residents of the ceremonial center of La Amontonada and other nearby archaeological sites into a sociopolitical unit during this period. Using the premise that communities of practice would be physically manifested, I will draw on several lines of evidence including ceramic and lithic analysis, architectural patterns, and GIS data to discuss community identity and how that influences political and economic organization.

Kooiman, Susan (Michigan State University)

[48] A Multidimensional Approach to Functional Pottery Analysis: A Case Study in the Upper Great Lakes of North America

A recent trend in ceramic analysis has been to use proxy observations to understand prehistoric vessel functions, such as culinary practices and secular versus ritual activities. This approach stands in contrast to the more traditional analyses that have focused on the social and spatiotemporal implications of stylistic attributes, and it serves to expand the breadth of information that can be gleaned from pottery. Building on this, a multidimensional approach was used to investigate diet, cooking practices, and functions of pottery vessels from the Middle Woodland Naomikong Point and Late Woodland Sand Point sites in Michigan's Upper Peninsula. Physical characteristics and the presence and locations of use-alteration traces (such as carbonized food remains and exterior sooting) were used to determine the technical functions of the vessels and revealed differences in cooking practices between the two sites. Variations in provenience and use-alteration traces suggest a distinction between utilitarian and ceremonial pots based on vessel size. Lipid residue analysis aided in pinpointing specific resources cooked in the vessels, laying the groundwork for a deeper understanding of Upper Great Lakes Woodland subsistence.

Koons, Michele (Denver Museum of Nature and Science)**[19] Internal vs. External: An Examination of Moche Politics through Similarities and Differences in Ceramic Style**

In this paper I present an analysis of Moche ceramics from three valleys. The goal of this study was to elucidate aspects of the Moche political landscape and craft production by examining external (surface decoration) vs. internal (technological) style. Design and petrographic analysis of Moche IV, V and Late Moche ceramics from the Chicama Valley (Licapa II, El Brujo, and Cerro Mayal), Jequetepeque Valley (San José de Moro), and Moche Valley (Huacas de Moche) indicate that similar surface designs, yet different internal composition suggest shared ideology among the centers, but local ceramic manufacturing. These data, along with other information, implies probable political alliances and/or religious affiliations, but indicates that each center was locally managed and controlled. I also identified traded or exchanged ceramics from the different sites, which show that relationships were maintained between people from various centers. Additionally, I examined well-contextualized radiocarbon dates associated with Moche IV, V, and Late Moche ceramics from these sites. This analysis shows where the different ceramic styles first appeared and when they were adopted at other Moche sites. Overall, this study of Moche ceramics helps demonstrate that the Moche political landscape was composed of individual site nodes in a complex dynamic network.

[59] Chair

Koons, Michele [149] see Caramanica, Ari

Koontz, Rex (University of Houston)**[62] The Place of Palma Imagery in Classic Veracruz Iconography**

Of the three costume elements associated with Classic Veracruz ballgame ritualism, the palma is the most restricted in time and space, appearing largely in areas associated with the Tajín realm at its apogee. Further, the imagery of the palma may be shown to relate closely to the monumental sculptural repertory found at El Tajín. This essay will attempt to place palma imagery more firmly in the Tajín iconographic system, showing how the cult of ballcourt decapitation, so important to palma imagery, defined in part the political system centered on Tajín. The essay proposes that like the yoke, the palma was emblematic of certain high political offices that oversaw ballcourt decapitation and other crucial legitimating rituals of Classic Veracruz polities. These offices are similar to those of other more well-known Mesoamerican political systems, and comparisons between these systems may provide clues to Classic Veracruz political organization.

[204] Discussant

Kooymen, Brian [173] see Pokotylo, David

Kopperl, Robert (SWCA Environmental Consultants), Christian Miss (SWCA Environmental Consultants), Kenneth Ames (Portland State University), Charles Hodges (Pacific Geoarchaeological Services) and Amanda Taylor (Pacific Lutheran University)**[315] Paleoindian Occupation of the Puget Sound Lowlands: Preliminary Findings from Data Recovery Excavation at the Bear Creek Site (45KI839), Redmond, Washington**

The Bear Creek site in suburban Seattle, Washington remains the only archaeologically excavated, stratified site in the Western Washington lowlands yielding Paleoindian artifacts. Intensive data recovery excavations in 2013 produced abundant data on lithic technology and local and regional site formation processes at the Late Pleistocene-Holocene transition. Diagnostic lithic artifacts share affinities with several Western North American Paleoindian traditions. Horizontally, discrete concentrations of debitage suggest repeated use of this place by small groups of people using a variety of lithic raw materials. Excavation coverage across a wide area also highlights the complexity of post-depositional processes following this early occupation.

Korhonen, Natalia [201] see Tallavaara, Miikka

Kornegay Dollar, Lauren

[104] Evaluating Chronologies of Nasca Trophy Head Iconography

In Nasca archaeology, ceramic iconography contains within it the basic communication lines between the elite and non-elite. Understanding the iconography of this culture carries with it the potential to comprehend the Nasca mindset. The trophy head is a prolific motif in Nasca ceramics. Thus, understanding trophy head iconography is key to understanding the Nasca. Donald Proulx (2006) suggests that Nasca iconography changes over time in conjunction with culture and political influences. He suggests that Monumental Phase (A.D. 1-450) trophy heads will be naturalistic and commonly found in scenes with agricultural motifs. After the fall of Cahuachi, during the Transitional Phase (A.D. 450-550), trophy heads become greater in number per vessel and shift toward more warlike imagery. Proliferous Phase (A.D. 550-750) trophy head motifs become more abstract, but continue to be found with violent themes. I am building upon Proulx's work using data gathered from the collections of the National Museum of the American Indian and the Putnam Museum. My sample follows the patterns proposed by Proulx. I found an increase in trophy heads per vessel during the Transitional Phase. Additionally, trophy head motifs become more violent over time. Potential culture influences for these shifts will be discussed.

Kornfeld, Marcel [284] see Larson, Mary Lou

Korpisaari, Antti (University of Helsinki, Finland)

[203] New Data on the Nature and Date of Tiwanaku Influence in the Azapa Valley, North Chile

Tiwanaku-affiliated artifacts are found over large parts of the territory of present-day North Chile. According to the traditional cultural chronology, strong altiplano/Tiwanaku influence in the coastal Azapa Valley would have begun in the so-called Cabuza phase (dated earlier to A.D. 300-700, and more recently to A.D. 500-1225), and would have continued in the so-called Maytas-Chiribaya phase. A recent restudy of the burial goods recovered in a total of 470 tombs at the Azapa Valley cemetery sites AZ-6, AZ-71a, AZ-141, and AZ-143 revealed very few Tiwanaku imports at the three first-mentioned sites, and, as has already been noted by Goldstein (1996, 2005), a stronger Tiwanaku presence at the small AZ-143 site. Sixteen new radiocarbon dates from the four cemeteries support the arguments advanced by Cassman (1997) and Sutter (2005), according to which the undeniable Tiwanaku influence seen in Cabuza pottery may have had much more to do with migratory processes set in motion by the collapse of the Tiwanaku state, than with any Tiwanaku-state-controlled attempt to colonize and/or indirectly control the Azapa Valley during the Middle Horizon.

Kosakowsky, Laura [31] see Bauer, Jeremy

Kosakowsky, Laura (University of Arizona)

[277] All Sacbes Lead to Las Cuevas: The Late Classic Ceramics

The ceramics from three seasons of excavations on the surface and in the cave of Las Cuevas have provided a tantalizing picture of this site during the Late Classic (A.D. 700-900). The analysis identified site-specific ceramic complexes utilizing standard types, varieties, and modes, and most importantly ceramic spheres to understand the chronological history of the occupational sequence of Las Cuevas, as well as broader inter-site and regional connections. Las Cuevas appears to have a relatively short occupation, constructed entirely during the Late Classic, with only hints of earlier ceramics in mixed contexts. Although there is a short 200-year construction history, the ceramics exhibit inter-regional connections with the Belize Valley and Vaca Plateau to the north, with sites further south in the Toledo

District and the Xibun, and southeast along the Belize coast. Despite sitting only 14 km from the large polity of Caracol, there is less Petén ceramic influence than one might expect. This intersection of different ceramic spheres centered on Las Cuevas, a relatively minor center that sits above a large and likely important cave, suggests that the site may have sat at a crossroads, serving as a locus for ritual activities and pilgrimages during the Late Classic.

Kosiba, Steve (University of Alabama)**[121] By this Standard: Materiality and Social Difference in the Inka Heartland**

In both their myths and rituals, the Inka declared that the Cusco region was the embodiment of their divine mandate to civilize and order the Andes. But how did this region, which was undoubtedly invested with local and pre-Inka cultural understandings, come to be naturalized as inherently Inka? This paper critically evaluates archaeological and art historical theories that seek to explain how standard materials, measures, and styles assembled a coherent aesthetic of Inka authority throughout the Cusco region. Such theories—and the idealized standardization of people and period that they project—often obscure our vision of the actual political work through which state authority is built. The paper presents recent architectural, archaeometric, and ethnohistorical data from Ollantaytambo, a monumental Inka city in the Cusco region, to discuss how the production and distribution of material culture (houses, serving vessels, carved boulders) naturalized the social boundaries and distinctions that undergirded Inka authority. Contrasting traditional archaeological accounts of standardization, the paper argues that the appearance of aesthetic coherence throughout the Cusco region was rooted in the materiality of social difference—the array of materials, practices, and techniques through which people built Inka objects and, in so doing, defined themselves as Inka subjects.

Kosyk, Katrina**[153] A Prelude: Aerophones from Precolumbian Greater Nicoya**

Music Archaeology is a relatively new subfield that has not been fully applied in pre-Columbian southern Central America. This is unfortunate because it can offer a truly unique perspective on traditional ideas regarding cultural relations in the past. Archaeologists are now piecing together, at an accelerated rate, the culture history of this region, yet the study of musical instruments remains largely limited to outdated reports from the late 19th century. Developing from recent research based on both archaeological and museum collections, this presentation examines—from a music archaeology perspective—a variety of highly decorated and culturally imbued ceramic ocarinas, whistles, and flutes. Through discussion of iconography, chronological variation, and the spatial distribution of aerophones from Greater Nicoya, including a comparative overview of instruments from surrounding archaeological regions, I offer a prelude to what might be accomplished by integrating the focused study of music with mainstream archaeology.

Kotegawa, Hirokazu (Universidad Veracruzana)**[204] La vida de los monumentos escultóricos olmecas**

De acuerdo con los estudios previos, sabemos que hubo una etapa de "reciclaje" o reproducción en la vida de algunos monumentos escultóricos olmecas. Antes de esta etapa tuvieron otras etapas como de la producción y exhibición (o función), pasando la etapa de "reciclaje" otra vez tuvieron la etapa de la exhibición. Arqueológicamente tenemos evidencias de estas etapas. Sin embargo, mayor evidencia solo se encuentra en los sitios grandes como San Lorenzo y La Venta por su taller o la forma mutilada o decapitada de los monumentos para el "reciclaje". También tenemos una perspectiva sobre la estrategia política e ideológica con los monumentos olmecas como una manifestación del poder por la élite. Según esta perspectiva, los monumentos olmecas se distribuyeron dentro de una sociedad jerarquizada por líderes de los capitales San Lorenzo y La Venta. ¿Todos los monumentos escultóricos olmecas tuvieron mismo proceso de la vida dentro de una sociedad jerarquizada? En esta presentación examinaremos los monumentos olmecas de la costa sur del Golfo de México en distintos sitios para llegar a alguna interpretación o propuesta sobre esta interrogación. Esta investigación nos dará otra perspectiva del uso de los monumentos olmecas.

Kovacevich, Brigitte [140] see Niespolo, Elizabeth

Kovacevich, Brigitte (Southern Methodist University)**[330] The Value of Labor: How the Production Process Added Value to Pre-Columbian Maya Jade**

Ethnohistoric, ethnographic, and experimental studies demonstrate that the production of jade objects can take years to complete. Studies also show that jade objects were produced by both ancient Maya commoners and elites, suggesting that there may have been a long sequence of production steps and some objects may have moved through multiple producers before completion. It was just this type of arduous process and investment of labor that helped to imbue these objects with value and make them highly esteemed. I will argue in this paper that while some jades may have been restricted to circulation by the elite of Classic-period Maya society, the production process was constitutive of social identity for all status levels.

Kowalewski, Stephen (University of Georgia) and Ron Spores (Emeritus Professor, Vanderbilt)

[83] *The Mixtec Kings and Their People*

Thesis: The Mixteca was ruled by powerful, hereditary Lords and Ladies who founded towns, owned the land, headed and administered the state, resolved disputes, collected tribute in labor and in kind, went to war, built alliances, engaged in long-distance trade, and carried out ceremonies essential to society. The evidence is in the extensive documentation of the Colonial period, in códices and lienzos, and in archaeological remains of architecture and other material culture at the capitals of the kingdoms.

Antithesis: The real power rested in the hands of the people organized in local corporate groups—the *siqui* or *sindi* (barrios) and communities that controlled smallholder rights to land and water, and assured the long-term management and fertility of the landscape, which was the basis of the economy. The evidence lies in the disjunction between the great mass of the archaeological record compared to the small *yuhuitayu* apparatus.

Synthesis: Both positions are over-idealized. Fixed types (Asiatic autocrats, theater states) do not capture the variation in real cases over space and time. Mixteca history exhibits a contested dynamic between monarchical (autocratic) and popular (communal) forces, a dialectic that continued through the Colonial period and still goes on today.

Kowalski, Jeff (School of Art, Northern Illinois University)

[130] *Creation, Renewal Ritual, and Political Authority: Messages in the Mosaic Facades of the Nunnery Quadrangle at Uxmal*

This talk examines the Nunnery Quadrangle at the Maya site of Uxmal in the context of that city's rise as a regional capital during the Terminal Classic period, considering possible uses of the building group, the meanings of a selection of individual iconographic motifs, and the broader ideological significance of the complex. The quadrangle's architectural sculptural program interweaves references to the time and space of creation, ancestral sources of political authority, and more contemporaneous ritual performances, historical events, and tribute wealth. Motifs associated with originary events include the Feathered Serpents and Pawahtun figures on the West Building. Other façade motifs of more current, though not necessarily more secular, historical events, including ceremonies involving the display of captives, and their implied torture and the performance of a type of torch sacrifice in connection with rituals of accession and/or cyclical renewal of time and agricultural fertility. Such iconography, combined with the quadrangle's monumental scale, superlative stonework, and restricted access, demonstrate that the quadrangle was designed to identify Uxmal as a central place and paramount political capital where the exalted social status of its king, Chan Chahk K'ak'nal Ajaw, and other members of the elite, was affirmed through imagery and social practice.

Kowalski, Jessica [260] see Jackson, Edwin

Koyiyumptewa, Stewart [152] see Ferguson, T. J.

Kramer, Karen [22] see Greaves, Russell

Krasinski, Kathryn (Fordham University), Fran Seager-Boss (Matanuska-Susitna Borough), Kelsey Taormina (University of Arkansas) and Brian Wygal (Adelphi University)

[173] *Late Holocene Land Use in the Middle Susitna River Valley, Alaska*

While ethnographies have documented and preserved essential aspects of the past 150 years of Middle Susitna valley Athapaskan culture, archaeologists have an incomplete understanding of the social and economic evolution of societies in the Middle Susitna valley (12,500-150 years ago). This is surprising

considering the major cultural shifts that occurred during these periods, primarily the transition from highly mobile big game hunting to intensive salmon processing and storage economies, semi-sedentary villages, and an overall increase in social complexity. Numerous sites containing small and large cache features and semi-subterranean house structures occur through the Middle Susitna Region of Alaska, but largely remain undated. Through the investigations of Chunilna Village (TAL-100 and TAL-101) and Trapper Creek Overlook (TAL-092) as well as testing of previously uninvestigated sites, we have begun to refine the Middle Susitna valley cultural chronology. Future work in this region should clarify when salmon harvesting and subterranean fish caching economies first emerged in southcentral Alaska.

Krasinski, Kathryn [282] see Wygal, Brian

Krasinski, Kathryn [114] see Davis, Leslie

Krause, Samantha [17] see Beach, Timothy

Krause, Samantha (Maya Research Program/ Four Corners Research), Thomas Guderjan (Maya Research Program/University of Texas at Tyler), Sheryl Luzzadder-Beach (George Mason University) and Timothy Beach (Georgetown University)

[123] Visualizing Maya Agriculture Along the Rio Hondo: A Remote Sensing Approach

For several years, we have been studying the extent and importance of ancient Maya ditched agricultural fields along the Rio Hondo from its headwaters near the site of Blue Creek to Chetumal Bay. In this paper, we summarize our current knowledge of these agricultural systems and the major Maya centers located along the river. Currently, we have turned our attention to how trade oriented sites from the Late Preclassic to the Postclassic period interacted, and how the economic system along the Rio Hondo was structured.

Kremkau, Scott (Statistical Research, Inc.)

[45] Lithic Landscapes in the Mojave Desert

This poster explores lithic procurement strategies in the Mojave Desert in southeastern California. The project area is located at Fort Irwin and the National Training Center. Recently Statistical Research, Inc. surveyed 10,000 acres on the installation and identified several large lithic procurement sites, some covering several square kilometers. The sites consist of thousands of pieces of lithic debitage, and hundreds of cores, tested cobbles, and hammer stones. This poster looks at how the lithic resources at these procurement sites were utilized by prehistoric inhabitants of the Mojave, and how the sites fit into the wider settlement pattern system of the region.

[45] Chair

Kremkau, Scott [45] see Becker, Kenneth

Kretzler, Ian (University of Washington) and Ben Marwick (University of Washington)

[214] Understanding Archaeological History through Textual Macroanalysis: The Role of Feminism in Gender Research

Over the past three decades, gender research in archaeology has spurred investigations of gender relations in prehistory and problematized androcentric interpretations of the archaeological record. Though much of this work draws heavily from feminist theory, some archaeologists argue for increased separation between feminism and the study of gender. Existing quantitative studies suggest archaeologists share this latter view. In order to develop a more complete understanding of the relationship between gender research and feminism in archaeology through time, we used textual macroanalysis to track the frequencies of and correlations between key words in more than 3000 articles published in American Antiquity over the past three decades. In doing so, we constructed a history of gender research in archaeology and evaluated the role of feminism in it. Our results suggest that while explicit contextualization in feminist theory is often lacking in archaeologists' investigations of gender, their engagement with feminism has been underestimated. This research not only complicates traditional narratives regarding archaeology and feminism, it highlights the worth of textual macroanalysis in developing quantitative histories of archaeology that reflect the work of archaeologists broadly rather than

a select group of theorists.

Krieger, Angie [111] see Baumann, Timothy

Krigbaum, John (University of Florida (Anthropology)), Neill Wallis (University of Florida (Florida Museum of Natural H), Bryan Tucker (Georgia Department of Natural Resources (Historic), Nicholas Coutu (University of Florida (Anthropology)) and Christina Holland (University of Florida (Anthropology))

[12] Weeden Island Paleodiet and Mobility: Isotopic Results from Three Coastal Sites in Northern Florida

'Weeden Island' is a Woodland period complex in eastern North America traditionally defined as a pan-regional religion or interaction sphere. Akin to Midwestern Hopewell, Weeden Island united disparate communities in common ritual practices across a large region. While material culture, settlement patterns, and subsistence regimes were highly variable across Florida and southern Georgia between ca. A.D. 200 to 750 many attributes of burial mound ceremonialism appear strikingly uniform. Still poorly understood are patterns of mobility and social interaction that may have promoted equivalencies in mortuary practices.

This research explores the Weeden Island phenomenon as it relates to human mobility by integrating multiple lines of isotopic data from three Middle Woodland skeletal populations [Ross Hammock Mound 1 (8VO131), Hughes Island Mound (8DI45), Mayport Mound (8DU96)]. The three sites are coastal maritime in context and each is characterized by distinctive geology with unique isotopic signatures. Preliminary results underscore the potential to clarify intrasite and intersite trends in diet and provenience. For example, carbon, oxygen and strontium isotope ratios derived from human tooth enamel identify clearly non-local 'outliers'. Our approach complements concurrent analysis of artifact assemblages in that the data reflect a single individual with a unique life history and sociocultural fate.

Krigbaum, John [113] see LeFebvre, Michelle

Kristan-Graham, Cynthia (Auburn University)

[37] The Frame and the Fold: Spatiality in the Group of the Thousand Columns, Chichén Itzá

Coming to terms with ancient spaces is not a straightforward exercise. Conceptions of margins, scale, aesthetics, inside/outside, and other concerns vary widely through across time and distance. Ethnohistory and ethnography can fill in some lacunae of knowledge, yet traditional media of spatial analysis—primarily photographs and reconstructions—replicate spaces as static and cubic. The Group of the Thousand Columns at the late Maya site of Chichén Itzá, Yucatan, exemplifies how a space has been understood as stationary and mute. Several types of borders, including fences, causeways, and colonnades, enframed and sequestered this elite precinct of palaces, ballcourts, temples, and distinctive sculpture in the site core. The ideas of philosopher Giles Deleuze can help transform the idea of buildings from geometric to folded, accordion-like structures that affect and respond to people and activity. Deleuzian folds offer several advantages in the interrogation of space: they approximate hubs and paths of activity; they are practical and perceptive explanatory models; and they to enrich an understanding of ancient spaces where so often the focus is on architectural or iconographic details that the big picture of society is overlooked.

Kristensen, Todd [323] see Mooney, James

Kristiansen, Kristian

[288] The Advent of Bronze Age Social Complexity

European Bronze Age societies follow two trajectories towards complexity, one based on nucleated fortified settlements and one based on individual farmsteads. The paper discusses the properties of both and the processes leading up to them, which is finally set in a larger global comparative perspective.

Kristiansen, Kristian [118] see Ling, Johan

Krug, Andrew (University of Missouri), Kyle D. Waller (University of Missouri), Christine VanPool (University of Missouri) and Gordon F.M. Rakita (University of North Florida)

[44] Shell Exchange and Interaction in the New Mexico Borderlands: Assemblage Diversity and Network Analysis Approaches

Previous studies of shell exchange in the Greater Southwest have supported archaeological interpretations of competing exchange networks in which the Hohokam, Sinagua, and Anasazi acquired shell from the Gulf of California, while the Casas Grandes, Mimbres, and Western Puebloan groups acquired shell from West Mexico. Notably, these studies found that Animas phase sites, including Joyce Well, clustered with the Casas Grandes shell network. In this study, we attempt to further studies of economic interaction in the borderlands region by comparing the shell assemblage from the 76 Draw Site, a large Animas phase site located near Deming, New Mexico, with several published Southwestern and West Mexican datasets. Comparing the results of shell morphology and assemblage diversities with the results of a network analysis, following a least-cost pathway model, allows us to further test hypotheses about potential shell trade routes into the Greater Southwest.

Krug, Andrew [44] see Fernandez, Andrew

Krummel, Jordan [109] see Marks, Theodore

Krus, Anthony (Scottish Universities Environmental Research Centre), Robert Cook (The Ohio State University at Newark) and Derek Hamilton (Scottish Universities Environmental Research Centre)

[13] A Little Bit Longer: The Date of Events at the SunWatch Site

Twenty-one radiocarbon results from houses, pits, and burials at SunWatch are presented with an interpretative Bayesian statistical framework. Three different archaeological interpretations for site chronology are given in separate Bayesian models. In our preferred model there is a building sequence for seven structures and a central post, identified in Cook (2007), and the remaining structures and pits are placed outside of this sequence. In the Bayesian model for this interpretation, occupation begins between cal. A.D. 1045-1235 and reoccupations occurred at SunWatch until cal. A.D. 1420-1520. An alternative model without the central post-structure sequence was created and produced very similar results. A second alternative model was created to assess if SunWatch had been occupied for one or two generations at approximately A.D. 1300, one of two possible occupation scenarios presented in Cook (2007). The second alternative model did not produce valid results and it is highly unlikely that the short-term occupation scenario occurred. Results are further reviewed in relation to the occupation sequence and nature of settlement. We conclude that multiple occupations likely occurred at SunWatch over a 210-445 year timespan and that multi-generational remembrance is reflected in the patterned positioning of structures, pits, and the central post.

Krus, Anthony [266] see Monaghan, George

Kruse-Peeples, Melissa [207] see Swarts, Kelly

Kubátová, Ilona (University of West Bohemia, Czech Republic), Patrik Galeta (University of West Bohemia, Czech Republic) and Michael Benedetti (University of North Carolina Wilmington, USA)

[102] Modified Preservation Index for Skeletal Remains: Case Study from the Medieval Cemetery at the Church of Saint Mari Magdaleny in Pilsen, Czech Republic

Understanding the preservation of human skeletal remains is an important step toward interpreting the archaeological record. Various methods exist to characterize the degree of skeletal preservation. This paper presents a new Modified Preservation Index (MPI), which is an extension of the Preservation Index (PI) of Stojanowski et al. (2002). PI is a quantitative evaluation of 80 skeletal elements that are commonly used in anthropological analysis. MPI introduces additional criteria (178 elements) used in new methods for estimating age, sex, and height from skeletons. MPI adjusts for partial recovery of skeletons that may occur during emergency excavations. The main differences between the methods are that MPI is suitable for analysis of individuals from all age categories, and MPI is typically greater than PI due to adjustments for the conditions of archaeological research. The PI/MPI methods were applied to a sample of 217 skeletons from a Medieval cemetery in Pilsen, Czech Republic. The PI/MPI data were tested for correlations with intrinsic factors (age, sex) and extrinsic factors (stratigraphic level, distance from the church, presence/absence of an anthropologist during excavation). Preservation state was significantly

correlated with age category, and with the presence/absence of an anthropologist.

Kuckelman, Kristin [333] see Coffey, Grant

Kuckelman, Kristin (Crow Canyon Archaeological Center)

[344] *A Room with a View: New Data on Uses of Multistory Structures in Late Pueblo III Villages of the Northern San Juan*

The ancestral Pueblo multistory structures of the northern San Juan region, also referred to as “towers,” have inspired many theories regarding their purpose and use: astronomical observation, defense, storage of crops, storage of ritual paraphernalia, lookout, domestic activities, or as visual symbols of power. However, even after more than 100 years of excavation in the region, interpretations have suffered from a paucity of empirical data. Recent research by the Crow Canyon Archaeological Center at the thirteenth-century, large village site of Goodman Point Pueblo in southwestern Colorado generated a substantial body of data through excavations in 11 multistory structures. Some such structures were located in residential roomblocks, others were associated with ritual, integrative, or special-use structures such as a great kiva or D-shaped bi-wall building. The resulting data do not suggest the storage of food or ritual paraphernalia but do indicate use as living and work space, storage space for vessels, tools, and other durable goods, and defensive use. Two isolated single-story structures thought to be towers proved to be kivas. These new findings add to the body of knowledge on the organization and use of secular and ritual constructed space in late Pueblo III settlements in the northern San Juan.

Kuehn, Steven [192] see VanDerwarker, Amber

Kuester, Falko [65] see Howland, Matthew

Kuhn, Steven (University of Arizona)

[16] *Are Individual Mobility Patterns Emergent from Resource Distributions? A Modeling Approach*

Recent research shows that step lengths for movements of individual human and non-human foragers tend to assume a limited range of distributions. In many cases the step-lengths form a highly right-skewed Lévy distribution, with many short movements and a few very long ones. In other cases, analogous to Brownian motion, distributions are more Gaussian. Both human and animal foragers have been observed to use different movement strategies according the distribution of prey and levels knowledge they possess. This raises the question of whether path-length distributions emerge from an interaction between resource distributions and very simple search rules, or whether they require specific behavioral or cognitive control on the part of the forager. Agent-based models are used to investigate whether Levy flights and other movement patterns can arise as a consequence of the application of a single set of search rules to different resource distribution. Changing resource patchiness does affect step length distributions, and some distributions are strongly right-skewed, but they are not in fact fat-tailed Lévy flights. These particular movement patterns do not emerge easily from most combinations of resource patchiness and decision rules, but require some other controlling factor.

[16] *Chair*

Kuhn, Steven [71] see Barton, C. Michael

Kuijt, Ian [106] see Lash, Ryan

Kuijt, Ian (University of Notre Dame)

[259] *Vectors of Improvement: The Archaeological Footprint of 19th/20th-Century Irish National Policy, Inishark, Co. Galway, Ireland*

The concept of Improvement cross cuts moral, cultural and ideology realms, as well as practical aspects of material life, including housing, education, and agricultural technology. Tracking tangible and measurable material change allows researchers to link past ideas and processes to actions, and action to material remains. Archaeological and historical research on Inishark, Co. Galway, Ireland, provides a unique opportunity to identify and interpret the material footprint of Improvement from the 1880's to the 1920's. Improvements on Inishark were linked to the development of Irish national policies, changes in landholding systems, and the sale of land and houses by the Congested Districts Board.

[259] Chair

Kulhavy, Kathryn [102] see Fuehr, Stephanie

Kurin, Danielle [93] see Black, Valda

Kurin, Danielle (Vanderbilt University)

[203] *Of Mines and Men: Reverberations of Wari Investment in Andahuaylas*

How did imperial industries impact laboring subjects in the ancient Andes? This study investigates skeletal and artifactual data excavated from a prosperous salt and copper mining village in western Andahuaylas (Apurimac), to illustrate how Wari-directed ore extraction and processing structured the lives (and deaths) of local people during the later Middle Horizon. Over 200 crania from different village sectors were evaluated to reconstruct demographic, health, and mobility profiles using standard methods. Results demonstrate the multivalent ways in which Wari's imperial incursion irrevocably altered local group interactions and mortuary traditions. Far from ephemeral, some of these practices were maintained long after the archaic empire's fragmentation, and laid the ground work for future regional competition and conflict.

Kurin, Danielle [103] see Gurevitz, Anna

Kurnick, Sarah (University of Pennsylvania)

[302] *The End of Political Authority at Callar Creek, Belize*

Politically authoritative relationships are prominent and persistent features of ancient, other, and our own lives. Such relationships, however, are ephemeral rather than perpetual, transient rather than permanent. Fully understanding the operation of political authority thus necessitates understanding the processes by which authority breaks down and is rejected, challenged, or made untenable. This paper will examine the end of political authority at one specific community: the low-level ancient Maya center of Callar Creek, located in the Mopan Valley of Belize. Recent investigations by the Mopan Valley Archaeology Project suggest that the cessation of politically authoritative relationships at the site was marked by the purposeful razing of architecture, burning of structures, and smashing of ceramic vessels and other objects – by a termination event. This paper will describe the termination event; argue that it plausibly represents an attack by outsiders on Callar Creek's central structure; and conclude that politically authoritative relationships at Callar Creek were challenged, and ultimately negated, by those living outside the site core.

Kurota, Alexander [87] see Worman, F. Scott

Kuwanwisiwma , Leigh [202] see Fugate, Dody

Kuzucuoglu, Catherine [249] see Mouralis, Damase

Kvamme, Kenneth (UNIVERSITY OF ARKANSAS)

[284] *Michael A. Jochim and Predictive Archaeological Models: The Birth of a New Industry*

Michael Jochim's 1976 book *Hunter-Gatherer Subsistence and Settlement: A Predictive Model* was a ground-breaking work from several stand-points. It advanced hunter-gatherer studies through a worldwide ethnographic synthesis of settlement, subsistence, and demographic behaviors and it advanced knowledge of the south German Mesolithic, but most of all it established a methodological perspective that prehistoric settlement locations could be modeled. Although it did so without reliance on GIS technology (preceding it by nearly a decade), in my view this work served as a launch point for the subsequent development of GIS-based archaeological location models. Since the 1980s these models, known more simply as "predictive models," have achieved much attention and they have been widely used for cultural resource management purposes, representing a multi-million dollar worldwide industry. Most models are based on statistical patterns of location summarized from known archaeological distributions, which are then mapped through a region by GIS to form location predictions for as-yet undiscovered archaeological sites. Almost from their inception these approaches have received criticism for their lack of a "deductive" methodology that considers past rules and behaviors that formed settlement

choices. Yet, Jochim's pioneering work actually serves as a rare example of a deductive model.

Kvamme, Kenneth [318] see Zimmer-Dauphinee, James

Kvetina, Petr (Institute of Archaeology Prague, Czech Republic), Jiri Unger (Institute of Archaeology Prague, Czech Republic), Marketa Koncelova (Institute of Archaeology Prague, Czech Republic), Jaroslav Ridky (Institute of Archaeology Prague, Czech Republic) and Petr Vavrecka (Institute of Archaeology Prague, Czech Republic)

[299] *Pathway to the Neolithic: augmented reality and the virtual museum*

The aim of the poster is to present an ongoing project devoted to the virtual museum of the Neolithic. Two main methods have been used in the project: 1) 3D optical scanning technology that exactly reflects the 3D surface geometry of the artefacts and will bring new presentation possibilities, 2) virtual reconstruction of Neolithic landscape and cultural structures it included. Although introduction into the general Neolithic agro-pastoral culture will be provided, detailed examples will be based on case study of the Central European Neolithic settlement in Bylany (Czech Republic), dating from the 5th - 6th millennium B.C. The purpose of the project is not only to present the Neolithic in the virtual space but also to show people how deeply rooted is the past in the real landscape. To solve the obvious problem that in today landscape nothing from the Neolithic is preserved on the ground, we are trying to follow the technology of augmented reality. This concept uses integrating GIS map with the virtual reconstructions of Neolithic village and the open library of 3D scans. Either in the computer or in real landscape the visitor will be able to overstep the threshold of the present.

Labate, Julie (Geoarcheology Research Associates) and Kevin Wiley (Geoarcheology Research Associates)

[111] *The Irish of the Upper West Side: Archaeology of Working-Class Irish in Nineteenth-Century New York City*

This paper gives an overview of the findings from the Riverside Project excavated by Geoarcheology Research Associates (GRA) in 2012-2013. Specifically, this paper focuses on material culture that can be defined as Irish on the Upper West Side of New York City in the Nineteenth Century. Utilizing historical records and ArcGIS, the Riverside project serves as a successful model within historical archaeology and within Cultural Resource Management as a whole.

LaBelle, Jason [23] see Johnston, Christopher

LaBelle, Jason (Colorado State University)

[24] *The Slim Arrow site, a late Paleoindian bison kill in the dune fields of Yuma County, Colorado*

Slim Arrow is a late Paleoindian bison kill located in the Wray dune field, in the uplands between the Arikaree and Republican Rivers of Yuma County, Colorado. Discovered and surface collected by the Andersen family in the late 1920s, the site contains a minimum of 65 projectile points (mostly Allen complex forms), 12 scrapers, 6 other tools, and debitage. Richard Snodgrass (American Museum of Natural History) completed limited work there in the early 1930s, but the site remained nearly unknown until relocated and tested in the early 2000s. At Slim Arrow, Paleoindian hunters geared up in western Kansas before heading up stream for bison hunting on the High Plains grassland. The large quantity of weaponry, as well as a linear concentration of bone, suggests a kill similar to the Olsen-Chubbuck site (140 km south). This presentation is dedicated to the memory of Joe Cramer and Jim Benedict, both of which gave substantial gifts towards the archaeological research of the ancient peoples and environments of North America.

Lacadena, Alfonso [25] see Tiesler, Vera

Lackey-Cornelison, Wendy [64] see Cornelison, Jered

Ladron De Guevara, Sara (Sara Ladron de Guevara)

[62] *Cuerdas y bandas cruzadas. La herencia de símbolos de poder olmecas.*

Esta ponencia revisara dos monumentos escultóricos del sitio de Los Soldados, cercano al sitio de La Venta, que reiteran símbolos de poder inaugurados por los olmecas en el sitio de San Lorenzo.

Se revisaran sus antecedentes así como su impacto en los símbolos de poder y religiosos posteriores a

los olmecas a lo largo y ancho de Mesoamerica precolombina.

[62] Chair

Ladwig, Jammi (PaleoResearch Institute) and Linda Scott Cummings (PaleoResearch Institute)

[207] A Tale of Shape: Refining Our Understanding of Past Plant Use through Phytolith Morphometrics and Multivariate Statistical Analyses

Questions regarding past plant use are crucial in the meaningful interpretation of archaeological sites. What people ate, how food was prepared, where the plants came from, the contexts of consumption, and a myriad of other questions can be answered via analysis of the paleoethnobotanical record. Phytolith analysis has been at the forefront of the employment of new techniques and morphometric studies, in particular, have increased the accuracy of plant identification and refined the taxonomic resolution possible. Recognizing that different varieties of the same species were grown at archaeological sites sheds light on the movement, interaction, and preferences of past peoples. In order to gain this fine-scale information, however, the method and theory behind phytolith morphometrics and multivariate statistical analyses must be understood. This poster provides a thorough explanation of the mechanisms involved in obtaining and interpreting these data. Special attention is given to how the researcher decides to include or exclude certain morphometric measures, what these measures mean, and how to select and correctly interpret the multivariate analyses applied to these data. The results of the application of these techniques to the American Southwest in the context of maize cob analysis are presented as a case study.

Lafarge, Audrey [299] see Wragg Sykes, Rebecca

Laffey, Ann (University of Florida)

[19] Empires Crafted of Clay: Earthenware Archaeometrics and the Characterization of Gendered, Multi-Scalar Political Expressions of Middle Horizon Andean Earthenware Vessels.

Patterns of polygynous social organization and gendered political affiliation are discernible when archaeometric data, earthenware form, and iconographic evidence are considered. Iconographic details from over 400 earthenware vessels and sherd materials from the contemporaneous Middle Horizon (MH) empires of the Wari and the Tiwanaku (ca. 600-1100 C.E.) are included in this preliminary examination. Archaeometric and archaeological data are juxtaposed with ethnographic and ethnohistoric scholarship to evaluate the impetus that lay behind the production of these hybrid-political expressions. Wari earthenware hybridity is attributed to multi-scalar political alliances made manifest through affinal relationships, whereas iconographic heterogeneity is associated with mosaics of meaning linked to women's identity, expressions of ethnicity and alterity, "secret" sacred knowledge, and intent to imbue vessels with mana.

I suggest that "foreign" women were integrated into both Wari and Tiwanaku society and actively contributed to the formation and reproduction of the overarching sociopolitical framework via symbols displayed on highly-visible earthenwares utilized during large-scale sociopolitical events. Additionally, women skilled in the production of earthenwares and chicha could attain a relatively higher status, for it was the distribution of these goods formed the cornerstone of the chicha-based economy that sustained these MH Andean states.

Laguens, Andrés [19] see Bertolino, Silvana Raquel Alina

Laguer Diaz, Carmen [269] see Pestle, William

Lail, Warren (New Mexico Highlands University), David Sammeth (New Mexico Highlands University), Shannon Mahan (USGS Luminescence Dating Laboratory) and Jason Nevins (New Mexico Highlands University)

[13] A Non-Destructive Method for Dating Human Remains

In 1973, the skeletal remains of several Native Americans were recovered from a creek bank in northeastern New Mexico. The remains became lost amid the collections of a local museum for 36 years. In an effort to repatriate the remains, it was necessary to fit them into a regional cultural chronology in order to determine the appropriate tribe(s) for consultation pursuant to the Native American Graves Protection and Repatriation Act. Because the remains were found in an eroded context with no artifacts or funerary objects, their age was unknown. Wishing to avoid destructive dating methods such as

radiocarbon dating, Optically Stimulated Luminescence (OSL) was used to date the sediments that had become embedded in a cranium. The OSL analysis, conducted at the USGS Luminescence Dating Laboratory in Denver, Colorado, yielded dates between A.D. 920 and 1455. We conclude that the remains were interred somewhat earlier than A.D. 920, but no later than A.D. 1455, and the appropriate Native American tribes are being contacted for the repatriation efforts. Not only do our methods contribute to immediate repatriation efforts, they provide archaeologists an established, versatile, and non-destructive absolute dating technique that can be used in many burial contexts.

Lail, Warren [79] see Span, T'Shawna

Laluk, Nicholas (White Mountain Apache Tribe - U of A - CNF) and Sarah Herr (Desert Archaeology, Inc.)

[326] Reconsidering Western Apache Problems and Approaches

In 1981 David Gregory described the problems and approaches to Western Apache archaeology. Since this first synthesis of the subject, recognition and documentation of Western Apache sites, features and artifacts has increased significantly, and the interpretation has relied heavily upon comparison with historical-period accounts and reference to ethnographic works of Grenville Goodwin, Keith Basso and others. In this paper, we provide a status report on what has been learned over 32 years of survey recording and excavation, and look forward to opportunities contained in this ever-growing and evolving set of information concerning Apache history and culture. Moreover, more meaningful interpretation of the past will come from working collaboratively with Apache cultural experts to ensure archaeological and anthropological projects in reference to contemporary and ancestral Apache land base concerns, issues of importance to Apache people today and in the future.

Lam, WengCheong (Harvard University Department of Anthropology)

[51] Interpreting Workshop Food Supply from Faunal Assemblages and the Production Organization of Iron Industry during the Han Era: An Example from Taicheng Iron Foundry

Animal bone assemblages from an iron foundry in the Guangzhong basin, the heartland of the Western Han dynasty, are analyzed in a comparative framework to interpret aspects of food systems and organization of Han Iron Industry. Characteristics of the nature of food supply are interpreted from taxonomic representation, body part representation, butchery patterns, and ago patterns. These analyses show that the foundry relied heavily on specialized husbandry and might have obtained food through a marketplace system. The discovery seems to be supportive to the exploration according to other aspects of data that the foundry was a centralized workshop specialized in the production of commodity goods. A model that explores the relation between patterning of bone collections and production organization is applicable to other studies of craft specialization.

[51] Chair

Lamb, Celine, Daniel Vallejo-Càliz (University of Kentucky) and Scott R. Hutson (University of Kentucky)

[305] Current Explorations of the Formative-Classic Maya Hinterlands of Ucí

Over several field seasons, members of the PASUC surveyed a 4 km² block whose center point lies 4km to the east of Ucí. The survey, which attempted to understand Ucí's hinterlands, documented a landscape of several small settlement clusters separated by tracts of minimally constructed land. Excavations and mapping revealed variability in the occupants' wealth, economic specialization, and integration within larger political economic spheres, underscoring the heterogeneity of these "rural" occupations. Given that an intersite causeway, or sacbé, connecting Ucí to other centers such as Kancab, runs close to these clusters and required major economic and social investment, it could be thought that the rural settlement clusters were "centered" on this feature. Without the existence of a clear civic-ceremonial center in the vicinity of these clusters, present terms and ideas such as "center," "periphery," and even "rural" would need to be reassessed to take account of the settlement patterns documented. In this paper we discuss the settlement composition near and around the sacbé, exploring not only the relationship between the different settlement clusters but also the relationship between these clusters and the larger social landscape as materialized by this causeway.

Lambert, Dora (Mississippi State University)

[10] ICP-MS Analysis of Sediment for Sourcing Ceramic Sherds in Shkodër region of Northern

Albania

Inductively-coupled plasma -- mass spectrometry (ICP-MS) was used to determine the elemental composition of sixteen sediment samples collected in the Shkodër region of Northern Albania during the 2012 field season of the Projekti Arkeologjikë i Shkodrës (PASH). These data have been combined with ceramic compositional data, mapped, and analyzed using a geographic information system (GIS). Spatial analysis indicates intra-regional variation in soil chemistry and helps contextualize ceramic distribution patterns and prehistoric and historic settlement location.

Lambert, Patricia [12] see Welker, Martin

Lambert, Shawn (University of Oklahoma)

[251] *Revealing Spiro's Lost Artifacts: The Research Value of WPA Artifact Illustrations from Craig Mound*

The Spiro site (A.D. 850 – 1450) in eastern Oklahoma is one of the most important archaeological sites in North America. However, the primary focus of archaeological research on the site has been the mounds themselves and their associated artifacts. I will show that archaeologists can generate valuable new finds about Spiro from archival research. The Sam Noble Oklahoma Museum of Natural History in Norman, Oklahoma, holds hundreds of unstudied Work Projects Administration (WPA) illustrations that depict artifacts from Craig Mound, the largest mound at Spiro. Study of these WPA drawings has revealed that several of them represent artifacts that have not been seen since their initial discovery in the 1940s. I suggest that these newly discovered illustrations would expand our knowledge of Spiro's deep prehistory. In particular, the illustrations will foster new inferences into Spiro iconography, give back contextual knowledge of the lost artifacts, help authenticate objects that are currently in public and private domains, and provide more comparative imagery that expands continuing analyses of iconography in the Southeast.

Lambert, Patricia (Utah State University)

[306] *Bodies of Evidence: The Meaning of Sex Differences in the Location of Violent Injuries*

Depressed cranial vault fractures and injuries from projectile or thrusting weapons are two types of violent trauma recorded with some frequency in Native American skeletal remains from California. The cranial injuries are most commonly healed, and thus indicative of some form of sublethal conflict, whereas the projectile injuries are more often unhealed or by location indicative of lethal intent. These injuries thus reflect at least two quite distinct forms of interpersonal violence, one meant to injure, the other to kill. What is particularly interesting from a biocultural perspective is that when the location of these injuries within the body is examined according to the sex of the victims, some notable differences emerge. These differences suggest both distinct contexts for how violent injuries were incurred, as well as differences in how the bodies of men and women were targeted by assailants—even in what was likely the same context (e.g., raid). This paper examines these sex differences in wound location and explores possible contexts and causes for this gendered variation in violent trauma.

Lambert, John (UC Davis) and Thomas Loebel (St. Xavier University)

[315] *Cody way out East: Late Paleoindian Mobility in Early Postglacial Wisconsin*

Cody complex lithic assemblages from northern Wisconsin support the assertion that the first hunter-gather populations to colonize this early postglacial landscape were highly mobile. The distribution of specific lithic raw materials implies that these late Paleoindian groups exploited an area extending from northeast Minnesota to central Wisconsin. Analysis of collections from the Forks View site in Calumet Co., WI helps elucidate the behavior of groups at the southern end of this range. When combined with material from other nearby surface collections, the Forks View assemblage provides a robust sample with both early (Clovis, Folsom/Midland) and late Paleoindian components (Cody, Agate Basin, Dalton, Alberta, Hell Gap), as well as younger Archaic and Woodland material. Documenting these lithic assemblages is a crucial step toward answering questions about diachronic changes in hunter-gatherer mobility before and after the entrance of Cody complex foragers into the region. The Paleoindian/Archaic transition marks a dramatic shift in residential mobility and toolstone utilization. Paleoindian assemblages in the sample are dominated by exotic, high quality raw materials, average transport distances routinely exceed 200 km, and toolkit composition reflects a reliance on long-distance residential movement. In contrast, Archaic and Woodland assemblages are composed almost entirely of local raw materials.

Lambert-Law De Lauriston, Timothy (The University of the Witwatersrand)

[217] An Exploration of Use-Wear Analysis on Acheulean Large Cutting Tools: The Cave of Hearths' Bed 3 Assemblage

Large cutting tools (LCTs) are a stone tool techno-group that appeared ~1.76 Ma in Africa and marked the beginning of the Acheulean. The group is comprised of three tool "types" called handaxes, cleavers, and picks. The function of LCTs has only been arrived at through assumption or through experimental tasks designed to determine if a tool "type" was efficient for a given task, e.g., are handaxes conducive to butchery tasks? To date, no extensive use-wear analysis has been carried out on African Acheulean LCTs and this is a pioneering study. The Cave of Hearths lies in the Makapan Valley in the Limpopo Province of South Africa. Excavations were carried out from 1947 to 1954, and it is from these excavations that this study draws its sample. Use-wear analysis can shed light on why the Bed 3 assemblage, and indeed the whole Acheulean assemblage, is dominated by cleavers. In addition, the data generated by this study can be used to understand other areas of archaeological inquiry such as early subsistence patterns, dietary trends, site use, etc. It will also provide the foundation needed for future studies to be carried out on LCTs from other sites in Africa.

Lamela Lopez, Raquel (NYCEP, Department of Anthropology, The Graduate Center CUNY), Timothy Pugh (Department of Anthropology Queens College CUNY) and Katherine Miller (Department of Anthropology Arizona State University)

[147] Catholic Mortuary Practices of the Fifteenth to Eighteenth Century: A Comparison between Tayasal, Petén, Guatemala and the Iberian Peninsula.

Excavation of various necropolises distributed across the Iberian Peninsula during the Middle Ages to the Renaissance indicate the presence of Catholic, Islamic and Jewish modes of mortuary practice. Canons of Catholic mortuary practice prescribed that burial grounds be associated with religious temples within urban centers. Graves, oriented west-east, were expected to contain individual inhumations without associated grave goods. Individuals were typically inhumed extended on their backs with the head oriented towards the west. This positioning allowed the deceased to face east, the sacred direction of Heaven. The arms of the deceased were placed in a semi-flexed configuration with hands over the pelvic, abdominal or chest region. Between the thirteenth to eighteenth century Spain and Portugal were two of the strongest economic powers of Europe controlling different areas of the Americas, Africa, Asia and Oceania. Examination of inhumations beneath the church of the San Bernabé mission located at Tayasal, Petén, Guatemala, revealed mortuary practices homologous to those described in the Iberian Peninsula during the fifteenth to eighteenth centuries. These similarities serve to demonstrate a process of assimilation of Catholic canons of mortuary practice by local populations of the Tayasal region.

Lamoureux St-Hilaire, Maxime (Tulane University) and Evan A. Parker (Tulane University)

[224] A Behavioral-Contextual Approach to On-Floor Assemblages

The best archaeological correlate for the Classic Maya collapse – settlement abandonment – is sometimes recognizable in the very last occupation of structures or in "on-floor artifactual assemblages." Unfortunately, the taxonomy for abandonment-related assemblages varies widely among scholars, ranging from 'problematical deposits' or 'de-facto refuse', to 'termination caches'. This paper proposes a methodical approach to on-floor assemblages based on site-formation processes theory, and is anchored in a highly contextual approach. This behavioral-contextual approach examines the vertical and horizontal architectural context of artifacts, the relative completeness of ceramic vessels, and the represented vessel forms in order to produce quantitative and qualitative data that may be complemented by multivariate statistical analyses. The resulting interpretive framework allows for distinct settlement abandonment scenarios to be reconstructed in a systematic, replicable fashion while using a specific contextual terminology. This methodology accounts for rapid and gradual abandonment, abandonment with anticipated return, mundane and ritual abandonment practices, and post-abandonment behaviors, all which correspond to various socio-political contexts and differential human resilience to a host of challenges. Case studies from the sites of Minanha, Belize, La Corona, Guatemala, and Escalera al Cielo, Yucatan – all abandoned in distinct fashions – illustrate the operation of this methodological approach.

Landa, Olga

[238] ANALISIS ARQUITECTONICO DEL EDIFICIO M DE MONTE ALBAN

Por análisis arquitectónico se entiende la distinción y separación de las partes de un todo hasta llegar a conocer sus principios o elementos, presentaremos un análisis del edificio M de Monte Albán. Fue investigado a partir de los años 30 y restaurado a lo largo de varias décadas con estas investigaciones se ha llegado a conocer las características formales de la estructura. Revisarnos los cambios que

sufrió a lo largo de 80 años y hablaremos del tipo de restauración que recientemente se llevó a cabo para conocer de manera íntegra su sistema constructivo así como sus características formales, abordaremos de cerca la manera de intervenir la arquitectura monumental así como las ventajas y desventajas de restaurar un elemento en diversas etapas en donde han cambiado los lineamientos de restauración a lo largo de la historia.

Landau, Kristin (Northwestern University), Heather Richards-Rissetto (Middlebury College) and Marc Wolf (CUNY Graduate Center)

[154] Tacking Back and Forth: Using 3D Tools to Guide Archaeological Excavation

Today the use of 3D technologies for architectural visualization, monument conservation, and education and public outreach is not uncommon in the archaeology of the Ancient Americas. However, real time applications of these tools to produce 3D architectural and landscape models that inform ongoing archaeological excavations and subsequent interpretation are few. We present the process and results from an exploratory project that utilized 2D maps, SketchUp models, and LiDAR data to guide field excavations (June-Oct 2013) at an ancient neighborhood on the southern periphery of Copán, Honduras. Specifically, the datasets included: (1) a theodolite/plane table map created in the 1980s, (2) a newer, 2012 total station/GPS map, (3) LiDAR data flown in May 2013 by the MayaArch3D Project, and (4) interpretive, 3D SketchUp models based on the previous three. These datasets are not mutually exclusive, and in fact, build and improve upon each other in combination with on-the-ground "truthting" through archaeological excavation. Tacking back and forth between 2D maps, 3D models, and excavation data provided a corrective for the maps and models, and helped us more efficiently and accurately address archaeological research questions such as internal neighborhood organization and political economy.

Landon, Amanda, Heidi Roberts (HRA, Inc. Conservation Archaeology) and Christopher Harper (HRA, Inc. Conservation Archaeology)

[334] Incised Stones at Post-Puebloan Period Sites in Southern Nevada

Incised stones are rarely recovered from excavated Virgin Branch Ancestral Puebloan sites in Nevada and Utah. Though absent during Puebloan times, they debut in the archaeological record after A.D. 1300, during the habitation shift from surface architecture to rock shelters or open camps. Often, these less permanent habitations contain mixed pottery assemblages with buff wares, gray wares, and Great Basin Brown Ware. Buff wares, which are typically associated with proto-Mojave or Patayan groups, dominate many of these Post-Puebloan assemblages, yet the presence of incised stones hints at connections to the Great Basin region. This paper examines the timing and distribution of incised stones in regions formerly occupied by Virgin Branch Puebloan groups.

Landry, Shannon (Northern Arizona University)

[79] Faunal Identification and Age Assessment through Dental Analysis: The Wetherill Trading Post, Chaco Canyon, NM

Inhabited at the turn of the 20th century, the Wetherill Trading Post illustrates early archaeological activities in the Southwest. Over the past several years, the University of New Mexico has conducted archaeological excavation and research in Chaco Canyon, NM to understand the homesteading lifestyle common to the Southwest. In this poster, I present results on the zooarchaeological analysis of domesticated and game fauna used for subsistence at the homestead. Through the use of historic documentation, photographs, and firsthand accounts in the analysis, I provide a framework for understanding differences in the ratio of game animals versus domesticated animals in the trading post context. Using animal dentition, I determined age and taxon presence at the site. Analyzing the differences between the animals historic records indicate were consumed and actual faunal remains provides valuable insight for historical archaeologists about consumption behaviors.

Landt, Matthew [77] see Williams, Justin

Lane, Paul [75] see Sinclair, Paul

Lane, Michael (University of Maryland Baltimore County) and Alexandra Charami (9th Ephorate of Prehistoric and Classical Antiquities)

[332] AROURA: Reconstructing an Extensive Agricultural Landscape around the Late Bronze Age Fortress of Glas, Central Mainland Greece

Between 2010 and 2012, UMBC and 9th Superintendency of Prehistoric and Classical Antiquities carried out an extensive magnetometric survey and surface collection of the plain around the Late Bronze Age III (ca. 1300–1200 B.C.E.) fortress of Glas in the northeastern Kopaic Basin, a karst polje in Viotia Prefecture, Greece. The plain immediately around the fortress consists of an area protected from the wetlands of the Basin by a dike. It was further preserved from inundation by canalization of seasonably variable rivers flowing into the polje, these hydraulic features also generally dated to the LBA.

Magnetometry covered over 60 hectares, revealing a network of magnetic anomalies connected with both Glas and the larger hydraulic works. Ground-truthed results showed that the anomalies correspond to features built of ancient lake bottom sediment, sometimes paved with boulders, and perhaps paralleled locally with ditches. The network is consistent with a meticulously planned and executed arrangement of agricultural fields, irrigated from the canalized rivers. Various radiometric analyses indicate these features were constructed at some time between 1880 and 1310 B.C.E.—i.e., in the centuries leading up to Glas' foundation. Discovery of traces of such a landscape is unique in the Aegean and of signal importance.

[332] Chair

Lang, Elizabeth (Yale University)

[127] “Our Daily Bread”: Modeling Day-to-Day Household Food Production and Consumption in Ancient Egypt

Food procurement, preparation, and consumption are universal human requirements, and the processes involved are powerful carriers of identity and ritual information. Such processes are often nearly invisible in the archaeological record, and as a result, investigations utilizing traditional methods have been unable to construct a full picture. This presentation will take a new direction, integrating archaeological, textual, and pictorial data with non-traditional lines of evidence such as ethnographic comparison, experimental archaeology, and anthropological theory. The goal of this presentation is to generate a model for quotidian food procurement, preparation, and consumption in the New Kingdom period of ancient Egypt (ca. 1550–1069 B.C.E.). This model will show that food procurement and processing required huge amounts of time and labor to process raw food into edible, satisfying meals. Such significant investments of time and work, along with commensality within the household, argue that food and the interactions ancient Egyptians had with food were incredibly significant, and necessary for the construction of identity at the household level. This presentation will emphasize an integrative approach to evidence for this important aspect of Egyptian life.

Lange, Frederick (DUKE CRM)

[153] Discussant

Langebaek Rueda, Carl [103] see Miller, Melanie

Langenwalter, Paul (Biola University, La Mirada, CA)

[163] Assessing the Evidence for the Ritual Burial of Badgers (*Taxidea taxus*) in Central California

Early archaeological research in central California revealed evidence of animal oriented ritual in the form of burials. Systematic archaeological research in the 1930s incorporated the idea of animal ceremonialism to explain the occurrence of species of birds, mammals and reptiles in individual burials recovered from sites in the region. Badgers (*Taxidea taxus*) are among the species reported in ritual burials from several sites. Additional examples have been sporadically reported from the California Culture Area. Recent studies indicate that a lack of rigorous criteria for feature identification resulted in the inclusion of a number of naturally occurring, burrowing dead animals, as examples of intentional ritual burials. Criteria are needed to identify intentional burial of badgers because they may be incorporated into archaeological contexts through natural processes. Such criteria include documented evidence of burial position, grave excavation vs. burrows, and the presence of grave goods. Radiometric dating of some of badger burials indicate that some features containing badgers are younger than their apparent archaeological contexts imply, further complicating interpretations. All features containing articulated badger skeletons should be dated to verify spatial and temporal associations within the archaeological context where they occur.

Langlais, Mathieu [201] see Naudinot, Nicolas

Langlie, BrieAnna (Washington University in St. Louis)

[150] *Food Fights: Recent Research on Terrace Agriculture in Puno, Peru (A.D. 1100-1450)*
Altiplano peoples' changing use of the landscape during the Peruvian Late Intermediate period (A.D. 1100-1450) is often attributed to widespread warfare in part precipitated by climatic fluctuations. Specifically, people relocated to defensible, but logically inconvenient, hill-forts to cope with the threat of enemy attack. This move and the environmental instability of the time are often viewed as adversely affecting agricultural production. Some scholars suggest inhabitants abandoned plant agriculture in favor of pastoral strategies. However, this simplistic model does not properly account for the adaptability of altiplano agriculture to a variety of social and environmental conditions. For example, from the vantage of hill-forts, farmers could sustainably grow food on adjacent agricultural terraces. Models derived from the field of political ecology would predict a ramping up of land use strategies during this era through either intensification or extensification. Within this framework, I present data from recent research conducted at Ayawiri, an LIP hill-fort located in the northern Titicaca Basin of southern Peru. In particular, recent excavations of agricultural terraces on the slopes below Ayawiri elicit a more nuanced picture of land use and the deep time adaptability of altiplano agriculture.

Langlitz, Meredith [96] see Thomas, Ben

Langlitz, Meredith (Archaeological Institute of America) and Ben Thomas (Archaeological Institute of America)

[326] *Involving Local Communities in Archaeological Projects*

The Archaeological Institute of America (AIA), through its Site Preservation Program, works with a diverse array of projects around the world by providing support for heritage conservation and community outreach efforts. Through this program we have been able to observe many different approaches to involving local communities in archaeological projects. The most sustainable and effective programs actively involve and engage local communities from the earliest stages of the project and maintain these relationships beyond its completion. While there is no "one size fits all" way to involve local stakeholders, creative and flexible project directors who take the time to understand the interests and needs of the surrounding communities design robust programs that are incredibly successful and rewarding for everyone involved. In this paper we assemble the collective wisdom gained from more than a dozen projects around the world and present the challenges, outcomes, and the inevitable surprises encountered by these projects.

Langston, Lucinda [216] see Dennison, Meagan

Laparidou, Sofia

[205] *Peasant Life and Agricultural Practices as Mitigating Factors against Political, Economic and Environmental Stress in Middle and Late Islamic Jordan: The Social Significance of Phytolith Analysis*

This paper seeks to inform previous historic and archaeological work about local economies, and seeks to place medieval peasants on the political and economic stage in middle and late Islamic Jordan. Agricultural history is positioned in a diverse landscape of the peripheral Mamluk state in Jordan. Peasantry, imperial agricultural exploitation, and rural history are viewed as interrelated factors affecting and reflecting the political and economic history and the landscape. The role of small rural communities as agricultural producers and consumers and their dependence or not on their immediate urban environment are investigated through the identification of daily agricultural practices and crop processing analysis. Phytoliths (micro-botanical remains) are used as an excellent proxy data in order to reconstruct local agricultural and pastoral pursuits adopted by the peasants. The phytolith data presented and discussed in this paper have been collected from medieval rural sites and their analysis aims to inform the decisions that real people make in order to minimize risk and their ways of adapting to crises. The character of medieval Jordanian rural society and practices are thought to be capable of offering an alternative understanding of the regional history.

LapeyreMontrose, Stephanie (California State University Graduate Student)

[174] *Mapping Success: Available Technology and a Multi-Disciplinary Approach Can Improve the Odds of Hominin Site Discoveries*

Hominin fossil finds have been a source of scientific discoveries and debates for years, but unfortunately, fossil discoveries are limited. When fossils are found, it is either by chance discovery, such as the case with sites found in quarries where finds are more often than not damaged, or by focused efforts on already known areas likely to contain sites. What if we could use technology to increase our chances and to hone in on unknown areas that are more likely to contain fossil bearing zones prior to entering the field? It could save time and money to know in advance what areas on which to focus fieldwork. The answer is simple, we can. In addition, later ground truthing of the area can only be further enhanced by advanced capability to know where to focus efforts and resources. This ability is readily available in the form of geographical information systems (GIS) spatial mapping, creating raster operations to focus on areas sharing attributes of known fossil locations. To serve as an example, known naturally occurring hominin fossil sites in Morocco and Algeria were used to create spatial maps highlighting potential hominin fossil sites containing the same attributes as known sites.

[174] Chair

LaPoint, Halcyon [23] see Lee, Craig

Lapp, Jennifer (SUNY at Buffalo)

[153] *Proyecto La Flor*

The excavations at Proyecto La Flor focused on investigating the prehistoric site of Conchal. Conchal is located approximately 1-2 km east of the Pacific Ocean, with its southern boundary connecting it to the Pacific via the Rio La Flor. This connection allowed access to the Pacific Ocean, while also allowing access to terrestrial resources. The natural and built landscape was an important resource for the inhabitants of Conchal and was what attracted these people to the area. Conchal was first potentially occupied during the Bagaces period. It was permanently settled during the Sapoa period, which continued into the subsequent Ometepe period. Through the utilization of the natural resources, molluscs in particular, the inhabitants created a built landscape of shell mounds. These mounds were composed not only of refuse, but also their ancestors. This area became a place to not only throw refuse and bury ancestors, but to lay claim. This claim was in the form of the created mounds, which was reinforced by the creation of more mounds. The buried ancestors in turn reinforced the living inhabitants claim over Conchal and its resources.

Lara-Pinto, Gloria (Universidad Pedagógica Nacional Francisco Morazán, Honduras)

[161] *The Politics of Ethnic Identity in the Context of the “Frontier”: The Chortí of Honduras*

Ethnic identification may go through different facets of redefinition that range from a mythical past to contemporary life. Such is the case of the Honduran Chortí, whose two geographically separate population nuclei present distinct social and economic characteristics in a region where the influx of diverse people and languages were recurrent prior to Spanish conquest. The indigenous enclave in Copán answers historically to the “Chortí” denomination, whereas the counterpart population in Ocotepeque has been known simply as “San Andrés Indians”. However, in 1994 both indigenous communities sought to vindicate their common ethnic ancestry before the state, a conception generally ignored in Honduras due to the loss of their language. Furthermore, this common ancestry was tempered by the late Nahua Pipil juxtaposition in the borderland shared with El Salvador, while simultaneously maintained in the frontier territory shared with Guatemala due to the actual and effective use of the Chortí language. The aim here is to contribute to the comprehension of these processes from the remote past to the present which led to the redefinition of an ethnic group “from within,” with the purpose to assert and strengthen their identity “outwards” in the specific context of an idealized mestizo nation.

Larkin, Karin (University of Colorado at Colorado Springs) and Jane Kelley (University of Calgary)

[202] *Recent Interpretations of the Ceramics from the Southern Zone of the Casas Grandes*

While Dr. Linda Cordell was particularly known for her work in the Rio Grande, her passion for research and scholarship inspired projects throughout the Southwest/ Northwest and even beyond. Cordell's mentorship and clear insight helped shape many research projects, including my dissertation research on the ceramic assemblages from the southern communities of the Casas Grandes Culture Area in Chihuahua, Mexico. Pottery has long been the yardstick of identifying the cultural affiliation of people who created these assemblages in the Southwest/Northwest as well as the basis for many other kinds of inferences. When the Proyecto Arqueológico de Chihuahua (PAC) began working in the Southern Zone of

the Casas Grandes Culture area, the project directors had only a handful of earlier research from which to draw upon. This left many unanswered questions and many avenues for research. Cordell's insight recognized this potential. This paper presents recent research related to the production and distribution of the Viejo and Medio period ceramics in the southern regions of the Casas Grandes Culture Area. Using a diachronic approach we examine issues related to chronological sensitivity, regional and extra-regional interaction, and cultural affiliation.

Larmore, Sean [343] see Gilmore, Kevin

Larralde, Signa [151] see Schlanger, Sarah

Larsen, Eric

[232] Can You See Your Story Up Here? Letting Multiple Narratives Stand

Archaeologists regularly create narratives about our sites – through informal talks, presented papers, and reports. We must interpret the data – it is part of our responsibility. Yet, ours are not the only stories. Part of the joy of archaeology is that the landscapes and objects we investigate can often complicate existing interpretations. How do we, as professionals, allow room for multiple narratives? The Courthouse Site in Annapolis, Maryland – a post emancipation African-American neighborhood -- provides a case with which to explore value of multiple narratives.

Larsen, Clark [291] see Pilloud, Marin

Larson, Dorothy (Maxwell Museum)

[42] Learning, Migration, and Identity in the Albuquerque Area during the Late Developmental to Coalition Transition

Over the last decade, archaeologists have increasingly searched for evidence for learners, as well as data on learning frameworks and the social context of learning. My research examines pottery from the Albuquerque District of the central Rio Grande during the late Developmental to Coalition period transition (ca. A.D. 1100-1300). I utilize both technological and decorative data in order to identify learners and characterize the structure of learning. This analysis expands on research about learning to consider the implications for broader social phenomena, including migration and identity.

Larson, Bruce and Jeff Irwin (NAVFAC HQ)

[125] Reconnaissance Survey in Djibouti: Evidence of Coastal Occupations in the Horn of Africa

The presence of the U.S. Navy in the Horn of Africa has led to the opening of a small but significant window into the prehistory of a poorly understood region. Surface reconnaissance conducted at the Camp Lemonier Navy base in the Republic of Djibouti over the last several years has allowed the Navy to inform base planning with a consideration of the local environment and cultural heritage. Surveys have documented several archaeological sites within the Afar Depression. Lithic and ceramic assemblages provide evidence of numerous occupations, including Late Stone Age cultures, and coastal adaptations along the Red Sea. A geoarchaeological study demonstrates heavily eroded soils with deflated soil columns, with minimal potential for intact, buried deposits. This paper will provide an overview of the local environment, a description of the artifacts recovered and a brief summary of the geomorphology and taphonomy of site areas, contributing to a small and slowly growing body of data for this critical area of African prehistory.

[125] Discussant

Larson, Mary Lou (University of Wyoming)

[284] Permutations in Paleoindian Lifeways: 5,000 Years at Hell Gap

Models of hunter-gatherer response to spatial and temporal variation in resources and climate form the basis for ecological studies of hunter-gatherer archaeology. Such studies provide one means of understanding mobility, raw material use, subsistence, settlement, and technological organization. An unusual approach to land use studies relies on high-resolution excavation and analysis of chipped stone and fauna combined with tightly controlled chronostratigraphic and site formation studies at a single location within a complex, well-excavated stratified site. Our paper considers the range of variability in 5,000 years of Paleoindian occupation at the Hell Gap site, Wyoming. Paleoindians left at least 23

campsites at four localities with nine cultural complexes. These camps range from high density bone beds to ephemeral short-term occupations. Our research illustrates the depth of changing environmental, seasonal, and cultural existence seen at a single location. Various specialized analyses allow analytical expansion beyond the site to regional perspectives on hunter-gatherer mobility, raw material use, subsistence, settlement, and technological organization. Some of the earliest evidence for Paleoindian structures, overwhelming use of local chipped stone raw materials, and the absence of associated communal bison kills fit well with changing perspectives on Paleoindian existence throughout North America.

[284] Chair

LaRue, Chuck [182] see Whittaker, John

Lash, Ryan [106] see Alonzi, Elise

Lash, Ryan (Northwestern University)

[106] *Mapping Ritual and Economic Communities in Early Medieval Connemara, Ireland.*

This poster traces the interconnections between 7th through 13th century settlements in the seascape of northwestern Connemara, counties Galway and Mayo, Ireland. Mountainous and boggy, much of Connemara, Ireland provides a rugged environment for settlement. Early medieval documentary coverage for the area is poor, and what little is known about Connemara in the period comes from archaeology and folklore surrounding insular monastic sites. Evidence for contemporary secular settlements in the area is comparatively scant. In all, coastal Connemara's landscape and settlement pattern fits poorly with dominant models of early Irish political economy as constructed from contemporary legal texts and archaeology in other parts of the country. Combining folklore evidence with survey and excavation data collected over the last 6 years, this study constructs a political economic model for early medieval Connemara that prioritizes sea travel and pilgrimage as bases for social entanglements. Mapping the diversity of early medieval settlement alongside saint cults and later territorial boundaries suggests the scales of economic interdependence and ritual interaction at play during the period. These findings are situated within anthropological considerations of the role of ritual in social integration and reproduction.

[106] Chair

Lassen, Robert (University of Tennessee) and Jennifer Anderson (Texas State University)

[318] *The Post-Clovis Paleoindian Archaeological Sequence at Gault*

Gault has a multicomponent sequence of post-Clovis Paleoindian occupations spanning the Pleistocene-Holocene transition. Projectile point types from these components include Folsom, Midland, Plainview, Dalton, Golondrina, St. Mary's Hall, Wilson, and Angostura. Interpretations of these components vary, with occupations such as Folsom and Midland likely representing short-term retooling stopovers, while others such as Angostura are more indicative of a wider range of residential activities. This research presents the contexts of these components at Gault, focusing on their spatial distributions across the site and on their chronological/stratigraphic relationships with each other. Because it is the most extensive Late Paleoindian component at the site, the Angostura horizon is also given particular attention via usewear analysis on projectile points and bifacial tools.

Lassen, Robert [318] see Crook, Wilson

László, Paja [222] see Duffy, Paul

Lau, George (Sainsbury Research Unit, Univ of East Anglia)

[162] *Deer in Recuay Culture: Perspectives on Predation and Emerging Warrior Elites in Ancient Peru*

This presentation examines the role of deer in the archaeology and imagery of the Recuay culture (ca. AD 1-700), north-central Peru. It focuses on innovations in human interactions with deer among highland groups following the collapse of the Chavín 'feline cult.' Two main patterns are described: first, the acquisition/consumption of deer resources (white-tailed and huemul varieties); and second, new and unprecedented dispositions in deer representation (namely heads, antler adornments, and trophies). The presentation concludes that human predation on deer, given its relation to the hunt and ideology of

enemies, was crucial in the rise of local warrior societies and noble status.

Laumbach, Karl [202] see Laumbach, Toni

Laumbach, Toni and Karl Laumbach (Human Systems Research, Inc.)

[202] Linda Cordell and the Cañada Alamosa Project

The Cañada Alamosa Project, located in southern Socorro County, New Mexico, is in its fifteenth year, with field research completed and special analyses in progress. The systematic testing of four sequential sites has yielded an array of ceramic types that span 800 years and are associated with both northern and southern ceramic traditions. Over the course of those years, Dr. Linda Cordell inspired and encouraged project principals as they examined ceramic production and exchange by the compositional analyses of both ceramics and clay sources through the use of neutron activation analysis, petrography, and lead isotope analysis. Dr. Cordell also possessed a passion for research into the origins of corn in the Southwest. The discovery of small, 4000-year-old corn cobs in a buried horizon at the Montoya Site make the Cañada Alamosa one of only a few locations where early corn has been found. Dr. Cordell was instrumental in having a sample of this ancient corn included in a DNA analysis of the earliest corn in the American Southwest. Her impact on the Cañada Alamosa Project was profound and will continue.

Lauzon, Ashley and Barbara Roth (University of Nevada - Las Vegas)

[32] From Architecture to Households: Pithouse Excavations at the Harris Site

Our work at the Harris Site has resulted in the excavation of 20 pithouses and a number of associated extramural features. Architectural and artifact data from these houses and features have allowed us to document differences that we see as tied to the presence of different types of social groupings, from autonomous households to extended family corporate groups. In this paper, we discuss the architecture of the excavated pithouses and how differences in architecture can be linked to differences in household organization.

LaValley, Stephen

[324] Middle and Late Archaic Obsidian Procurement and Land-Use Strategies in the Black Rock Desert and High Rock Country of Northwest Nevada

The period of transition from the Middle to Late Archaic was a time of transformation for several aspects of prehistoric lifeways in the Great Basin. This paper addresses two aspects of this transition, obsidian toolstone procurement and land-use strategies, for the Black Rock Desert and High Rock Country of northwest Nevada. Recent results from X-ray fluorescence analyses of artifacts from Paiute Creek Shelter, Hanging Rock Shelter, Silent Snake Springs, and Smokey Creek Cave are compared to previous source provenance data and theories of obsidian procurement from the region. With data from more than 600 sites in the area, spatial analysis and site assemblage characterizations are employed to examine land-use strategies across time. Results indicate that no significant changes occurred in how obsidian toolstone was procured between the Middle and Late Archaic, contrary to previously established ideas. Results also illustrate a greater degree of residential mobility during the Late Archaic, as opposed to the logistical focus of Middle Archaic mobility.

Law De Lauriston, MacLaren (University of the Witwatersrand, Johannesburg, RSA)

[217] The Effect of Contact with Farmers on Hunter-Gatherers' Lithic Assemblages: Use-Wear Analysis of Stone Tools from Holkrans, North West Province, South Africa

Holkrans Rockshelter is perched in the outer rim of the Vredefort Dome, on a quartzite shelf, overlooking the Vaal River, in the Potchefstroom District, North West Province, South Africa. Thus far, excavations have identified two main phases of Later Stone Age occupation – pre-ceramic and ceramic – comprising three superimposed layers, dating approximately 2,000 ya, the late first millennium A.D., and within the last 500 years. The research aim is a better understanding of the effect of contact and interaction with herder-farmers on the activities of hunter-gatherers. This fits into a larger discussion that has come to be known as the Kalahari Debate wherein the two opposing viewpoints contrasted the immediate encapsulation and assimilation of the foragers into herder/farming cultures, against the continuation of the 'pristine' hunting- gathering way of life well beyond the time of contact. Reality was no doubt more complex and regionally variable, and a more nuanced view of the specific impacts on the Vredefort Dome hunter-gatherers has emerged through use-wear analysis of the Holkrans lithic assemblage. This may change the way we approach and interpret future LSA lithic analysis in southern Africa.

[217] *Chair*

Lawler, Dennis [53] see Martin, Terrance

Lawrence, Dan [75] see Wilkinson, Tony

Lawrence, Scott (Grave Concerns) and James Gibb (Gibb Archaeological Consultants)

[155] *The St. Nicholas Cemetery Restoration Project*

In 1943, the United States Navy acquired, through eminent domain, 6400 acres of prime farmland at Cedar Point, Maryland. Cedar Point was home to the town of Pearson, a Methodist church and cemetery, and St. Nicholas church and cemetery. The current St. Nicholas church was built in 1915 replacing the original 1795 church. One of the first projects in developing the base was to map all visible graves at the cemetery with names and dates when readily available and then bury the headstones atop each grave. In 2003, the authors petitioned the navy to resurrect and restore the head and footstones to its 1943 appearance. While initially the project was rejected, later commands agreed to the effort provided the Maryland Historical Trust would approve and issue an Archaeological Resources Protection Act (ARPA) permit. The fragile marble stones were broken due to pressure cracks and mishandling and very few remained intact. After 7 years of volunteer labor, 263 headstones were recovered and re-erected and once again, the cemetery appeared as it did in 1943.

Lawrence, Ken (SWCA-Texas State University), Brittney Gregory (Consulting Geoarchaeologist) and Charles Frederick (Consulting Geoarchaeologist-Geologist)

[199] *Geoarchaeological Investigations at Kelley Cave (41VV164) and Skiles Shelter (41VV165), Val Verde County, Texas.*

In conjunction with the 2013 Texas State University Archaeological Field School excavations at Kelley Cave (41VV164) and Skiles Shelter (41VV165), a series of geoarchaeological samples were collected and analyzed. These samples (e.g., magnetic susceptibility and phosphorus) were collected from select excavation profiles within each of these arid rock shelter sites. This presentation discusses the preliminary results of these investigations, their interpretations, and how they correlate to the cultural deposits from the excavations.

Lazrus, Paula Kay (St. John's University)

[300] *Landscape Economics in Uncertain Times*

During the period of Napoleonic Rule (1799-1816) the hill town of Bova (Calabria, Italy) was a relatively important center. Despite its social importance and abundant resources the community appears not to have been fully integrated into the larger economic system of the region. Hilly terrain, lack of good roads connecting the town and the coast and the density of vegetation in some areas would have dictated what crops were grown in particular localities. The connection between the accessibility of fields to both town and the wider regional market is utilized as one marker in an investigation of landownership and social situation opening a window into questions of income inequality that might otherwise not be apparent given the fact that individuals tend to have multiple holdings, across the landscape. This poster explores the spatial distribution of land and crops as a window into local economic dynamics

Lazzaris, Gerson Levi and Erika Marion Robrahn-González (UNICAMP)

[6] *Management of Urban and Archaeological Settings: A Case Study of the Port of Rio de Janeiro, Brazil*

Archaeological research carried out recently in the port region of Rio de Janeiro has revealed a complex correlation between old and new historical structures related to the expansion of the city towards the coastline. Early evidence of an active commercial life connecting Rio to other overseas contexts consists of an old row of water-front warehouse, old streets, storehouses and other historical buildings. Dating to the eighteenth century, when Rio was the center of the Portuguese Monarchy, the material record comprises an important part of the colonial and post-colonial history of Brazil. This paper aims to explain the research strategies adopted to understand the urban complex. Beyond the scientific knowledge generated by our research, our additional goal is to translate this knowledge for local communities through the use of media technology and historical landscape reconstruction of the urban coastal zone. Furthermore, this cultural heritage is integrated into the new urban design planning correlating cultural

circuits, tourism and providing tools for the archaeological management of this historical heritage.

Lazzaris, Gerson Levi [57] see Gonzalez, Erika

Le Bourdonnec, François-Xavier (Université Bordeaux-3), Gérard Poupeau (Muséum National d'Histoire Naturelle, France), Ludovic Bellot-Gurlet (Université Pierre et Marie Curie - Paris 6, France) and Marie Orange (Southern Cross University, Australia)

[249] PIXE and Obsidian Sourcing in the Mediterranean Area

Particle Induced X-Ray Emission [PIXE] counts among the non-destructive ways of determining obsidians elemental compositions. We analyzed at two French facilities, AGLAE (Centre de Recherche et de Restauration des Musées de France, Paris) and AIFIRA (Centre d'Etude Nucléaire de Bordeaux-Gradignan), about 1,000 Upper Palaeolithic to Chalcolithic artifacts sampled in nearly 40 sites, from western Mediterranean to eastern Anatolia, and 100 others from related potential sources. Fifteen major and trace elements contents were obtained either from extracted beam (in room atmosphere) or in a vacuum chamber. The PIXE source data are in good agreement with that obtained in our laboratory by other techniques (ICP/AES-MS, EDXRF, EMPA, SEM-EDS). They allowed us to determine unequivocally the provenance of all the artifacts characterized by PIXE. Apart from non-destructivity, the technique is also attractive as it can be applied to small (>1mm²) samples.

Le Bourdonnec, François-Xavier [249] see Orange, Marie

Leach, Melinda (University of North Dakota)

[22] Farmers and Foragers in the Desert West: Twined Textile Industry across 10,000 Years

The use of animal and plant fibers in the production of twined textiles has a long and global history. In this paper, I explore the use of vegetal fibers and twining techniques, especially in rabbit fur robes and rope/cordage supplies. Museum specimens from collections in California, Nevada, Utah, New Mexico and Arizona are employed in this examination of variation, and consistency, in twined textiles produced over millennia by both foragers and farmers in the American Desert West.

Leach, Peter (Department of Anthropology, University of Connecticut)

[196] GPR Prospection for Unmarked Graves in Glaciomarine Silts and Clays: A Case Study from Maine, USA

The success (and failure) of many ground-penetrating radar surveys in cemeteries is often a direct result of local field conditions. Decades of GPR research have shown that certain sediment types, like dry, stratified sands, provide favorable conditions. Others, like wet, conductive silts and clays, are generally considered poor candidates for GPR. This paper presents the results of a two-season GPR survey in Bangor, Maine where prospection for unmarked graves was undertaken in Presumpscot Formation, a Pleistocene-aged glaciomarine silt and clay. This project was undertaken as a part of a larger effort to characterize human burials with GPR and to correlate geophysical signatures, sediment type, and age of interment. While the Presumpscot Formation was chosen as an example of sediment with unfavorable characteristics, it actually provided the most highly resolvable graves of all the glacial sediments tested. The success of the survey was likely due to the Presumpscot Formation's sedimentology; it is a sediment comprised of clay-sized particles, rather than a mineralogical clay derived from weathering in place. This case study suggests that the resolvability of graves in glaciomarine silts and clays is quite high, and that there are variations in data collected during summer and winter surveys these settings.

LeBeau, Albert [343] see Schilling, Timothy

LeBlanc, Steven (Harvard University)

[66] Discussant

Leckman, Phillip [294] see Homburg, Jeffrey

Leckman, Phillip (Statistical Research, Inc.) and Michael Heilen (Statistical Research, Inc.)

[294] Community Organization and Culture Change in the Chuska Valley, New Mexico

Over the many centuries spanning the Archaic and Anasazi occupation of the Chuska Valley, many communities formed, endured, or faded in the face of shifting patterns of regional migration, the emergence of new cultural systems, and other dimensions of social and environmental change. In this paper, we examine the internal organization of some of these communities, comparing and contrasting community scale, patterns of clustering or dispersal, the presence and role of integrative architecture, and other community attributes over space and time. In particular, we consider the relationship between these dimensions of community organization and the role of persistent places and communities within the broader Chuska Valley landscape. These analyses provide a basis for tracing the ways in which the organization of community space and architecture contributed to the endurance of prehistoric occupation in some locales and the more fluid, shifting nature of occupation in others.

Ledford, Kelly (Middle Tennessee State University) and Tanya Peres (Middle Tennessee State University)

[53] *Turkeys of a Feather Flock (and die) Together: Exploring the Management of a Resource in the Southeastern US through Individual Life Histories*

It is widely accepted that turkeys (*Meleagris gallopavo*) were important in the diets of Mississippian Period peoples of the Southeast, yet we do not fully understand how turkey populations were managed. Ethnohistoric documents and ethnographic accounts suggest that the Cherokee and other southeastern groups baited turkeys to hunt them more easily and raised turkey poult for reliable and easy access to meat and feathers. We argue that if turkeys were being kept and raised there should be evidence to support this. Contextual information is important as it seems clear that some turkeys were raised while others were hunted in the wild. Osteological evidence based on morphometric data of archaeological specimens can be compared to the same data from modern wild and domesticated specimens to determine size differences. In this paper, we present data on a sample of turkeys from a dated context excavated at the Fewkes Site in Middle Tennessee. Given the context it appears that these specimens lived and died together ca. A.D. 1250. We explore the life histories of these turkeys as individuals and as a group, and use the data to discuss the multiple roles of turkeys as a managed resource in the late prehistoric southeast.

Ledford, Janine (Makah Cultural & Research Center)

[136] *Discussant*

Lee, Craig (Metcalf Archaeological Consultants & INSTAAR), Halcyon LaPoint (United States Forest Service) and Michael Bergstrom (United States Forest Service)

[23] *Rocky Mountain Ice Patches as a Rich Source of Archaeological and Paleoenvironmental Data*
Organic artifacts recovered at melting ice patches provide context for the inorganic elements that comprise most of the archaeological record. A recently recovered coiled basket, an almost-certain product of women's craftsmanship, speaks to group composition, while ownership marks on hunting implements speak to group or individual identity. In addition to a review of the tool classes represented at ice patches, this paper summarizes the associated biota as revealed by frozen organic lags recovered through coring. Finally, the analysis of wood from preserved tree stands illustrates the dynamic nature of these environments during warm periods.

Lee, June-Jeong [41] see Ko, Eunbyul

Lee, Rechanda and Kerry Thompson (Chair - Northern Arizona University Anthropology D)

[78] *'Ashtl'ó Yóhool'aah (Learning to Weave): The Cultural Transmission of Technological Style in Navajo Textiles*

For Native American Nations, cultural continuity is a means of connection to our past and a stabilizing element for our societies in the present and future. Cultural continuity exists because of our means of knowledge transmission through generations. There is little understanding in archeology on how the process of learning impacts, particularly in traditional knowledge, technological styles and their evolutionary processes. My research examines how learning networks and technological styles are reflected in Navajo textiles and production through the study of designs and weaving techniques. To support my research I analyzed rugs woven by intergenerational weavers and used archival interviews. Although external economic influences have been present through time which shift various demands for certain styles/patterns, technological styles remained mostly unchanged. In addition, the research indicates that technological styles are transmitted through the generations. This study is important to

archaeology because understanding learning networks allows us to understand how the learning process affects the patterning of material culture in time and space.

Lee, David (Southern Methodist University)**[312] *The Royal Palace Group at El Perú-Waka'***

Ongoing research from the Palace Group at the site of El Perú-Waka' in western Petén, Guatemala has revealed new insights into the Late Classic royal precinct of this important Maya center. This paper presents results from the continuous process of contextualizing existing data in light of new discoveries.

Lees, William**[239] *Missouri Basin Projects and the Emergence of Historical Archaeology on the Great Plains***

The Missouri Basin Projects of the River Basin Survey provided unprecedented attention to the archaeology of the Great Plains. Although the focus of research was patterned on the research of archaeologists who had been working in this area in the early half of the 20th century, which was largely concerned with understanding the prehistoric past, historical resources were not ignored. Coming at a time in the emergence of the discipline of Historical Archaeology, work on historic period sites in the Missouri Basin illustrate both benefited from and informed the development of historical archaeology. Simply put, the enormity of the research effort provided opportunity for research and for the development of careers focused on historical archaeology, which helped to create a "critical mass" leading to historical archaeology as accepted scholarship within North American archaeology and beyond.

Lee-Thorp, Julia [53] see Wright, Carrie

Lefas-Tetenes, Mariani [68] see Ducady, Geralyn

Lefebvre, Karine (Univ. Paris I Panthéon-Sorbonne)**[60] *Vocación defensiva – vocación simbólica: nueva mirada sobre los asentamientos encaramados en el valle de Acámbaro durante el Postclásico tardío***

Los trabajos arqueológicos llevados a cabo desde los años 1970 en el valle de Acámbaro sobre el patrón de asentamiento en el transcurso del Posclásico tardío revelaron una ocupación privilegiada de los relieves, cumbre de mesetas y pendientes altas. Desde entonces, los investigadores identificaron la ubicación dominante de los sitios como un elemento defensivo característico. El contexto político conflictivo en esta zona fronteriza del reino tarasco frente al imperio mexica, ampliamente evocado por las fuentes escritas del siglo XVI, hace hincapié en esta interpretación. Sin embargo, estos estudios se basan en datos arqueológicos poco abundantes y hacen caso omiso la multiplicidad de las formas y de las funciones de estos asentamientos encaramados, así como el lugar preponderante de estos cerros en el paisaje ritual prehispánico. A partir de una confrontación sistemática de datos arqueológicos recientes y de la documentación escrita, esta comunicación propone confrontar diferentes aspectos tipológicos y simbólicos, con el objetivo de comprender mejor las lógicas de asentamiento en vísperas de la Conquista.

LeFebvre, Michelle (University of Florida), Christina Giovas (URS Canada), Susan deFrance (University of Florida), John Krigbaum (University of Florida) and Scott Fitzpatrick (University of Oregon)**[113] *Mammals on the Move: The Zooarchaeology of Pre-Columbian Circum-Caribbean Interactions and Economy***

In addition to traditional studies of pottery and settlement patterns, archaeologists working in the Caribbean are focusing on other classes of artifacts and new methods of analysis to better understand the nature and nuances of precolumbian interactions among the islands and circum-Caribbean region, including mainland South America. In this presentation, we discuss the role and potential of zooarchaeological data in studies of human migration, interaction, trade, and economy during Caribbean precolumbian history. We present new research and recent zooarchaeological and isotopic data demonstrating how the manipulation of small mammals may have been both socially and economically significant; including the translocation and introduction of both wild and domestic South American mammals (e.g., agouti, opossum, and guinea pig), as well as possible management of native hutia. Our

results focus on the second half of the Ceramic Age (post A.D. 500), include Greater and Lesser Antillean sites, and provide a foundation from which to formulate additional studies.

LeFebvre, Michelle [139] see Kimura, Birgitta

Leftwich, Brent

[284] *Bedrock Mortars, Basins, and Behavioral Ecology: Resource Use, Procurement, and Processing Strategies in the North-Central Sierra Nevada*

As one of the most ubiquitous features throughout the Sierra Nevada of California, bedrock mortars are synonymous with hunter-gatherer subsistence during the Late Prehistoric, particularly in reference to the acorn economy. Although much less common, large, tub shaped features, often referred to as "Sierra basins," have garnered more recent, and somewhat controversial, attention as potential salt producing facilities near natural saline springs. The location and morphology of these permanent, immovable features can be used to create models of prehistoric behavior in the region. A research project along the North Fork of the Mokelumne River examined functional variables in mortar depth from over 300 bedrock mortar sites. Using quantitative methods and GIS spatial analysis, this project elucidated settlement and subsistence patterns by juxtaposing site size and complexity, elevation, and dominant vegetation. This approach revealed a pattern of permanent settlement, central place optimization, and risk buffering on the regional scale, while resource procurement and processing at the individual site level proved highly variable. In this most recent work on the project, Sierra basins (whether natural or cultural in origin) have been added to this analysis to examine strategies for salt harvesting in the context of wider resource exploitation.

Lei, Xingshan [51] see Lam, WengCheong

Leight, Megan

[91] *Teotihuacan Figural Representations: Ancestor or Deity?*

Teotihuacan, Mexico's major cosmopolitan city until its demise in the mid-6th century, was a place of origins, laws, and power. It became a source of inspiration as a tollan, with its highly recognizable artistic styles echoing across ancient Mesoamerica. Google-eyed masks and warrior-style headdresses embellish the individuals of many Early Classic Maya monuments, but Teotihuacano art is largely deemed impersonal. The human figures represented are not believed to represent actual individuals rather deities, unlike their Maya counterparts who utilize ancestors and rulers in Teotihuacan garb. This paper considers recent studies on the identity of human figures in Teotihuacan imagery, which tend to vacillate on whether or not actual individuals are represented.

Leisz, Stephen [154] see Pezzutti, Florencia

Leisz, Stephen (Colorado State University), Christopher Fisher (Colorado State University), Florencia Pezzutti (Colorado State University) and Juan-Carlos Fernandez-Diaz (NCALM - University of Houston)

[337] *Moving beyond Traditional Full Coverage Survey: LiDAR at Angamuco, Michoacán, Mexico*

Since the early 2000s LiDAR has been used in various field settings in support of archaeology. In 2010, after two fieldwork seasons devoted to the mapping of structures of a previously unknown settlement on a malpais in the Lake Patzcuaro Basin of Mexico, 9 km² of LiDAR data were obtained for the site. During the next two field seasons LiDAR derived products were integrated into the fieldwork and mapping efforts. This paper describes the process that led to the use of LiDAR within the Legacies of Resilience project in the Lake Patzcuaro Basin, Michoacán, Mexico. It details the creation of the LiDAR derived products used in the mapping effort, the results of the LiDAR supported ground survey and mapping and a comparison to the previous full-coverage surveys which used sub-meter GPS surveying methodologies to map structures within the newly identified pre-contact urban area. Based on our experience recommendations are made for best practices in integrating LiDAR derived products into archaeology surveys which focus on dense urban areas under semi-dense tree cover.

Lekson, Stephen (University of Colorado)

[202] *Mesa Verde Migrations*

Migrations and the abandonment of sites and regions were long-term interests of Linda Cordell. Her dissertation on Mesa Verde and her later work at Rowe Ruin directly addressed these issues. We revisit this surprisingly contentious topic, evaluating models developed from University of Colorado research at Pinnacle Ruin in southern New Mexico in light of larger studies of regional abandonment and population movement. Cordell's approaches and ideas are integrated into our analysis.

[56] *Discussant*

Lekson, Stephen [66] see Sedig, Jakob

Lelièvre, Michelle (The College of William and Mary, Anthropology and American Studies)

[218] *Temporal Changes in Marine Shellfish Use: A View from the North Atlantic*

The proposed paper will report on test excavations conducted in a shell midden (BjCo-02) located on the south side of Maligomish (Indian Island), a small island located off the northeastern coast of Nova Scotia. Archaeological, archival, and historical evidence indicates that the indigenous Mi'kmaq have used Maligomish for at least the past two thousand years. In collaboration with the Pictou Landing First Nation, whose reserve lands include Maligomish, a complete survey of the island and limited test excavations were conducted to determine if the island was used year-round or only seasonally during the pre-contact period. Although the recovered data were insufficient to answer that question, the recovered remains of shellfish show a marked shift in species representation over time, with *Crassotrea* sp. (oyster) predominating until ca. A.D. 1200 when *Mya arenaria* (soft-shell clam) becomes the overwhelmingly dominant species. This paper will consider whether the quantity and preservation of the collected shells is sufficient for analyses that would allow us to infer broader changes in the environment and resource intensification. Such changes have increasingly engaged researchers engaged in archaeomalacology in the southeastern United States, California, and South America. This paper will provide a unique perspective from the north Atlantic.

Lemke, Ashley [300] see Nicodemus, Amy

Lemke, Ashley (University of Michigan)

[318] *Converging Lines of Evidence: Clovis Diet at the Gault Site*

Archaeologists have long questioned Clovis foragers as solely big game hunters and a more sophisticated picture of Clovis hunter-gatherers, representing a mosaic of complex adaptations has emerged in recent years. Investigations of the diet at single sites such as Gault contribute to a picture of regional variability in Clovis subsistence. While well known for including a wide range of species, the Gault faunal assemblage is poorly preserved and highly fragmented and just 5% is identifiable to genus or species. In order to compensate for poor faunal preservation, new spatial analyses have been combined with lithic and faunal data to isolate Clovis subsistence resources from the paleontological background noise at Gault. These lines of evidence converge and reveal that, similar to most ethnographic or archaeologically known foragers, Clovis peoples made seasonally variable subsistence choices which included a range of both plant and animal species.

Lemonnier, Eva [21] see Arnauld, Charlotte

Lemonnier, Eva

[34] *"Garden Cities" in the Classic Maya Lowlands? Settlement and Land Use Patterns at La Joyanca (Guatemala) and Río Bec (Mexico)*

Despite a general consensus in Lowland Maya settlement pattern archaeology regarding the existence of "agrarian cities" during the Classic period, there is little current research aimed at defining precise models of these agrarian systems. Infield agriculture poses a methodological challenge: how can we identify archaeological evidence of plots producing staple crops, whether domestic or kitchen gardens, orchards, or infields? And how can we link these forms of evidence to material remnants of houses and households? This paper will begin with a brief synthesis of recent advances in the study of Maya settlement patterns and agriculture. It will then present the results of two recent investigations carried out at the sites of La Joyanca, Guatemala, and Río Bec, Mexico. Through a multidisciplinary and multi-scalar research strategy developed collaboratively with geographers, it has been possible to formulate two distinct models of territorial occupation and land use, in relation to social groups.

Lennen, Joel**[327] Terminal Woodland-Early Mississippian Interface at the Jackson Lake Site**

The Terminal Woodland-Early Mississippian Interface (A.D. 1075-1200) in central Alabama saw the coexistence of local Woodland communities and Mississippian peoples who were moving throughout the Southeastern United States. These interactions were experienced at several sites located around modern-day Montgomery, including the Jackson Lake Site that lies west of the Alabama River. Interactions between local Woodland and Mississippian communities may have taken place amongst generations of individuals who dwelled at the Jackson Lake Site. This paper analyzes previous investigations at the site, and in conjunction with future research, will help us address questions regarding the Terminal Woodland- Early Mississippian in central Alabama.

Lensink, Stephen [77] see Alhambra, Dominique

Lentz, David [158] see Tankersley, Kenneth

Leon, Mike [50] see Herbert, James

Leon, Jeffrey (Cornell University) and Ian Lindsay (Purdue University)**[157] Two Cases for Archaeological Geophysics: Comparing the Application of GPR and Magnetometry at Late Bronze Age Sites in Armenia and Cyprus**

In a 2010 article in *Antiquity*, Conyers asserted, "geophysical methods in archaeological research have progressed to the point that they can be used as much more than exploratory tools" (2010:183), in response to the assumption that geophysical methods are strictly for prospection in archaeological research to indicate areas of interest for future excavation. Geophysics is, arguably, providing more archaeological data than ever before; however, in order for these data to have a sustained impact on the field, projects must understand the promise and limitations of geophysical survey, and effectively implement survey as an aspect of larger research design. Here we report on Project ArAGATS in Armenia and the KAMBE project on Cyprus, both of which have recently employed geophysical survey (specifically magnetics and ground-penetrating radar). Our goal is to compare not only the techniques deployed and data collected, but, perhaps more importantly, how these geophysical surveys impacted the research agendas for each project in an effort to illustrate how geophysical survey can be effectively implemented in archaeological research frameworks.

Leon, Alycia (Flagler College) and Courtney Van Gemert (Texas A&M University)**[285] Social Structure Inferences from Funerary Remains Located at the Site of Panquilma in Cieneguilla, Peru**

Funerary interments allow insight into the social hierarchical composition of prior societies. Through funerary analysis at the site of Panquilma, which is located within the Lurin Valley of Cieneguilla, Peru, generalizations can be made in regards to the structure of social classes during the Late Intermediate Period. Burials discovered in the public sector as well as the domestic sector exhibit different characteristics in regards to the treatment of the deceased, tomb appearance and funerary offerings in comparison to those found within the funerary sector. Prior to the examination of the funerary sector at the site it was believed that the people of higher importance were buried within the household compounds of the site and the lower class citizens were interred in the funerary sector. Further examination of the looted remains discovered in the funerary sector and public sector in comparison to the untouched human remains located within the domestic sector lead us to believe that the prior statement no longer holds validity. Through the analysis of the skeletal remains in terms of pathologies, sex, age and trauma along with grave goods, different conclusions can be made in regards to the social structure of the Ychsma population.

Lepofsky, Dana [160] see McKechnie, Iain

Leriche, Christina (Drew University), Jill Rhodes (Drew University), Barbara Omay (Drew University) and Joeseph Mountjoy (Universidad de Guadalajara, Centro Universitario d)**[140] The Discovery of an Omechicahuaxtli from Postclassic West Mexico: Analysis and cross-cultural examination of human bone musical trophies**

The modification of human bone into musical trophy items is a practice common across the ancient

world. They have been recovered in the Americas from California to the Andes. The form of processing and functional significance varies. The most commonly known are symbolic, associated with ritual sacrifice or warfare, although human bone instruments are also recorded in fertility and funerary rituals. The omechicahuaxtli is specific to Mexico and refers to a musical rasp. This contribution reports on an omechicahuaxtli recovered from a Postclassic shaft and chamber tomb in Jalisco. Artistic representations of rasps are known from this region. To date, this appears to be the only West Mexican omechicahuaxtli recovered from an archaeological excavation and systematically analyzed. The rasp is broken, possibly assisted by a sacrificial 'death' prior to interment. At least 23 notches are visible with varying distance, depth and polish. Microscopic analysis of the notches was undertaken to examine how the musical rasp was manufactured and used. This analysis identified tool striations and extensive wear patina, demonstrating the rasp was not just a symbolic object, but had extensive use prior to inclusion in the funerary context, thus providing insight into prehistoric ritual world of West Mexico.

Leriche, Christina [189] see Rhodes, Jill

Lerman, Melanie (California State Polytechnic University, Pomona) and Austin Ringelstein (California State University, Northridge)

[142] Glass Beads from Catalina Island: A History of Trade and Contact

Catalina Island, off the coast of southern California, has a rich cultural history that has offered archaeologists the ability to explore trade relations and culture contact between the Gabrielino/Tongva people and European explorers during the protohistoric period. However, the dynamic of the relationship between Europeans and native peoples is still unclear. The village of Nájququar, located on the Isthmus of the island at present day Two Harbors, is a large site (SCal-39) that offers an excellent opportunity to examine these questions. Research using X-Ray Florescence and other methods is applied to the analysis of glass beads, a commonly exchanged commodity throughout California, that have been found in previous excavations in Nájququar. With the resulting spatial and temporal data, the degree of influence from contact and trade with Europeans can be determined with more precision.

Lerner, Shereen (Mesa College)

[96] Challenging the Status Quo

In 1988 educating the public on archaeology was considered outside the mainstream of archaeological research. It was a luxury, an option, and not widely accepted by the archaeological community. A group of archaeologists came together to challenge the old way of thinking and developed plans to integrate educating the public into mainstream archaeology. Over the last 25 years, we have watched the role of public archaeology grow into its own profession and become a regular component of archaeological research proposals. What are the benefits in having moved in this direction? What does our future hold with regard to improved communication with the public?

Leslie, David (University of Connecticut), Sally McBrearty (University of Connecticut) and Gideon Hartman (University of Connecticut)

[209] Stable Isotopic Evidence for Landscape Environmental Reconstructions, Kapthurin Formation, Kenya

The Kapthurin Formation, a part of the Middle Pleistocene sedimentary sequence of the Kenyan Rift Valley in the Lake Baringo basin, documents the transition from Acheulean to Middle Stone Age (MSA) technology. The MSA is of particular importance, as it marks the appearance of modern behavior, and the emergence of our own species, Homo sapiens. Archaeological and paleontological sites from two time intervals, 509 ± 9 thousand years ago (ka) to 543 ± 4 ka, and 235 ± 2 ka to 509 ± 9 ka, were sampled for stable isotope values of fossil pedogenic carbonates, useful in reconstructing environments exploited by MSA and Acheulean hominins. Sample preparation of fossil carbonate nodules followed conventional methods. $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ values derived from this study and a previous study on tooth enamel indicate that landscapes in the Lake Baringo basin were composed of diverse micro habitats, ranging from wet forested (C3) environments to arid grassland (C4) environments between 545 ka and 235 ka. These results will be useful in determining if there is evidence for differential utilization of landscapes, environments, and resources at MSA sites when compared with Acheulean sites, as has been suggested by other researchers.

Lesure, Richard [140] see Martin, Lana

Letham, Bryn (University of British Columbia), Andrew Martindale (University of British Columbia), Kenneth Ames (Portland State University) and Kisha Supernant (University of Alberta)

[173] Kitandach (GbTo-34) Revisited: Using Percussion Coring to Explore a Large Shell-Bearing Site in the Prince Rupert Harbour, British Columbia, Canada

Large shell-bearing sites are stratigraphically complex and the depositional behaviours that result in their formation over time are varied and often poorly understood. Very large and deep sites are challenging to excavate and the limited areal coverage of most excavations provide a limited sample of the entire site. This poster presents the results of a detailed surface and subsurface investigation of Kitandach (GbTo-34), a 10000 m² shell-bearing village site in the Prince Rupert Harbour, British Columbia, Canada that has been occupied from 5700 BP until European colonization. We build on intensive coring methods employed in the region in the last decade in which core samples are taken on a grid across the entire site, analyzed for major stratigraphic transitions across wide areas, and intensively radiocarbon dated to understand the timing of developments, expansions and accumulations across the location. The site was excavated by the Canadian Museum of Man (now the Canadian Museum of Civilizations) in the early 1970s; our analysis allows us to revisit this legacy of archaeological work and combine the results of traditional large scale excavation and wide ranging subsurface coring and radiocarbon dating for a refined view of an otherwise methodologically daunting site type.

Leventhal, Alan (College of Social Sciences, San Jose State University), Les Field (Department of Anthropology, University of New Mexico) and Rosemary Cambra (Chairwoman, Muwekma Ohlone Tribe)

[119] The Politics of Erasure, Nominative Cartography, and the Muwekma Ohlone Tribe's Reclamation of their Ancestral Heritage Sites

In the twentieth century, the erasure of the Ohlone, the indigenous people of the San Francisco Bay Area, was constructed around the unilateral and arbitrary termination of their relationship with the federal government in 1927, and an "extinction sentence" inscribed by Kroeber in his authoritative Handbook of the Indians of California (1925). The processes by which the presence of Ohlone peoples in their aboriginal territories were decisively obscured and disestablished initiated during the Spanish colonial regime involved the transformation of geography and placenames that not only erased the Ohlones and their history, but also filled that absence with colonial presence. This study closely interrogates "nominative cartography" - - the power to erase and implant, to disappear but also to substantiate, and to displace and replace in the service of colonial projects - - by tracing the changing map of Ohlone homelands as they were transformed by and during the colonial regimes, using the specific case of the neophyte cemetery at Mission Santa Clara. This case underscores that the Ohlone did not disappear and their persistence is reflected in contemporary strategies to regain their federally recognized status that also involves efforts to re-establish their presence in the broader contemporary cultural landscape.

Leventhal, Richard [273] see Daniels, Brian

Leventhal, Richard (University of Pennsylvania) and Tiffany C. Cain (University of Pennsylvania)

[330] Land: A Symbol of Existence

Within most societies of the 21st century, people perceive land as a commodity on which one farms or extracts the important resources associated with it, i.e. food, lumber, minerals, or oil. This perspective on land has played a critical role in the recent history of the Americas. But we ought to regard land through a more nuanced lens. For many people it operates as far more than just a commodity: it symbolizes and fashions the very existence of individuals and groups. The symbolic representation of identity through association with land has become a flashpoint in the modern struggle of Native Americans for recognition and rights. Not only do we see this within the United States or Canada, but also similar disputes and conflicts are evident throughout the Americas and across the globe. We focus these two competing views of land (commodity and complex symbol) within the Maya regions of Central America, specifically Belize and Mexico. We also consider that when land is scarce and identity is divorced from land, identity itself often becomes commodity - a phenomenon commonly encountered in tourist centers throughout the area.

Levi, Laura (The University of Texas at San Antonio)

[292] An Economy of Movement

Movement is considered central to placemaking behavior. Typically, places are framed as loci of the

familiar, of face-to-face interactions. In the literature, therefore, places have come to connote the small-scale or local. This paper will argue to the contrary that movement is a multi-scalar phenomenon the effects of which serve to integrate disparate sites of experience. Using the Programme for Belize archaeological data base, I will explore relationships among temple architecture, processional pathways, and markets. From this analysis, a case will be made for the primacy of movement in the forging of regional coalitions among the ancient Maya.

Levin, Maureece (University of Oregon)

- [298] *Paleoethnobotanical Indicators of Plant Food Production: A Contextual Approach from Pohnpei, Eastern Micronesia*

Food production systems can be evaluated through a number of means, including proxy indicators and direct evidence for cultivation. Paleoethnobotanical data can provide direct indication of prior plant presence and use, but they must be contextualized, as they differ in the questions they can address in any given environment. This paper evaluates the potential of direct paleoethnobotanical indicators for understanding questions of food production in the tropical Pacific, drawing on Pacific Islands reference materials and an archaeological case study from Pohnpei, Federated States of Micronesia. In this context, plant remains address questions related to human relationships with the environment, changes in human diet, and the development of complex social systems. However, differential preservation related to the tropical island environment, the production of durable remains, and the types of features and artifacts where plant remains are found limit the types of remains that are recovered. Thus, this paper examines both the potential of common Pacific economic taxa to produce recoverable plant remains and the ways in which these remains have actually been preserved by the Pohnpeian social and physical environment.

Levine, Marc (University of Oklahoma)

- [83] *Cotton Kingdom: Textiles and Trade at Postclassic Tututepec*

Tututepec was among the most powerful Mixtec capitals of Late Postclassic (AD 1100-1522) Period Oaxaca. This paper begins with a discussion of how sociopolitical organization at Tututepec differed from that of the more well-known Mixtec polities or yuhuitayu from highland Oaxaca. I argue that some of these differences can be explained by Tututepec's political economy and its role as a regional trade center. Tututepec's status as an entrepot was strengthened through the local production of cotton thread, which was in great demand throughout Mesoamerica at this time. The proliferation of spindle whorls found across Tututepec and from household excavations demonstrates the importance of cotton thread production to Tututepec's economy. Apart from economic exchange, the cotton trade also facilitated an exchange of ideas and practices. Based on an interregional comparative stylistic analysis of Postclassic spindle whorls, I explore how disparate communities of spinners shared technological knowledge that facilitated the production of high quality cotton thread.

- [83] *Chair*

Levine, Abigail [104] see Sitek, Matthew

Levy, Thomas (University of California, San Diego)

- [65] *Transdisciplinary Research and Historical Biblical Archaeology: Cyber-Archaeology and the Museum of the Future*

The 2013 UC San Diego international conference concerning "Israel's Exodus Between Text and Memory, History and Imagination" included an exhibition of transdisciplinary research (team science) that involved scientists who contributed their unique expertise to attempt to solve an ancient historical problem. This involved a specialist team of archaeologists, Biblical scholars, Egyptologists, geoscientists, computer scientists, engineers, and digital media technologists who used scientific visualization and media tools to show how a team approach could contextualize one of ancient history's great mysteries – the Israelite Exodus from Egypt. The paper discusses the project that involved transforming a reconfigurable performance space into a 21st century museum space using new visualization and audio technologies to present original archaeological and geoscience research for both scholarly and public outreach.

- [65] *Chair*

Levy, Thomas [65] see Howland, Matthew

Levy, Janet (UNC at Charlotte)**[143] First Steps to an Archaeology of Masculinity in the Southeastern U.S.**

The late prehistoric (ca. A.D. 1000-1600, encompassing Mississippian and Late Woodland periods) southeastern U.S. provides us with several rich sets of data from archaeology, bioarchaeology, ethnohistory, ethnography, and linguistics. While several archaeologists have begun to explore ramifications of gender in this time and place, there has been little or no focus on masculinity itself. The archaeological record includes significant evidence that inter-personal violence of various kinds was part of the life experiences of communities in the region. So, there are several intriguing questions to be explored about the interconnections among personal identity, the ideology of masculinity, and the experience of violence. In this paper, I take exploratory steps to lay out the issues and potential evidence, and to consider how researchers' biases may influence our analyses.

Lewandowski, David (Northern Arizona University)**[2] Examining the Social Networks during the Pithouse-to-Pueblo Transition in the Mogollon Highlands**

This paper examines the social networks that existed in the Mogollon Highlands during the pithouse-to-pueblo transition (A.D. 850-1100) using Social Network Analysis (SNA). The research focuses on the changing social networks that accompanied the appearance of pueblo architecture and prevalence of Cibola White Ware relative to Mimbres White Ware in the region around A.D. 1000. My research follows and tests the models set forth by previous SNA studies in the Southwest by using ceramic wares to build ties between sites creating the social networks. The relationship between social and geographical spaces within the region can be examined by combining SNA with GIS. I also examine changes in site centrality with emphasis given to the placement of Great Kiva sites within the network, exploring their potential as centers for exchange of commodities and ideology. Previous SNA studies in the American Southwest have demonstrated the potential for this type of analysis in examining cultural phenomena in prehistory such as migration and demographic changes. This paper uses SNA to examine a major cultural phenomenon not addressed in the previous SNA studies, the pithouse-to-pueblo transition.

Lewarch, Dennis (Suquamish Tribe)**[140] Aztec Period Lithic Tool Production, Distribution, and Use in the Coatlan del Rio Valley, Morelos, Mexico**

Debitage, formed tool classes, and use-wear traces on stone tools from eight Aztec period sites in the Coatlan del Rio Valley of western Morelos, Mexico, provide insights into the manufacture, distribution, and use of obsidian, cryptocrystalline, and ground stone artifacts. Data from 3,500 4-x-4-m surface collection units and maps of areas between collection units are used to identify obsidian and vesicular basalt workshops and to calibrate the flow and use of stone tools among more than 350 Aztec period houses in the valley. Valley-wide stone tool densities quantified by residential midden and extramural workshop area provide bench marks to identify households with greater access to imported obsidian and to identify house complexes exhibiting a wide range of functional classes. Quantitative differences among sites and households demonstrate complex patterns of provisioning, household consumption, and household craft production. Aztec period economic organization inferred from analyses of lithic artifact assemblages corroborates complex domestic multicrafting patterns noted elsewhere in Morelos.

Lewis, Helen (University College Dublin)**[117] The Celtic Tiger and Underdeveloped Geoarchaeology in Ireland: Issues Arising From Skewed Applications in CRM**

A certain level of geoarchaeology is a standard in CRM world-wide (e.g. geophysical survey). Where interventions are conducted, however, the application of geoarchaeological approaches varies enormously, despite the premise that interpreting context requires at least a fundamental appreciation of soils, sediments, and landform history. Depending on the educational backgrounds of archaeologists, local traditions in the discipline, and the expectations of industry regulators, some CRM units regularly apply geoarchaeological assessment in excavation and post-excavation, while others never do. These decisions constrain the value of site interpretation, dating programs, and the usefulness of results for future research investigations ('preservation by record'). In the Republic of Ireland, despite an early interest in geoarchaeology, and a recent construction boom employing thousands of CRM archaeologists, while certain traditionally-important environmental approaches are extremely well-developed, others, including geoarchaeology, never quite got off the ground, beyond geophysics and 'traditional' wetland studies. The

result of this limitation is reduced research potential for better understanding excavated 'dryland' archaeology, and of data collected from hundreds of recent investigations, many of which otherwise held very high standards of practice. It is vital that 'contract archaeologists' understand the fundamentals and potential of geoarchaeology, and industry leaders apply international best-practice, regardless of local tradition.

Lewis, Ian (Western Washington University; Equinox Research and Consulting International)

[160] Chasing Clusters: Analysis of Activity Areas to Determine Site Type at the Locarno Beach Phase (3500-2400 B.P.) Site 45WH55, Chuckanut Bay, Washington

In the Pacific Northwest the Locarno Beach Phase (3500-2400 B.P.) is viewed as a temporally intermediate, yet distinct phase between the Charles Culture (4500-3500 B.P.) and Marpole Phase (2400-1500 B.P.). Current understanding of settlement and subsistence practices during the Locarno Beach Phase suggests a drastic shift from forager to collector strategies and a site-type dichotomy of residential base camps and seasonal, limited-activity sites.

Site 45WH55 is a prehistoric shell midden site with radiocarbon dates (2750-2450 B.P.) from the latter half of the Locarno Beach Phase. Located on Chuckanut Bay in Northwestern Washington and the Southern Gulf of Georgia region, analysis of this site will contribute to the overall understanding of the time period. Through statistical analysis of the lithic and bone assemblages, I argue that 45WH55 closely resembles a residential base habitation site. However, rather than being the central base of a far-ranging, logistical organization with accessory limited-activity sites, this site appears to have exploited a largely local catchment area. Based on these conclusions, I propose that the current dichotomy should function more as a spectrum, in which some groups established bases in ecologically rich environments that would combine the functions of a residential base and its accessory stations.

[160] Chair

Lewis, Jason (Stony Brook / Rutgers), Sonia Harmand (Turkana Basin Institute, Stony Brook University, S), Hélène Roche (CNRS, UMR 7055, Préhistoire et Technologie, Univer), Michel Brenet (Inrap, Centre mixte de recherche archéologique, Do) and Guillaume Daver (Maître de conférences IPHEP-UMR 7262 (CNRS))

[255] Humanity's Big Bang? The Role of Bipolar and Passive Hammer Percussion in the Development of the Earliest Hominin Lithic Technologies

The manufacture and use of tools by hominids have been studied extensively by archaeologists, and also recently by primatologists on that of non-human primates, all of whom appreciate the relevance of tool-use and tool-making in understanding the origins of technology and the evolution of human behavior. Over the last few decades, there has been growing consensus on the probability of hominin tool manufacture before the Oldowan technocultural complex at 2.6 Ma. But did the earliest stone knapping develop naturally from pre-existing pounding behaviors, or did it appear *de novo* as direct hard-hammer flaking for cutting edges? The bipolar and passive hammer percussion techniques are biomechanically similar to the actions employed by non-human primates when engaging in pounding behaviors, but they have been little studied in replication experiments aimed at understanding the development of the earliest hominin lithic technologies. Recent archaeological discoveries made by the West Turkana Archaeological Project and initial results from a new experimental program are presented here showing that bipolar and passive hammer percussion are expedient techniques for producing sturdy cutting flakes and trenchant cores, and that Pliocene hominins may have been more capable with these gestures than with direct hard-hammer percussion.

Lewis, Danielle [288] see Willer, David

Lewis, Michael (University of Utah) and Joan Coltrain (University of Utah)

[317] Strontium Isotope Variability in Range Creek Canyon, Utah: A Pilot Study

This study presents a first approximation of strontium isoscapes in Range Creek Canyon, Utah. Biologically available strontium was assayed by sampling *Chrysothamnus naseosus* from ten locations. Significant differences between $87\text{Sr}/86\text{Sr}$ from sites on the Colton, Flagstaff and North Horn formations allow the upper and lower sections of the canyon to be isotopically distinguished from one another. Sites in the lower canyon can also be distinguished from nearby alluvial deposits in Desolation Canyon. Strontium samples from stream and spring water indicate a fourth source of strontium above our sample area--perhaps associated with the Green River Formation which caps the Tavaputs plateau. Stream

water approximates soil $^{87}\text{Sr}/^{86}\text{Sr}$ but a 'lag' is noticeable on the intra-canyon scale. Implications for strontium analyses in Range Creek, Fremont and regional archaeology are discussed.

LI, YUQI (Washington University in St. Louis)

- [92] *Late Bronze Age (1900-1500 B.C.) Copper Metallurgy and Interactions between Sedentary and Mobile Groups in Southern Uzbekistan*

Southern Uzbekistan was inhabited both by mobile groups and sedentary people in the Late Bronze Age (1900-1500 BC). How these groups interacted in copper metallurgy was the main research question of this paper. Two sites were chosen as representatives of each group. Muminabad is a cemetery site located on a foothill of the Upper Middle Zerafshan River, Samarcand region. Based on the Andronovo type burial goods recovered from this site, Muminabad most likely belonged to mobile groups. About 200 km southwest to Muminabad, in a oasis of Northern Bactria, stands the largest early urban site in Central Asia—Djarkutan. Chronologically, Djarkutan also largely belongs to the Late Bronze Age. From both sites, 25 bronze artifacts in total were analyzed. Composition analyses of these bronze were conducted with a Portable X-ray fluorescence (XRF) spectrometer. Comparison of their bronze compositions shows that these two sites probably had used copper ore from the same sources. This result shed light on the metallurgical interaction in particular and day-to-day interactions in general between the mobile and sedentary groups in Southern Uzbekistan in the Late Bronze Age.

Lieb, Brad (Chickasaw Nation)

- [213] *Natchez Refugee Pottery Practices and the Materiality of Identity*

This study is based on the premise that past ceramic practices which yield recoverable results reflected and structured multivalent identities of their producers and users. Natchez people of two different towns resettled separately among the Chickasaws in Mississippi during their temporary refuge there in the 1730s, following their expulsion by the colonial French from traditional Natchez homelands in the Natchez Bluffs region of the Lower Mississippi Valley. By examining variability in ceramic practices in the three independent domains of clay body composition, vessel form, and surface decoration, this study seeks to parse out the material evidence of past practices which can inform on subtle, yet meaningful, dispositions related to Natchez village and ethnic identity as well as assimilation in their diasporic resettlements. By extension, this study is relevant to other, even pre-Contact, long-distance migrations of tribal social segments, given the historical documentation and pronounced differences between traditional Natchez and Chickasaw pottery practices prior to their short-term co-residence in the Chickasaw Oldfields near present-day Tupelo, Mississippi.

Lieber, Mallary (University of Missouri-Columbia), Christine Van Pool (University of Missouri-Columbia) and Gordon Rakita (University of North Florida)

- [44] *Pottery in the Northern Ramos Zone: The Ceramic Assemblage from 76 Draw*

The Animas Phase area includes settlements associated with many different archaeological cultures, each of which is reflected in specific pottery types. These types are generally found on the same sites, but it is unclear whether this reflects some sort of general synthesis among the cultures (e.g., people affiliated with the Salado, Medio period, and El Paso phase lived at the site together) or if it reflects trade among sites that produced different types of pottery. One means of addressing this is to examine the relative proportions of the various pottery types at various sites to determine if there are meaningful differences in the proportions of ceramic types across the area. Such differences in turn will reflect cultural affiliation and integration. The presented research evaluates the relative abundance of the various pottery types at 76 Draw and ultimately finds that the amount of Ramos polychrome in the assemblage is high relative to other areas in the Medio period world. This in turn reflects social interaction with a southern Ramos Zone centered on Paquimé, Chihuahua, and suggests that at least some Animas Phase sites had a close association with Medio period settlements far to the south.

Liebert, Thaddeus [79] see Huckell, Bruce

Liebmann, Matt (Harvard University)

- [338] *Catachresis and Catechesis in the Pueblo Missions of 17th Century New Mexico*

Building upon recent anthropological critiques of "hybridity," this paper will critically examine this concept and its companion, "purity," in archaeological scholarship. I argue that the identification of hybridity can tell us as much about archaeologists' own biases as it can about the subjects of our research. Using the

theoretical concepts of hybridity developed by Bakhtin, Bhabha, and Latour, this paper examines the material culture of 17th century Franciscan missions in New Mexico. A case study investigates the ways in which Pueblo peoples appropriated and re-purposed "foreign" material culture under Spanish colonialism, with a focus on the Pueblos' consumption of bells in 17th century contexts.

[256] Discussant

Liebmann, Matthew [296] see Golden, Charles

Liffman, Paul (El Colegio de Michoacán)

[339] Wixarika Territoriality and the Production of History

Wixarika (Huichol) placemaking extends mythical-historical symbolism along ancestral paths into new geographic spaces implicated in long-distance exchange through principles of metonymy (direct extension), iconicity (formal resemblance) and synecdoche (hierarchical entailment) that link analogous, often eponymous sites to increasingly encompassing scales of reference. In turn, the appropriation of such places provides topographic referents for transforming and further extending that history in space. I take examples of placemaking from the 90,000 square kilometers encompassed by Wixarika cosmological territory (kiekari). According to other research, kiekari has extended from the Pacific coast to the San Luis Potosí desert in the east, Jalisco lake region (S) and Sierra Madre Occidental of Durango (N) since Classic times. Therefore Wixarika marine and tropical forest resource extraction in the kiekari's western quadrant, which overlaps the Aztatlán region and connotes nocturnal female fecundity, is contextualized via exchange routes that entail complementary products, ecosystems and cosmological values in the desert, a region identified with diurnal male austerity, peyote and turquoise; the lakes (obsidian and rain); and the Sierra's temperate forests. In this view, Wixarika territoriality employs a metaregional cosmological framework to encompass diverse spaces in discursive and material exchange relationships and to legitimize economic, political and religious hegemony.

Lightfoot, Kent (University of California, Berkeley)

[198] Life at the Margins of Two Colonial Regimes in California

California was the middle ground for two extensive colonial regimes in the late 1700s and early 1800s: the Spanish moving up the coast from western Mexico and Baja California and the Russians sailing down from the North Pacific. As one of the most densely populated areas in North America, thousands of Native Californians were impacted by the subsequent colonial encounters. This paper focuses on those Native people along the frontiers of the Spanish and Russian colonies, and will consider how they forged their politics, social practices, and identities living between two colonial regimes.

Lillehammer, Grete (Museum of Archaeology, University of Stavanger)

[115] Twenty-Five Years with the "Child" and the Archaeology of Childhood

This paper summarizes the main points of my 1989 article, "A Child is Born," relating it to trends in archaeology at the time of publication, and considering its relevance to archaeology in 2014. In an effort to jumpstart debate in archaeology about the potential for an archaeological, historical, and ethnographic study of childhood, the 1989 article attempted to define the child's world generally in time, space, and structure. It applied child's play as an analytical tool towards considering the world of children from an archaeological perspective. Since the publication of this article, its main points have been elaborated, while the "child" has matured itself, as it has contributed to the establishment of the archaeology of childhood as a topic of interest in archaeological research. Meanwhile, technological advancements have improved the abilities of archaeologists to study childhood in the past. This paper reviews these developments, and it advocates a cross-cultural approach to studying the multi-relational child as a new direction in the archaeological study of children and childhood in past societies.

Lilley, Ian (The University of Queensland)

[242] Recent Research in the Loyalty Islands, New Caledonia: Archaeological Science and Community Heritage

This paper discusses the results of a long-term project on Tiga, smallest of the inhabited islands of New Caledonia's Loyalty Islands. The objective was to conduct a project that developed new scientific knowledge regarding Tiga's place in New Caledonian and Pacific human history in a way that also made sense to local people in terms of their own understandings of and priorities regarding their past. We found success in the form of shared 'meta-interests' in the sweep of history, producing a model that aligns

archaeological and local understandings of the past in terms of classes of events and processes, such as the physical formation and initial peopling of Tiga, the introduction of domesticates, and variations in population movements to and from the island.

[97] *Moderator*

Lillie, Robin (University of Iowa Office of the State Archaeologist Burials Program) and Jennifer Mack (University of Iowa Office of the State Archaeologist)

[155] *Myth and Memory at a 19th Century Catholic Cemetery*

Many of the older cemeteries in the United States carry with them stories, sometimes based on truth and often based on myth and faulty memory. Dubuque, Iowa's Third Street Cemetery represents one of many 19th century graveyards disrupted by urban expansion and development. The Iowa Office of the State Archaeologist excavated over 900 burials over the course of a five-year period. During that time we read newspaper articles and heard testimony from locals about the cemetery's history and the fate of its residents. Following the excavations and during the analysis and research, we found that many of the stories were just that – and we were able to debunk some of the most strongly held of them. Others are just worth retelling.

Lillios, Katina (University of Iowa)

[28] *Practice, Process, and Social Change in Third Millennium BC Europe: The Role of Collective and Cummiled Burials*

To understand the changes in burial traditions between the European Neolithic/Copper Age and the Early Bronze Age, archaeologists have emphasized the Secondary Products Revolution, development of metallurgy, rise of elites, and spread of Bell Beakers. This tendency reflects the materialism pervasive in archaeological thought, in which burials are treated as material expressions of religion or ideology, and that to explain changes in these realms, one needs to look to economic or sociopolitical conditions.

Burials are, however, not only sites of socially organized human action and labor, they have sensorial properties; their form, visibility, color, tactile qualities, and smells provoke, engage, and constrain the bodies, eyes, and minds of individuals and groups. With this in mind, I explore how the practice of dealing with death - including creating and using collective and commingled burials - may have contributed toward increasing social differentiation in third millennium BC Europe.

Lillios, Katina [102] see Waterman, Anna

Lima, Ângelo [331] see Jacques, Clarisse

Lin, Ying (Hamilton College), Khori Newlander (Hamilton College), Nathan Goodale (Hamilton College) and David Bailey (Hamilton College)

[10] *Chert and Obsidian Calibrations for pXRF Based on National and International Standards*

Archaeologists have increasingly employed portable x-ray fluorescence (pXRF) instrumentation to analyze a wide variety of materials. Significant questions remain, however, regarding the reliability and reproducibility of these data. This research presents our methods to calibrate an Olympus NDT Delta pXRF instrument using national and international standards. We develop calibrations for chert and obsidian, which we evaluate by comparing (a) the data we obtain from whole rock and powdered samples and (b) our pre-calibration and post-calibration results. Our analysis demonstrates that calibration significantly enhances instrument performance and that factory-set calibrations are not adequate for archaeological research, as they do not yield reliable and reproducible compositional data.

Lin, Sam [13] see Chodoronek, Michael

Linares, Adriana [312] see Coronado, Anabella

Linares-Palma, Adriana (The University of Texas at Austin)

[326] *Archaeology and the Community: Constructing Bridges for Knowledge of the Past in Kaminaljuyu, Guatemala City*

Based on archaeological excavations at Kaminaljuyu mound E-III-5 and educational workshops at the public school "Delia Luz Gutierrez de Castellanos", this paper explores how children position themselves in relation to their surroundings and how knowledge of the ancient past and their relationship to it varies when

they are exposed to archaeological excavations. I focus on the perception of the archaeological site of Kaminaljuyu and its relationship to the social and political-educational discourses that are associated with Guatemalan national archaeological projects. The hypothesis is that archaeological sites in Guatemala are used to promote a national identity that encourages tourism consumption of "exotic" ancient Mayas, which is totally disconnected from contemporary Mayan indigenous peoples' movements and local communities' interests.

This represents the first systematic study and initial investigation of these issues in the Guatemalan highlands, and I hope that it will serve as a platform for an activist archaeology in Guatemala that looks to socialize the production of archaeological knowledge to those who do not have access to private education, and to continue discussions on challenges of academia for social justice and its impacts on the population.

Lindauer, Owen

- [151] *A Personal Perspective of 39 Years of Transportation Archaeology: Contributions, Issues, and Challenges*

Transportation archeology has been and continues to be if not the most active contributor to archeological research and practice, is among the most active contributors to advancing our discipline over the past 40 years. Development is the reason why there is a continuous demand for responsive, inventive, attentive, and professional archeological efforts. But the nature of "development" exerts its own set of constraints, issues and challenges to conducting archeological investigations and advancing archeological research. This presentation will touch on some of the highlights of transportation archeology from a perspective an individual over the past 39 years.

Lindgren, Stefan [277] see Galeazzi, Fabrizio

Lindsay, Ian [157] see Leon, Jeffrey

Lindsay, Ian (Purdue University)

- [198] *"Crossroads" through the Caucasus? Autochthonous Political Development on the Margins of Mesopotamia and the Steppe*

It has been over 20 years since Phil Kohl penned some of the first English-language summaries of material culture and archaeological periodization in the Caucasus, an area that he alternately referred to in quotation marks as the "frontier" and "periphery" of the Near Eastern world. Kohl's papers signaled an early attempt to push back against Assyro-centric views of the Caucasus and demonstrate that behind the Iron Curtain lay a rich archaeological landscape derived through historical and social processes independent of—if not entirely disarticulated from—the cities, states, and empires of Mesopotamia. This paper summarizes results of ongoing investigations by Project ArAGATS in Armenia, where research over the past 15 years has uncovered evidence for local pathways to complexity that take us beyond traditional images of the Caucasus as a supplier of raw materials to the Near East and passive receptor of cultural traits that passed between Mesopotamia and the Steppe. Recent excavations in a wide of social contexts—cemeteries, residential complexes, citadels, shrines—are illuminating the unique strategies of governance that fortress-based polities employed to assemble communities of mobile pastoralists under their rule, and reshaping our understanding of ancient power and authority in the Caucasus and throughout Eurasia.

Lindstrom, Katie (University of Wisconsin-Madison)

- [35] *Patterns of Elite Harappan Pottery in the Indus Civilization Borderlands of Gujarat*

Research presented in this paper tests prevailing models about the spatial patterning of Harappan pottery in the Indus Civilization borderland region of Gujarat, where it is found in association with regional non-Harappan pottery at many walled cities and towns. Prevailing models conclude that Harappan pottery was introduced into Gujarat by migrants from the Indus Valley. An untested premise of these models is that Harappan vessels were the only pottery types utilized by elite residents and were restricted to use inside the perimeter wall. In contrast, non-Harappan pottery was utilized by non-elite residents who were forced to live outside the perimeter wall. In this paper I present new pottery data from the walled site of Bagasra, which contradicts prevailing models. These new data establish the spatial distribution of many Harappan pottery types on both sides of Bagasra's perimeter wall, where they occur in association with a variety of non-Harappan pottery types. Based on these data, I contend that elite residents of Indus settlements in borderland areas utilized both Harappan and regional non-Harappan

pottery. I offer a revised model for the spatial patterning of Harappan pottery in borderland regions, which accounts for their documented distribution at walled settlements.

Ling, Johan and Kristian Kristiansen (Professor)

[118] *Comparative Advantage as Mode of Production in Bronze Age temperate Europe*

Control over the exchange of metals was a crucial feature of stratified societies in temperate Europe during the Bronze Age. To obtain the precious metals they needed (such as copper and tin) different societies used different strategies. Environmental, geographical and social differences were used in the development of regional specialization and in the creation of surplus value. Thus, people within various regions focused on amber, tin, gold, copper or textiles. In line with Marxist theory we argue for the hypothesis that certain social relations, geographical positions and environments created comparative advantages that impacted the direction and velocity of the movement of persons, raw materials and finished goods in the Bronze Age.

Lione, Brian [215] see Hanson, Katharyn

Liot, Catherine (Catherine Liot), Susana Ramirez (Universidad de Guadalajara (Mexico)), Javier Reveles (Universidad de Guadalajara (Mexico)) and Cinthya Cardenas (Universidad Autónoma de Yucatan)

[21] *Intrusive Settlement and Cultural Assimilation Processes in the Sayula basin (Western Mexico) during the Early Postclassic*

The Early Postclassic settlement pattern in the Sayula Basin demonstrates two overlapping sociocultural components. On the one hand, the Sayula phase is a well-structured regional development with its own cultural identity within a greater socioeconomic system. On the other hand, some groups affiliated with the Aztatlán sociopolitical system, locally known as Cojumatlan phase, were within distinct kinds of settlements and reflect different stages of incorporation. Both components are represented by two political centers, La Picota for the Sayula phase and La Peña for the Cojumatlan phase. Both are major settlements, separated by a relatively short distance (around 30 km), but characterized by pronounced diversity in the internal settlement pattern, material culture, ritual, and so on. No evidence of confrontation or competition has been noted in the comparative study of both sites, yet by A.D. 1100, a new sociocultural structure emerged, known locally as the Amacueca phase, which shows a steady link with the Cojumatlan phase. The Aztatlán presence in the area might have caused the decline of the Sayula phase following cultural assimilation within the Aztatlán system.

Lipe, William (Washington State University)

[151] *Glen Canyon Salvage to Dolores CRM: Big Projects and Big Changes*

The Glen Canyon (GCP) and Dolores (DAP) projects were the largest of their day in the Southwest and are still among the largest archaeological projects ever carried out in the United States. The GCP (1957-1963) was designed and conducted as "emergency salvage", while the DAP (1978-1985) was one of the first large projects to be initiated after "CRM" formally emerged in 1974. Both these efforts were rooted in the archaeological method, theory and practice of their time, but both had aspects that anticipated later developments. And they were designed and carried out in very different legal and public policy environments. Perspectives gained from analyzing these two influential projects will be used to identify and comment on some of the principal trends and transitions that have shaped US public archaeology since the 1950s.

Lipo, Carl [11] see Harlow, Jeanette

Lipo, Carl (California State University Long Beach) and Terry Hunt (University of Oregon)

[193] *Easter Island, Archaeological Evidence, and the Evolutionary History of Warfare*

Reevaluation of existing evidence suggests a remarkable lack of systematic warfare among the prehistoric population of Easter Island. The archaeological record of the island is in marked contrast to other Polynesian islands where violence is well-documented and widespread. The evidence from Easter Island contradicts common assumptions about the island but is consistent with the conditions that favor warfare. Here, we evaluate the evolutionary landscape of systematic violence and show that when retaliation is likely evolutionary stable strategies involving violence avoidance and alternative means of negotiating conflict and competition

become fixed in the population.

Lippert, Dorothy (National Museum of Natural History)

[135] *Discussant*

Lippi, Ronald (University of Wisconsin)

[57] *Return of the Yumbos: A Cultural Happening in Nanegal, Ecuador*

Leaders of the Palmitopamba Archaeology Project in the cloud forest of northwestern Ecuador have worked for years to involve and collaborate with the local mestizo community, but in 2013 the embrace was expanded to include modern-day descendants of the ancient Yumbos. Representatives of the Tsachila and Quichua Quijos indigenous nations were invited back to a portion of their ancestral homeland for public and private events related to the archaeological project. Visits to sacred waterfalls, conversations about local history and other events were coupled with shamanic rituals to consecrate the archaeological sites and to re-bury previously excavated human remains. An overview of this event, which was co-sponsored by the parish government, is given along with some analysis of the process, the results and what the future might hold with regard to the "decolonization" of the archaeological project.

[57] *Chair*

Lira-Lopez, Yamile

[204] *Un estudio del Monolito de Maltrata, Veracruz*

El monolito de Maltrata es hasta el momento la única escultura monumental labrada en piedra encontrada en el sitio arqueológico denominado Rincón Brujo ubicado en el periodo Posclásico. Fue trasladada al Museo de Antropología de Xalapa, Veracruz por Alfonso Medellín Zenil en 1962, donde actualmente se encuentra. Su estudio es importante dada la poca presencia de escultura monumental en las altas montañas del estado de Veracruz, México, donde se encuentra enclavado el valle de Maltrata. Diversos investigadores han descrito las escenas que se labraron en la superficie de esta gran piedra, relacionadas posiblemente con un evento político de algún personaje, durante una fecha significativa indicada por el planeta Venus, encontrando semejanzas con símbolos en sitios arqueológicos ubicados en el periodo epiclásico como Xicalco, Tajín, Cacaxtla, y otros de Teotihuacan y de la zona Maya. En esta ponencia se presenta una análisis de los grabados así como otros elementos arqueológicos encontrados en recorridos de superficie y excavaciones realizados en la última década cercanos al monolito, que ayudan a contextualizar en tiempo y espacio la posición del monolito así como una interpretación más amplia.

Litschi, Melissa [104] see Sharp, Kayleigh

Little, Aimée [22] see Van Gijn, Annelou

Little, Keith and Hunter Johnson (Tennessee Valley Archaeological Research)

[323] *A French Outpost in the Mississippi Choctaw Homeland*

Recent excavations at 22KE630 revealed the presence of an undocumented eighteenth-century French outpost in Kemper County, Mississippi. Broad areal excavations exposed the archaeological footprints of three French earthfast poteaux en terre structures in association with large assemblages of Choctaw ceramics. Given that most archaeological sites associated with European colonial settlements in the region yield substantial assemblages of Native American ceramics, an immediate question arises as to whether the eighteenth-century site occupants were exclusively Frenchmen, who were obtaining ceramic containers through exchange and interactions with neighboring Choctaw populations, or a mixture of both Frenchmen and Choctaws. The question is further complicated by material evidence of a Choctaw ritual performed at the site, which opens the possibility that the site was occupied simultaneously by both Europeans and Choctaws. This paper accordingly explores evidence pertaining to the identities of the site occupants.

Littleton, Judith [67] see Bunting, Augusta

Liu, Li [51] see Zhao, Hao

Liu, Xinyi
[99] *Moderator*

Livesay, Alison (University of Oklahoma)

[11] *Black, White, and Red All Over: Mimbres Oxidized Ceramics*

Archaeologists have conducted much research on Classic Mimbres ceramics (A.D. 1000-1130) in southwest New Mexico. However, there exists a strange oversight of Mimbres bowls fired in an oxidizing environment, in which bonded iron oxides in the paint give it a distinctive reddish color. While still classified as part of the black-on-white design tradition and found in similar mortuary contexts, I argue that these oxidized bowls were intentionally manufactured. The resulting red color and its placement on bowls may be indicative of the symbolic function of these vessels as “visual metaphors” of an Mesoamerican inspired ideology or religion that was present during the Classic Mimbres period.

Livingood, Patrick [327] see Hammerstedt, Scott

Llamoja Vega, Delia [285] see Stellian, Tatiana

Locascio, William (Flagler College)

[311] *New Thoughts on Old Trash: Patterns of Refuse Disposal at El Hatillo/He-4, Panama*

Lithic distribution at the site of El Hatillo/He-4, Panama indicates that Late Ceramic period residents of the village manufactured and disposed of the by-products of manufacture over recently abandoned structures rather than middens. This placed potentially hazardousdebitage out of the way of daily activities, rather than left to be swept up periodically along with other refuse. Hayden and Cannon (1983) discuss ethnographic evidence of such behaviors among Highland Maya, noting that members of communities routinely sort refuse by type and discard those types differentially based on economy of effort, value of refuse, and hindrance of refuse (Hayden and Cannon 1983). The gradual accumulation of particular types of refuse in the same areas or spatial contexts across El Hatillo and over the course of multiple generations of residents must have contributed a certain “fabric” to the village to which the all villagers adapted.

Lockau, Laura (McMaster University) and Megan Brickley (McMaster University)

[28] *Bioarchaeological Examination of Commingled Human Remains from the War of 1812: Perimortem Trauma in the Smith's Knoll Sample from Southern Ontario, Canada*

While underutilized in paleopathological analysis, human remains that are fragmented, disarticulated, and commingled provide valuable evidence for lived experiences of perimortem traumatic injury in the past. These contributions are particularly relevant to samples associated with battle contexts; during warfare, human actions related to interpersonal violence, postmortem treatment, and mass burial increase the likelihood of commingling and fragmentation in assemblages of human remains. This paper will outline the interaction of these processes for the Smith's Knoll sample from southern Ontario, Canada, a collection containing the remains of soldiers who were killed during the battle of Stoney Creek in the War of 1812. This skeletal assemblage is associated with significant documentary evidence for events that occurred during and following the battle, providing a unique opportunity to examine how skeletal evidence for perimortem traumatic injuries compares to conceptions of injury experience based on historical documentation. Available comparative evidence provides context and indicates what evidence may be missing due to the condition of the remains. Results from bioarchaeological integration of paleopathological and historical data at Smith's Knoll indicate how fragmentation, disarticulation, and commingling of skeletal remains from a warfare-related context can develop and ultimately affect the evidence available regarding soldiers' experiences of traumatic injuries.

Lockhart, Jami [30] see Jeane, David

Lockhart, Jami (Arkansas Archeological Survey)

[30] *More Than Just Remotely Interested: Dr. Tom Green and AAS Geophysics*

In 1998, Dr. Thomas J. Green began authorizing the purchase of a full complement of

archaeogeophysical technologies for use at the Arkansas Archeological Survey. At that time, proof-of-concept projects were scarcer than they are today. These technologies were still commonly regarded with skepticism within mainstream archeology. The mention of geophysical survey potential would often elicit comments akin to "we tried that once, and it didn't work." More than 15 years and 150 projects later, the geophysical results presented here are testament to Dr. Green's foresight, initiative, and support, which have substantively advanced Arkansas archeology. Remote sensing has been used for the discovery of countless cultural features, and has provided insights into intrasite organization at both historic and prehistoric sites in all parts of the State and beyond. Examples of these contributions will be drawn from a variety of projects, site types, cultural affiliations, and physiographic settings.

Lodge, Spencer and Steve Black (Texas State University)**[316] Roasting Pits within the Sheep Range in Southern Nevada**

Since early 2012, Google Earth aerial imagery has been used to identify over 200 roasting pits throughout the Sheep Range, on the Desert National Wildlife Refuge in Southern Nevada. Images of these features were ground-truthed and 161 roasting pits were visited where surface observations and measurements were documented. Surveys were also conducted in proximity of each feature to identify additional archaeological elements, such as evidence of habitation. These sites are primarily standalone processing features where most likely a variety of plants (*Agave utahensis*, *Yucca brevolia*, *Yucca schidigera*, and *Yucca baccata*) and other foods were cooked and processed. The total number of artifacts found in association with these features was underwhelming, but preliminary analysis suggests these sites were primarily used within the past 1,000 years. The abundance of these features within the Sheep Range indicates the significant role they played in the prehistory of the area.

Loebel, Thomas [315] see Lambert, John

Loendorf, Lawrence (Retired Albuquerque NM)**[156] Rectangular-body anthropomorphs at Lookout Cave, Montana**

Marvin Rowe radiocarbon dated a solidly-shown rectangular body anthropomorph from Elk Creek Cave in Montana to an age of A.D. 1200. Similar rectangular body figures have now been found at Lookout Cave, Montana. Artifacts recovered in excavations at Lookout Cave include side notched projectile points, wooden arrow shafts, ungulate fetal bones, and four human phalanges. This assemblage suggests the cave was used as a place to seek visions at A. D. 1200 to 1400. Importantly the Rowe date for solidly-shown rectangular body anthropomorphs is confirmed by the Lookout Cave associated artifacts.

Loendorf, Chris (Gila River Indian Community)**[182] Projectile Point Design and Warfare along the Middle Gila River in Arizona**

This paper examines Akimel O'odham technological responses to endemic warfare that occurred during the Historic period (ca. A.D. 1500 – 1900) along the middle Gila River in south central Arizona. Although little archaeological evidence for this conflict has previously been recognized, extensive historical documentation, including both oral traditions and written descriptions, exists for large battles and numerous small raids. This research examines material cultural changes that occurred in response to this conflict. This variation includes changes in projectile point design, which can be used to identify conflict in other archaeological contexts where oral and written histories are unavailable.

Lofaro, Ellen [53] see Wylde, Michael

Lofaro, Ellen (University of Florida), Michael Wylde (University of Florida), Susan DeFrance (University of Florida) and John Krigbaum (University of Florida)**[206] Canids in Precolumbian Peru: A Descriptive and Isotopic Analysis**

Foxes and dogs have a long history of interactions with humans, serving diverse roles from food source to working relationships to pet companions. This research both examines ethnographic and historical stories about canids in the Andes and combines this information with isotopic analysis of two canids from the Chanka site of Sonhuayo (AD 1000-1250) near modern Andahuaylas, Peru. These canids had local strontium signatures and incredibly high carbon values, indicating that they lived locally and consumed huge amounts of C4 plants such as maize. Their location in a looted cave containing human burials also indicates that their value to the society was likely above and beyond that of a food source. Similar examples of canids buried with humans exist on the north coast of Peru as well as the Chiribaya to the

south.

Logan, Amanda (Northwestern University)**[250] Towards a Cultural Biography of Maize in West Africa**

One of Deborah Pearsall's central contributions was tracing the spread of maize into South America using novel techniques, revealing patterns that had previously been invisible, and opening the doors to new debates and understandings about the past. Using this single commodity approach, I examine the adoption and spread of maize in West Africa using archaeobotanical, archaeological, and historical data from Ghana. I offer a cultural biography of maize as its use changed through time and over space, from its initial adoption as a luxury crop, to its commoditization during the Atlantic slave trade, and ultimately its role as a stop gap crop during times of food shortage during the colonial period.

Lohse, Jon (Gault School for Archaeological Research)**[280] Dating Calf Creek Bison in Texas**

This paper presents the results of ongoing AMS radiocarbon analysis of bison remains recovered from Calf Creek or probable Calf Creek components in Texas. Dating Calf Creek has been challenging in most regions where this horizon is found. Modified XAD pretreatment of archaeological samples is adding considerable resolution to our understanding of when this horizon occurred. We present a record of approximately 20 dates from five sites, and discuss what this means for the early Middle Holocene record of the Southern Plains.

[280] Chair**Lombardo, Umberto (Institute of Geography, Bern, Switzerland), José M. Capriles (Center for Comparative Archaeology, University of) and Heinz Veit (Institute of Geography, Bern, Switzerland)****[69] The Paleoenvironments and Adaptive Strategies of the first Amazonian Hunter-Gatherers**

Until recently, very little was known about the early human peopling of central South America and the interior Amazon basin. Here we report on early Holocene archaeological sites, mostly shell middens, located under forest islands (patches of forest surrounded by savannah) in the Bolivian Llanos de Moxos. Two of these sites: "Isla del Tesoro" and "San Pablo" are compared. Geoarchaeological survey permits reconstructing the paleoenvironmental context of these two sites. Furthermore, differences in the archaeological record, unveiled during archaeological excavations, provide new data for discussing the nature of human-environment interactions and the adaptive strategies of the first Amazonian hunter-gatherers.

Longstaff, Laura (University of Idaho) and Robert Lee Sappington (University of Idaho)**[343] The Kelly Forks Work Center Site, North Central Idaho: 12,000 Years of Occupation at the Interface between the Columbia Plateau and the Northwestern Plains**

The Kelly Forks Work Center site (10CW34) is located at the confluence of Kelly Creek and the North Fork of the Clearwater River on the Clearwater National Forest. Archaeological investigations began here in 1969 and occasional small-scale surveys and testing projects were conducted until University of Idaho archaeologists conducted data recovery excavations from 2010 to 2012. A series of 26 radiocarbon dates, beginning at ca. 10,680 BP (Cal BP 12,820), documented a series of recurring occupations from the Western Stemmed Point Tradition (Windust phase) into the historic period. While most cultural materials are comparable to those from the southern Columbia Plateau, lithic tools similar to styles from the northwestern Plains, including a Paleoindian Goshen point and late prehistoric Avonlea points, were also recovered. Onsite activities included tool manufacture and modification, fishing, hunting, and animal processing. Faunal remains were minimal but protein residue analysis on lithic tools identified bison, sheep, dog, rabbit, rat, beaver/porcupine, rat, human, and other antisera. X-ray fluorescence identified obsidian and vitrophyre tools and debitage from multiple sources in Montana, Idaho, and Oregon. Kelly Forks represents a significant setting in the northern Rockies that was used intermittently for more than 12,000 years.

Longstaffe, Fred [113] see Szpak, Paul

Lopez, Xulieta (UNAM-PATP-ASU), Jose Luis Ruvalcaba (IF-UNAM), Manuel Aguilar (IF-UNAM) and Marina Vega (Centro de Geociencias-UNAM)

[253] The Sacred Artifacts of Slate in Mesoamerica: Identification and Provenance.

La pizarra es un material que se ha recuperado frecuentemente en las excavaciones de distintos puntos de America; abarca diferentes temporalidades y fue usado por diferentes sociedades.

Geograficamente, se reportan artefactos de pizarra desde Arizona y Nuevo Mexico, Estados Unidos; en el norte de Mexico, el occidente, el Altiplano central y el sureste mexicano. Informes arqueológico sitúan artefactos en Guatemala, Belice, El Salvador, Costa Rica, Argentina y Peru. Dichos artefactos se han identificado como marcadores de jerarquía social y se presentan usualmente asociados a entierros y ofrendados a estructuras importantes. La presentación abordará los usos de los artefactos por diferentes sociedades mesoamericanas a lo largo del tiempo. Se presentará la identificación mineralógica de la materia prima y las fuentes identificadas hasta el momento para el Altiplano de Mexico. Para la identificación de la materia prima se han aplicado a los artefactos y las muestras geológicas las técnicas PIXE, DRX y XRF.

Lopez Bejarano, Jose Maria (University of Pennsylvania)**[183] Creating and Recreating a Myth: Inca Ritual and Administrative Centers along the Pilgrimage Route in the Peninsula of Copacabana, Bolivia**

Spanish chronicles claim that the sovereign Inca Yupanqui transformed the town of Copacabana on Lake Titicaca into an important administrative center with the settlement of a significant number of members of the elite Inca lineages or panacas. The construction of temples, storehouses (colcas), pilgrims' lodgings (tambos or corpaguasi), shrines, roads, and carvings of the living rock throughout the peninsula of Copacabana are observable, in part, to this day. The purpose of such substantial efforts was to attend the requirements of the numerous pilgrims that visited the region on their way to the sacred rock, birthplace of all nations, located on the Island of the Sun. The Incas also displaced and resettled the local inhabitants and repopulated the region, bringing people from 42 different ethnicities as colonists or mitimaes. This paper explores the massive changes wrought on the physical landscape by these construction projects.

Lopez Bravo, Roberto (Universidad de Ciencias y Artes de Chiapas) and Elizabeth Paris (University of Southern Mississippi)**[191] Maintaining the Western Maya Frontier: Highland Chiapas in the Early Postclassic Period**

This paper examines the multifaceted ways that social identities were constructed and expressed in highland Chiapas during the Early Postclassic period. This region formed part of the western frontier of the Maya linguistic and cultural area, and thus provides a valuable perspective on the ways that the occupants of this area used material culture to define their relationships with their non-Maya neighbors. Ethnohistorical records also suggest that the Maya residents of this area had a highly tense and antagonistic at Spanish Contact, particularly with the Chiapanecs of the Central Depression of Chiapas, who are thought to have immigrated to the area near the end of the Late Classic period. Archaeological data can clarify the degree and nature of the contact between these groups, and the degree of porosity in spatial and social boundaries. Excavations at Moxviquil and Huitepec suggest that previous economic exchanges with likely Zapotec-speaking populations during the Late Classic period were discontinued during the Early Postclassic period, indicating that the porosity of the western frontier decreased. While there is no archaeological evidence for violent conflict along the border, the defensible locations of these sites testify to uneasy political and social relationships during these periods.

López Bravo, Roberto [37] see Paris, Elizabeth

Lopez Corral, Aurelio (Instituto Nacional de Antropología e Historia)**[112] El discurso político versus las esferas no élites: cambios en las dinámicas de interacción en el valle poblano-tlaxcalteca**

Tradicionalmente se considera que los cambios del Epiclásico (600-900 d.C.) al Posclásico (900/1000-1519 d.C.) en el Valle de Puebla-Tlaxcala conllevaron varios procesos sociales entre los que destacan importantes migraciones, conquistas, conflictos interregionales, y la propagación de pequeñas entidades estatales rivales, entre otros. Estos procesos generalmente son estudiados a través de manifestaciones de poder asociadas a los sectores gobernantes. Sin embargo, la cultura material de los grupos no-élite de la sociedad no necesariamente refleja estas condiciones de manera evidente. En este trabajo hablaremos de la interacción social entre las esferas no-élite de algunos de los principales asentamientos de la región poblano-tlaxcalteca, comparando su cultura material y la incidencia de materiales foráneos en los distintos sitios del valle.

[112] Chair

López J., Julieta Margarita [112] see Kabata, Shigeru

Lopez Mestas Camberos, Martha Lorenza

[189] *Las figuras huecas en la tradición Teuchitlán del centro de Jalisco: ritualidad e identidad social*
Las representaciones antropomorfas son abundantes entre las ofrendas funerarias de la tradición de tumbas de tiro en el centro de Jalisco, entre 200 a.C. a 400 d.C. Sin embargo, no se ha realizado un análisis antropológico sistemático de las mismas, a partir de sus contextos de producción, distribución, uso y deposición, especialmente porque en dichas figuras se plasmó la cosmovisión e ideología de la élite dominante, convirtiéndose en imágenes performativas que proyectaron los valores sociales y los sistemas simbólicos en la subjetividad de los individuos mediante los diferentes códigos que las conforman, es decir, que los conceptos y categorías que organizan el conocimiento son directa o indirectamente corporalizados en ellas; de ahí que, a partir de estas representaciones antropomorfas es posible analizar cómo las prácticas sociales estructuran el cuerpo y sus representaciones, construyendo seres sociales vía la internalización de esquemas y valores básicos, al igual que el papel del ritual en este proceso.

López Zárate, José Leonardo [83] see Whittington, Stephen

López-Forment, Angélica [293] see Overholtzer, Lisa

Lopez-Hurtado, Enrique (IEP Instituto de Estudios Peruanos)

[285] *Chair*

López-Hurtado, Enrique [285] see Capriata Estrada, Camila

Lopez-Johnson, Amber (California State University, Los Angeles) and Jaime Awe (Institute of Archaeology, NICH, Belize)

[302] *Preliminary Excavations of Structures B6 and B7 at Cahal Pech, Belize*

During the 2013 field season, preliminary excavations on Structure B6 and B7 at Cahal Pech were conducted by students from the American Foreign Academic Research program with the Belize Valley Archaeological Reconnaissance. The excavations extended 53 meters horizontally in an attempt to examine the Late Classic period architecture on both range structures. The building platform was uncovered and extended across both structures, offering a better understanding regarding the structural transition of the two buildings. The location of structures B6 and B7 in the less-restrictive and public Plaza B infers possible functionality. However, the interior side staircase on structure B7 could infer limited access. The information presented in this paper is effective in understanding how Plaza B functioned during the Classic Period.

Lopinot, Neal [280] see Ray, Jack

Lopiparo, Jeanne [161] see Hendon, Julia

Loren, Diana (Peabody Museum, Harvard University)

[338] *Christian Symbols in Native Lives: Medals and Crucifixes in French Colonial Louisiana*

In this paper, I provide a close reading of the presence of Christian medals and crucifixes on early colonial Native American sites in French colonial Louisiana. Recognizing that consumption of religious artifacts does not indicate wholesale conversion and assimilation, I seek a more nuanced understanding of how the sacred was or was not made secular. What kinds of religious medals and amulets have been recovered from Native American and French contacts? How did Native Americans living in the 18th-century Lower Mississippi Valley creatively and meaningfully incorporate these items into their lives? How do these combinations provide insight into developing tastes and fashions regarding personal adornment, intimate social relationships between Native Americans and French, and, potentially, concerns of bodily and spiritual care?

Loring, Stephen (Arctic Studies Center, Smithsonian Institution)

[73] "These Names," She Said, "These People, Are Our Road Signs." Social Obligations, Toponymy, and Wayfinding in the Barrenlands of Northern Canada.

The lives of the Innu of Nitassinan (interior Labrador) and the Inuit of Nunatsiavut (northern Labrador) share with their ancestors an extraordinary ability to thrive in a challenging tundra and taiga landscape despite widely dispersed group aggregates and very low population densities. Strategies to access local, as well as non-local, resources and maintain far-flung social networks are integral to the survival of northern peoples. This presentation considers ethnographic accounts and historical observations, as well as archaeological remains including quarry sites, portage and travel routes and boulder features, to interpret hunter-gatherer mobility and knowledge about landscapes.

Losey, Ashley

[23] Risk and Climate at High Altitude, a Z-score Model Case Study from Wyoming's Wind River Range

High Rise Village in Wyoming's Wind River Range is one of several anomalous large high altitude habitation sites in North America. The site's climatically sensitive treeline setting presents an opportunity to explore the role climate may have played in its occupation. This study considers climate-driven resource variability and models how foragers could have handled the risk of subsistence shortfall under two climate regimes, stable and variable. The z-score model was used to generate risk-minimizing foraging expectations under the different climate scenarios. Further, an onsite dendroclimatological study generated a highly localized, nearly millennium deep climate reconstruction for the site to characterize periods of relative climatic stability and variability.

Losey, Ashley [23] see Morgan, Christopher

Losey, Robert (University of Alberta)

[53] Identifying Sled Dogs through Bone Functional Adaptation Studies

Sled dogs were critical elements of many northern societies. Despite their importance, there have been very few attempts in archaeology to differentiate sled dog skeletons from those of other dogs. Working with skeletons from canids with known life histories, including Inuit sled dogs, modern house dogs, and northern wolves, we attempt to demonstrate how the shapes of limb bones of these animals vary in relationship to activity patterns. Recent studies have demonstrated that limb bone cross-sections and overall shape are related to the strains placed upon the limb during life. In this study, we utilize computed tomography (CT) scans of canid limb elements to analyze and compare their shapes and sizes. We predict that the limb elements of sled dogs will be more robust than those of sedentary dogs, as bone will in part remodel in accordance with the strain it experiences. Wolf limb elements also should be robust because these animals are highly active and their limbs experience high levels of variable strain.

Although both wild northern wolves and sled dogs are highly active, we predict that the specific activity of sled pulling produces a strain pattern that distinguishes the cortical bone geometry of sled dogs from other canids.

[53] Chair

Lothrop, Jonathan (New York State Museum), Adrian Burke (Université de Montréal), Susan Winchell-Sweeney (New York State Museum) and Gilles Gauthier (Université de Montréal)

[211] Coupling Lithic Sourcing with Least Cost Path Analysis to Model Paleoindian Pathways in the Far Northeast

Studies of prehistoric lithic source areas traditionally focus on geologic sourcing, mining methods, and/or stone tool technology. Where direct procurement of toolstone can be inferred, complementary GIS terrain analysis can provide insights on movements of prehistoric human groups after toolstone acquisition. Researchers of North American Paleoindians have used GIS least cost path analysis (LCP) most commonly to reconstruct possible routes for regional and continental colonization, but this approach can also help infer post-colonization seasonal movements. In the Hudson Valley of New York, Paleoindian fluted point groups heavily exploited Normanskill chert outcrops during the late Pleistocene, as demonstrated by our sourcing studies of geologic and archaeological specimens using X-ray fluorescence (XRF). We combine (1) XRF sourcing results that link Paleoindian sites to Hudson Valley/Normanskill chert outcrops, with (2) regional LCP analysis, to model seasonal pathways of Paleoindian groups in the Far Northeast.

Loubser, Johannes (Stratum Unlimited, LLC)

[248] Seven Millennia of Visitation to the Watson Petroglyph Complex, Southeast Oregon

Markings that qualify as petroglyphs were positively identified on 284 panels within the Watson Complex. At least the following five traditions were observed within the complex: the Great Basin Abstract Tradition; the Columbia Plateau Tradition; the Interior Line Tradition; the Hunting Tradition; and the Plains Ceremonial Shield Tradition. These traditions most likely span a period from at least 5000 BC to AD 1850. Among the 10 test units excavated near petroglyph boulders, the exposure of Mount Mazama tephra and recovery of two Middle Archaic point fragments suggest that site use extended back to 5000 BC. Recovery of a Rosegate series point and a brown ware ceramic bowl fragment shows that Native American site use continued into proto-historic times. Flakes and river pebbles that were found wedged within cracks of boulders near petroglyph surfaces are physical testimonies of ritualized actions.

Louderback, Lisbeth (University of Washington), Joel Janetski (Brigham Young University) and Judith Field (University of New South Wales, Australia)**[148] The Impact of Climate Change on Dietary Choice during the Holocene at North Creek Shelter, Utah**

A common assumption in the Basin-Plateau region is that dietary shifts among plant and animal resources with different energy returns were driven by climate change. Effective testing of this assumption requires an understanding of the relative importance of economic plant and animal resources through time and space. As such, we would expect to observe in the archaeological record evidence for flexible and dynamic subsistence strategies developed to cope with climate change. North Creek Shelter, a stratified archaeological site in the arid Northern Colorado Plateau provides a unique opportunity to investigate changes in diet breadth from the early to middle Holocene, a time of significant climatic variability. Multidisciplinary approaches to investigation of the archaeological record at North Creek Shelter has included studies of macro- (seeds, fruits, leaves) and micro-botanical (pollen, tuber starch grains) remains adhering to ground stone surfaces, hearth features, and rockshelter sediments. Together with independently generated vertebrate faunal data we can test the notion of climate driven subsistence shifts from a foraging theory perspective.

Louderback, Lisbeth [148] see Rhode, David

Loughlin, Michael [279] see Pool, Christopher

Loughmiller-Cardinal, Jennifer (University at Albany, New York)**[319] Reconciling Function and Use – Reassessing the Role of Maya Ceramic Types through Empirical Analysis.**

The function of certain categories of Classic Maya vessels has long been assessed by formal characteristics, iconographic and textual references, and ethnographic analogies. An empirical analysis of a significant sample of such vessels, however, showed that content residues and technical capabilities of the vessels did not and could not match such presumed uses. In order to reconcile this conflict of interpretation and data, it became necessary to reexamine the typology and methods of vessel classification. Ultimately, the theoretical framework challenged how concepts such as 'use', 'function', and 'role' relate to actual ancient behavior and the artifacts by and through which such behaviors were performed. The resulting reassessment revealed broad implications for our understanding not only of these vessels, but also significant implications regarding the ritual and political institutions of Classic Maya elites.

[319] Chair**Love, Michael (Calif State Univ-Northridge)****[279] The Early Mesoamerican City: An Introduction**

Mesoamerica was a land of cities, and the key trait that distinguishes Mesoamerica as a cultural region in comparison to the zones north and south of it is the presence of cities. The first generation of Mesoamerican cities was formed in the Formative or Preclassic era, as populations aggregated in settlements that were political, economic, and ritually prominent. In the functional sense of urban centers as central places, cities were present in the Early Formative, and in the Middle to Late Formative period cities reached a scale that matched or exceeded those considered to be urban in other parts of the world. By the Late Formative urban settlements were present in all of Mesoamerica, linked by economic exchanges as well as cultural exchanges, especially marked by the creation of a high culture that cut across ethnic and linguistic boundaries. This paper considers the nature of early cities in Mesoamerica, the links that united them, and the role that theories of urbanism and urbanization can play in the analysis

of Formative-period Mesoamerica. It will also examine the distinctive nature of first-generation cities, and the role that Mesoamerica can play in constructing theories of early urban settlements around the world.

[279] Chair

Loven, Jeremy (Eastern New Mexico University)

[144] *Subsistence Patterns during the Casas Grandes Medio Period: Results of the Faunal Analyses from Sites 315 and 355.*

Sites 315 and 355 were small agricultural villages occupied during the Casas Grandes Medio period (1200 - 1450 A.D.), and located in close proximity to Paquime, in northwest Chihuahua, Mexico. The faunal analyses of the assemblages from both sites produced contrasting results. The Site 315 assemblage was dominated by jackrabbits and other small mammals, whereas the Site 355 assemblage was comprised predominantly of larger mammals, with a much greater ratio of cottontails to jackrabbits than at Site 315. The extreme difference in the Lagomorph Index, the Artiodactyl Index, and the overall ratio of small to large mammals between the faunal assemblages recovered from the two sites suggests either a change in the local environment, resulting in an increase in the relative abundance of particular species of animals, or differences in the hunting strategies utilized by the occupants of the two sites. Differences in environment and species abundance may indicate that the sites were being occupied at different times, with Site 355's occupation likely occurring later in the Medio period than Site 315.

Lovett, Bobbie [14] see Gonzalez, Juan

Lovis, William (Michigan State University)

[73] *Landscape Marking and Network Maintenance in Big Rough Spaces with Few People: "It's Dangerous to Travel Alone"*

Many aspects of hunter-gatherer network dynamics are strained in circumstances where low population densities are coupled with large spaces and where mobility is difficult. Since all individuals are critical components of such small scale systems, knowledge of member movements and locations, and practices designed to minimize individual loss, figure prominently in network preservation. This goal is facilitated by landscape marking behavior. Here, the practical aspects of network dynamics in such contexts are explored through a case study employing the cumulative regional ethnography of the Innu/Naskapi of Labrador.

[229] Discussant

[73] Chair

Lovis, William [261] see Upton, Andrew

Lowe, Lynneth [253] see Lowe, Lynneth

Lowe, Lynneth (Centro de Estudios Mayas, UNAM), José Luis Ruvalcaba Sil (UNAM), Lynneth Lowe (UNAM) and Emiliano Gallaga

[253] *Nondestructive Analysis of the Lithic Artifacts from Chiapa de Corzo*

Archaeological excavations at Chiapa de Corzo have provided important information on funerary and ceremonial contexts dating back to Middle Formative period. In order to understand the provenance and probable trade routes of the imported lithic objects, such as jade, serpentine, obsidian and iron ores, an important sample has been analyzed with nondestructive techniques. Combined information from Infrared Spectroscopy FTIR, Raman Spectroscopy and X Ray Fluorescence has allowed us to identify their elemental composition and probable sources, thus representing a solid advance on the understanding of early interaction networks in southern Mesoamerica.

Lowe, John (Texas Parks and Wildlife)

[258] *Building a Community of Archaeologists through Social Media*

More agencies, cultural resources management firms, and individual archaeologists are now using social media for promotion and outreach. However, the use of microblogging platforms such as Twitter and Instagram can also help in building a "community of archaeologists" that goes beyond typical job networking. This community aspect is likely just as important, particularly for younger working archaeologists and those still in school. People can commiserate, seek support, share advice and suggestions, and forge friendships outside of a professional setting and beyond the field. It is also a way for archaeologists to join forces to discuss and act on serious issues affecting them, such as the recent

fight concerning the use of volunteers and unpaid interns, known as #freearchaeology.

Microblogging also allows for a different perspective from the common top-down, expert, official narrative. Field and lab techs are able to share their photos and their opinions. Finally, it gives the public a glimpse into the daily lives of archaeologists and the challenges we face, in essence adding a different element of "humanity" to archaeology.

Lowery, Darrin**[114] Geoarchaeology and Paleo-American Prehistory: The Middle Atlantic Delmarva Peninsula Data**

Both soil science and geology play a crucial role in trying to locate pre-13,500 year old archeological deposits. Over two decades of fieldwork, testing, and interdisciplinary collaboration have resulted in a detailed understanding of both the upland stratigraphy and the relative sea level record of the Delmarva Peninsula region. Data from Paw Paw Cove, Mockhorn Island, Miles Point, Oyster Cove, Cator's Cove, Elliott's Island, and Parson's Island have provided us with a comprehensive understanding of climate driven upland landscape formation processes. Three of the sites have revealed Clovis-age archaeological deposits, which provide us with a glimpse into the Younger Dryas influence on the region. Four sites hint at an LGM-age human presence dated to circa 27,500 calBP to 23,000 calBP. Recognizing the controversial nature of these claims, the Delmarva Peninsula archaeological data could represent an early attempt to colonize the Americas. Regardless, the research clearly shows the value of focused regional geoarchaeological syntheses in trying to locate Paleo-American archaeological sites and deposits.

Lowry, Justin (George Mason University), Jason Paling (Plymouth State University) and Colin Quinn (Dartmouth College)**[153] Chiquilistagua Archaeology Project First Season Findings**

The 2013 season at Chiquilistagua archaeological project was the first year of a multiple year research program intended to survey and describe archaeological sites west of Managua. The site of Chiquilistagua was chosen as the first location because of its proximity to potential trade networks. Materials have been found in this year's excavation that may point to lithic production. This paper will present data from the 2013 excavation season as well as some new interpretations about cultural diversity within Nicaragua.

Lowry, Sarah [157] see Patch, Shawn

Lowry, Sarah (New South Associates, Inc.)**[196] Ground-penetrating Radar as a Tool for Large Cemetery Management**

Large cemeteries used over long periods of time present complex management concerns to both those charged with maintaining the cemetery and organizations involved in construction on their periphery. These cemeteries are commonly mislabeled and boundaries are often unknown. Ground-penetrating radar (GPR) is often used to identify the location of burials and define cemetery boundaries. GPR surveys are an invaluable tool in situations where a diverse group of stakeholders are trying to efficiently assess the situation, understand the cemetery, and, in cases where disturbance may be necessary, evaluate their options. Large surveys, however, require specific methodological steps to both organize data and expedite processing. In this paper, we will discuss strategies we use for approaching large and complex cemeteries using examples from cemetery surveys in North America. We will also discuss varying goals for cemetery GPR surveys and how our approach can vary based on client needs.

[196] Chair

Lozada, Maria [11] see Barnard, Hans

Lozada, Maria (University of Chicago)**[203] Middle Horizon Funerary Traditions among the Ramadas in the Vitor Valley of Southern Peru**

Recent multidisciplinary research in the Vitor Valley of southern Peru conducted through the Vitor Archaeological Project offers compelling archaeological evidence of Wari direct intervention in Millo and close interaction with the local Ramadas tradition. Wari influence has been identified within the domestic sphere; however, Ramadas mortuary contexts demonstrate minimal impact from this expanding highland society. In this paper we present the results of our systematic excavation of a Ramadas cemetery, and contrast our findings with Wari mortuary patterns documented in Millo, and other prominent Wari-

influenced sites in the region. Specifically, Ramada burials were found within bounded cemeteries distributed along the Vitor drainage. Tomb construction conformed to the deep boot-shaped designs and commonly contained multiple individuals. We argue that the Ramadas identity was not fully transformed by the Wari, and that their funerary practices remained largely unaltered in spite of the fact that the Vitor Valley of southern Peru was central to the Wari highland administration.

[25] Chair

Lozano, Stephanie (Los Angeles County Museum of Art)

[319] *New Perspectives on Ancient Maya Trade: Educating the Public through the Museum's Collection*

This paper has two main objectives: first, to present new perspectives on ancient Maya trade from museum collections, and secondly to demonstrate how to educate the public regarding information contained in museum collections. The iconographic analysis of several museum pieces from the Los Angeles County Museum of Art reveals various ways trade occurred within the Maya area. The first analysis was of a set of Maya incense burner stands with imported Maya blue pigment. The second analysis focuses on a Maya vessel's carved image, which notes the gift giving of the valued quetzal plumage between two Maya kings that aided in developing social and political relationships. The third analysis is of a pair of quatrefoil-shaped earrings, which illuminates the constant exchange of ideas such as world view and cosmic order. Museums' collections are valuable and informative but often stay dormant as pieces sit in galleries without much exposure to the public. The above-mentioned museum pieces are the basis for a museum education outreach program called "The Maya Mobile" from the Los Angeles County Museum of Art. "The Maya Mobile" is a program that educates 2,500 public school students a year on new perspectives of ancient Maya trade.

Lozny, Ludomir

[288] *Societal Dynamics of the North Central European Plains, 600-900 C.E.*

This paper attempts to explain the transition from non-complex societies to supra-tribal polities in the North Central European Plains between 600 and 900 C.E. The analytical framework for social dynamics in the NCEP 600-900 C.E. involves the process of culture change amplified in the 700-800s C.E. by the reign of Charlemagne and political pressure from the Norse and Carolingian-controlled Great Moravia. Such conditions of political circumscription caused the emergence of a region-wide non-state dissipative polity identified here as the region-wide and Carolingian-inspired Tornow Interaction Sphere (TIS), which declined after the fall of the Carolingian Empire. In result the western parts of the TIS were incorporated into the Ottonian Holy Roman Empire of the 900s C.E., while the post-TIS integrative processes occurring in the eastern part of the region allowed for the emergence of a new state-level polity in the 1000s C.E.. I thus argue that in the seeming absence of critical internal economic and political stimuli, a combination of such causal events as population pressure, warfare, and social circumscription triggered the emergence of the multi-agent polity of the TIS, which subsequently contributed to the rise of a state level polity of the 900s-1000s C.E.

Lubberts, Zachary [295] see Comer, Douglas

Lubman, David (DL Acoustics)

[122] *Sound as Artifact*

Archaeology is the scientific study of lost civilizations through examination of their physical remains. But sound is ephemeral. So how can it be considered a physical remain, or artifact? Stones and bones - the best known artifacts – persist in the archaeological record. Sound can inhere in architecture which is an accepted part of that record. Such sound may qualify as artifact. An example is the chirped echo discovered at staircases of the temple of Kukulkan at Chichen Itza, Mexico. The chirped echo matches sound of the quetzal - a bird with important cultural meanings throughout Mesoamerica (e.g., in feathered serpent myths.) Probably all ancient pyramid staircases produced impressive echoes when new or maintained by re-plastering. Echoes become fainter or inaudible as staircases deteriorate with time. Restoring the original staircase can restore the original sound. Sound as artifact can also arise from a sound's cognitive meaning because of the human propensity to associate sound with spirits. Kings and priests were likely motivated to manipulate sound at sacred sites to impress the laity and to secure priestly tenure. (Think of the Wizard of Oz.) Archaeologists should recognize that sound was more important in ancient times when the world was quieter.

Lucas, Virginia (University of Alabama at Birmingham)**[206] Malabar Period Faunal Use at Three Sites in Brevard County, Florida**

Three Malabar Period Sites, Hunter's Camp (8BR2508), Palm Hammock (8BR2509), and Xavier's Knoll (8BR2510), have been excavated in the Fox Lake Sanctuary in Brevard County, Florida. Faunal assemblages recovered from general excavation units and features were examined to learn more about Malabar Period subsistence. Sampling methods utilized at the site allowed for a more complete perspective on subsistence strategies. The main objectives of this study were to determine the seasonality of the sites and to compare the subsistence strategies between the three sites by determining species diversity, the relative abundance of marine vs. freshwater species and aquatic vs. terrestrial species. The data collected suggests that the people of these sites incorporated turtle and both marine and freshwater species of fish and shellfish, almost to the exclusion of all other species, into the subsistence economy.

Lucernoni, Shannon [137] see Meredith, Clayton

Lucero, Lisa [75] see Scarborough, Vernon

Ludwig, Larry [79] see Huckell, Bruce

Luhman, Hope (The Louis Berger Group, Inc.)**[96] Considering the Possibilities: Cultural Resource Management's Role in Heritage Education**

Most of the archaeological work being conducted today is in a cultural resource management (CRM) or public archaeology context. The many successful heritage education programs developed by industry firms demonstrate the possibilities for engaging the public. Schedule and budgetary constraints challenge the average project yet the goal is consistent — to develop public outreach and educational components for our projects that result in a meaningful experience for all participants. But, how does CRM continue to engage the public? This paper explores CRM's continuing role in heritage education and looks at the potential of everyday technology to enrich our conversations with the public.

Lukach, Katharine (Brandeis University)**[3] Uuhaj: Material and Representational Aspects of Ancient Maya Neck and Pectoral Ornaments**

The art history of Maya pectoral ornaments and their symbolic meanings in the context of Maya society, religion, and conceptions of the body have been elucidated by scholars including Tatiana Proskouriakoff, Stephen Houston, David Stuart, and Karl Taube. We identify long-term stases and trajectories of change in the representation of these objects from the Late Preclassic to the Late Postclassic periods of Maya culture history. We then connect these representational patterns to archaeological reality, interrogating the archaeological record for physical examples of necklaces and pectoral ornaments and investigating production techniques. Excavation and art history provide two incomplete but complementary sources of information about a body of artifacts that were important to ancient Maya concepts of social status and physical vitality.

[3] Chair

Luke, Matthew (Georgia Southern University)**[76] Interactive Interpretative Technologies**

As smartphones, touchscreen displays, and other interactive technologies increasingly become part of everyday life, these technologies can provide archaeologists with the opportunity to present the public with a more thorough and engaging interpretation of their work than was feasible in the past. While the information presented on two dimensional textual and image based interpretative signage commonly employed at sites and museums today is limited due to size and number of signs, smartphones and interactive displays can present virtually and unlimited amount of information via an internet connection. These devices also provide researchers with the ability to present their data in image, audio, video, and 3D multimedia formats creating a more engaging experience for visitors to the site. The development and implementation of this technology can lead to more widespread public interest and engagement in support of archaeological research and cultural preservation. This presentation seeks to demonstrate the capabilities of these technologies to enhance archaeological interpretation.

Luke, Matthew [221] see Greene, Lance

Lulewicz, Jacob (University of Georgia) and Jennifer Birch (University of Georgia)

[263] *Mapping Community Organization in the Georgia Piedmont: The View from a Transitional Late Woodland-Early Mississippian Village*

Renewed excavations and geophysical survey at the Raccoon Ridge site in Morgan County, Georgia, began with the premise that our limited knowledge of Terminal Late Woodland and Early Mississippian communities constrains our understandings of the cultural frameworks that gave rise to complex organizational structures in the Mississippian period. In the summer of 2013 the University of Georgia archaeological field school conducted a combination of archaeological and geophysical survey and excavations at Raccoon Ridge. We employed a combination of controlled surface collection, shovel testing, magnetic susceptibility testing, and mapping of soil profiles and phosphate signatures in order to identify areas of potential precontact settlement remains and to identify areas for excavation. Our investigations produced evidence for multiple occupational loci including midden deposits and a combination of Vining and Woodstock phase ceramics, in addition to earlier Archaic and later Lamar phase components. Our results provide initial insights into local variability in the Late Woodland-Early Mississippian transition in the Georgia Piedmont and an evaluation of the specific methods used vis-à-vis the goals of the project.

Luna Erregerena, Pilar [114] see Chatters, James

Luoto, Miska [201] see Tallavaara, Miikka

Lupo, Karen [40] see Kiahtipes, Christopher

Lupo, Karen (Southern Methodist University) and Dave Schmitt (Desert Research Institute)

[73] *Land-Use and Landscape Features among Foragers and Farmers in the Northeastern Congo Basin*

Forested regions of the Congo Basin are occupied by ethnically distinct but interacting populations of foragers and farmers. The interrelationships between forest foragers and farmers are complex and multidimensional and extend to land use rights and patterns reflected by artificial and natural landscape features. In this paper we discuss differences between foragers and farmers in how landscapes are viewed, demarcated and used. We also discuss how long-standing sociopolitical inequalities between these populations gave rise to and continue to maintain existing land-use patterns.

Luther, Joseph

[14] *The Boneyard: A 12,000 Year History*

The Boneyard is a prehistoric and historic site in western Kerr County, Texas. Recent archaeological investigations have revealed an occupation area with diagnostic artifacts dating as early as 12,000+ years BP, and evidence indicates that the site was continuously occupied through the twentieth century A.D. There are two site numbers associated with the site, one (41KR22) associated with an area on a floodplain, and the other (41KR727) associated with a Pleistocene ground surface on a 60-foot-tall bluff overlooking 41KR22. More than 2500 artifacts have been recovered at the site, with most Paleoindian artifacts from 41KR727. Diagnostic artifacts include Clovis, Angostura, Abasolo, Martindale, Pedernales, and Perdiz points, among others. Documentary and archaeological evidence indicate that a great Native American trade fair was hosted by El Mocho, the Tonkawa chief, on this site in November and December of 1782. More than 2000 Indians participated in this event, and they consumed more than 4000 head of beef over two months, thus the name, "Boneyard." The site was occupied by Lipan Apaches from 1700 to 1878, and battles involving Spanish soldiers, Texas Rangers, the U.S. Army, and Anglo-American settlers took place at this site.

Luthern, Megan (Temple University)

[257] *Examining the Bioarchaeological Potential of Iraqi Kurdistan*

There is tremendous unrealized research potential for bioarchaeological analyses in ancient Iraqi Kurdistan. Excavations at Satu Qala were conducted by the University of Leiden in cooperation with Salahaddin and Leipzig Universities. A total of twelve human skeletons were recovered from these excavations. This paper discusses the bioarchaeological analyses of these human skeletal remains, and examines evidence of health and activity patterns gleaned from this modest assemblage. This pilot study

provides examples of the kinds of informative data that can be drawn from skeletal remains, which in turn build upon and supplement other archaeological methods of inquiry. Despite the small sample size recovered from these preliminary excavations, this paper argues bioarchaeological analyses are an important avenue of investigation, especially in Iraqi Kurdistan, a region that has recently seen a reinvigoration of archaeological research. These bioarchaeological data can greatly enrich this renewed wave of archaeology in the region.

Luzzadder-Beach, Sheryl (Department of Geography and the Environment, University of Texas At Austin)

[330] Wetland Agricultural Commodities in the Maya Lowlands

Improved remote sensing technology, data access, and fieldwork have revealed more ancient wetland agricultural sites in the Maya Lowlands than previously known. This signifies the importance of wetland agriculture to the ancient Maya, and sheds new light on the spatial scale of hydrologic engineering, agricultural productivity, and sustainability. This paper presents current research on ancient Maya wetland fields and hydrologic resources in northern Belize including evidence for economic species. We also discuss environmental potential and limits for commodities produced including tree crops, Zea mays, manioc, arrowroot, and many others that do not show up in the pollen record.

[17] Discussant

Luzzadder-Beach, Sheryl [17] see Beach, Timothy

Lyall, Victoria

[120] Painted Performances in Northern Maya Mural Painting

The archaeologist Roman Piria Chan recorded the mural paintings of Mulchic, a small Puuc site in northwestern Yucatan, in 1964. In his first descriptions the paintings' use of a clearly delineated compositional space and three-quarter life-size figures immediately recalled the paintings of Bonampak writ small. Despite their smaller scale--the program wraps around the interior of a small single-room temple--the images relate an intricate, multi-part ritual, whose protagonists wrestle, dance and slay each other against a shifting landscape. This paper will examine how the painters used the existing architectural framework to parse the narrative into discrete episodes and distinguish between ritual fields. The viewer becomes witness to and participant in the sanctification of the space.

Lycett, Stephen (University of Kent)

[26] Levallois: Looking Back with Forward Planning

The study of Levallois artefacts (e.g. flakes and cores) has been an important topic within Palaeolithic archaeology for more than a century. Studies of these artefacts have been implicated in major debates concerning cognitive and behavioural aspects of evolution in hominins. This paper will take a look at some key aspects of research into Levallois with an aim of identifying future research priorities and questions. It will also review how three different research strategies – artifact studies, experiments, and mathematical modelling – previously used to investigate Levallois might better be integrated. It is contended that future exploitation of the concepts of “internal validity” and “external validity”, which are possessed by these contrasting data sources to varying degrees, is vital to the integration of these different research threads . By emphasising both the strengths, but also the weaknesses of these different avenues of enquiry, these validity concepts may enable a better sense of how the links between them can be strengthened in archaeological enquiry.

[26] Chair

Lycett, Stephen [26] see Eren, Metin

Lyle, Robin

[141] Turkey Gizzard Stones: Ecofact, Artifact and Archaeological Curiosity

Archaeological assemblages in the American Southwest often include turkey gizzard stones, but what do they mean? How can archaeologists learn form this small, colorful but durable ecofact; this recycled lithic artifact or potsherd? How do they function in the living turkey and how do they enter the archaeological record? Identification and context are the keys to accurate interpretation. This long term study of modern wild turkey gizzard stones and clusters from archaeological turkey burials attempts to characterize the normal ranges of variation and add value to the interpretative process. Where turkeys were kept

prehistorically, gizzard stones can help inform archaeologists about cultural and agricultural practices. Even when preservation is not good, gizzard stones are clear evidence of ancient turkeys.

Lyman, R. (University of Missouri Co)**[286] *The History of MNI in North American Zooarchaeology***

North American zooarchaeologists' use of the minimum number of individuals (MNI) quantitative unit began early in the twentieth century, well prior to the discipline's received wisdom that Theodore White introduced it. MNI's popularity grew in the 1960s as a result of White's innovative technique for estimating meat weight and his clear demonstration (if not explanation) of how to determine MNI values from tallies of particular skeletal parts (e.g., left distal humerus). MNI's popularity faded in the 1980s and 1990s once its flaws were perceived to exceed those of NISP and it was demonstrated statistically that NISP often provided equivalent data.

Lynch, Joshua (Center for the Study of the First Americans) and Jim Wiederhold (Center for the Study of the First Americans)**[217] *Experimental Testing of Composite Points, a Pilot Study***

Microblade technology, and implicitly composite point technology, is present across Beringia from the late Pleistocene through the late Holocene. The roles of microblade technology in late Pleistocene/early Holocene Alaskan archaeological assemblages are much debated, but are essential to our understanding of the past. In this paper we investigate composite point technology through actualistic, experimental testing. We present a small scale pilot experiment conducted with replicated composite points made from caribou antler inset with retouched obsidian microblades, similar to those seen in the archeological record of Alaska and Siberia. The points were mounted to atlatl darts and launched into actualistic targets until each point was rendered unusable. Osseous and lithic components of the points were examined for macro- and microscopic use wear. Results are yielding insight into the functional performance and durability of composite dart points. Future directions of this research are also discussed.

Lynch, Sally (McMaster University)**[219] *Feasting and Power at the Moche Site of Huaca Colorada, Jequetepeque Valley, Peru***

Huaca Colorada is a Late Moche (AD 500 – 800) ceremonial center located in the Jequetepeque Valley on the North Coast of Peru. The Late Moche period was characterized by environmental, religious and political changes. Recent evidence suggests that Moche subjects navigated the dynamic Late Moche period through a political economy predicated on ceremonial feasting. In this paper I discuss my analysis of 5908 ceramics from this site. Previous researchers have suggested that the ubiquitous utilitarian cooking vessels and high quality "tableware" in middens surrounding the elite ceremonial precincts are suggestive of feasting patterns. I use chi-square statistical assays to test the significance of the observed distribution of ceramic forms between the elite and commoner sectors. From this data, I argue that distinct modes of commensalism, in particular patron-role and diacritical feasts, mediated a series of diverse political relationships and materialized varied and likely changing religious roles, social identities, and positions of authority at the site.

Lynch, Thomas F. [336] see Urana, Lauren

Lynnerup, Niels [241] see Turner, Sara

Lynott, Mark**[82] *Hopewell Ceremonial Landscapes of Ohio***

During the first five centuries of the Christian era, a remarkable society built a large and elaborate complex of earthen mounds, walls, ditches and ponds in the southern flowing drainages of the Ohio River Valley. The number, size, and variety of forms make them some of the most impressive earthworks in all of North America. The period from c. 200 BC to c. AD 500 (Early to Middle Woodland) witnessed the construction of earthen landscape features covering dozen of hectares at many sites and hundred of hectares at some. The development of the vast Hopewell Culture earthwork complexes such as those at Mound City, Hopewell, Fort Ancient and the Newark earthworks was accompanied by the establishment of wide-ranging cultural contacts reflected in the movement of exotic and strikingly beautiful artifacts such as elaborate tobacco pipes, obsidian and chert spearheads, copper axes and regalia, animal figurines and delicately carved sheets of mica. These phenomena, coupled with complex

burial rituals, indicate the emergence of a powerful ideology of individual and group power and prestige, and the creation of a vast cultural landscape within which the monument complexes were central to a ritual cycle encompassing a substantial geographical area.

[82] *Chair*

Lynott, Mark [82] see Gardiner, Julie

Lyon, Patricia

[281] *Discussant*

Lyons, Natasha (Ursus Heritage Consulting), Tanja Hoffmann (Simon Fraser University) and Debbie Miller (Katzie Development Corporation)

[290] *Picturing New Socioeconomic Realities for Coast Salish Societies of the Mid-Holocene Based on Excavations of a Katzie Village*

Recent excavations at the archaeological site DhRp-52, a large village located in the core of contemporary Katzie First Nation territory, yields significant insights into mid-Holocene resource management and regional socioeconomies amongst Coast Salish communities of the Northwest Coast. The site contains permanent residences, a substantial wetland garden, and evidence of large-scale trade networks. These finds stretch both the temporal and spatial scope of extant ethnographies. This paper uses a series of illustrations to both visualize and contemplate the gender, ritual, social, political, and economic implications of the DhRp-52 evidence for current understandings of mid-Holocene lifeways amongst the Coast Salish.

Lyons, Patrick (Arizona State Museum)

[321] *The D-Shaped Kiva at Point of Pines Pueblo, Arizona*

Emil Haury's 1958 synthesis of the Pueblo III-Pueblo IV period (A.D. 1265-1450) archaeology of Point of Pines Pueblo in east-central Arizona, is the US Southwest's classic case study in how to reliably infer ancient migrations. Field school excavations conducted between 1946 and 1960 at Point of Pines by the University of Arizona Department (now School) of Anthropology and the Arizona State Museum uncovered compelling evidence of immigrants from the Kayenta region of far northeastern Arizona and southeastern Utah. One of the key markers of this group of foreigners is a D-shaped kiva. Because the excavations at Point of Pines Pueblo have never been fully reported, this ancient ritual structure is not as well understood as it should be. A recent study of materials in the Point of Pines archives and a reanalysis of the ceramic assemblage recovered from the kiva have shed new light on the immigrant occupation.

[321] *Chair*

Lytle, Whitney [228] see Heep, Nathan

Lytle, Whitney, M. Kathryn Brown (University of Texas at San Antonio), Eleazar Hernandez (University of Texas at San Antonio) and Christie Kokel (University of Texas at San Antonio)

[252] *Plaza and Courtyard Investigations at Xunantunich, Belize*

Xunantunich is best known for its Late to Terminal Classic occupation. The Mopan Valley Preclassic Project began investigating the site in 2008 to gain a better understanding of the site's Preclassic and Early Classic components. Our research design includes intensive plaza investigations to uncover buried architecture and features. We have concentrated our efforts in two areas of Xunantunich, Group D and Group E. Group D is an elite residential group with an eastern pyramidal ancestor shrine. A previously unidentified small rectangular platform suggesting association with the ancestor shrine was exposed beneath the Late Classic courtyard. This buried architectural feature was unusual and associated with a large number of smashed Preclassic and Protoclassic ceramics. These ritual deposits may represent activities related to ancestor veneration. Group E is a Preclassic site core with an E-group architectural arrangement. Excavations in the plaza at Group E have revealed several important architectural features as well as a possible Preceramic occupation layer. In this paper, we highlight some of our recent finds buried beneath plazas and courtyards and how this research has updated our understanding of the development of the Xunantunich polity.

Ma, Sai

[51] *Analysis of the Economic Structure of the Zhouyuan Site in the Shang and Western Zhou Periods*
This paper discussed the economic structure of THE Zhouyuan Site in the Shang and Western Zhou Periods. Through the analysis of agriculture tools in different periods and at different sites, this paper suggests the economic structure might have changed significantly from the Proto-Zhou period to Western Zhou period. The percentage of agriculture tools declined obviously in the Western Zhou period, and at the same time, a large number of handicraft workshops appeared. Meanwhile, the percentage of agriculture tools in the Western Zhou period is also much lower than that from other sites in the same period, such an Tianma-Qucun site, which indicates that the people living in Zhouyuan site might have other sources of food supply. Nevertheless, the data that could be analyzed is quite limited, so it's still a preliminary conclusion.

Ma, Xiaolin [126] see Pechenkina, Ekaterina

Maas, Lauren [169] see Moreno, Meredith

Macadaeg, Gary [266] see Wilson, Jeremy

MacDonald, Kevin (UCL Institute of Archaeology)

[108] *Sorotomo (AD 1200-1500): Excavations at a Malian Center of Power*

Sorotomo, at 72ha, is one of Mali's largest known settlement mounds. More importantly, unlike most other Malian urban tell complexes, its historical associations are emphatically political and military - not commercial. This makes it an important exception to the rule that West African cities were primarily heterarchical trade entrepôts. Historical sources on Sorotomo are scarce – but tantalising. In the Tarikh es-Soudan, it is recorded that in the Empire of Mali's principality of Jenné, an area between the Niger and Bani rivers, there was the 'sultanate of Zorra.' Likewise, the German anthropologist Leo Frobenius collected oral traditions early in the 20th century which named 'Soro' as a major center of political authority for the Empire of Mali. We (re-)located Sorotomo ('the ruins of Soro') in 2005 during a broader oral historical and archaeological survey of the Segou region. In 2006/2007 and 2009/2010 we undertook excavations, including a large exposure. The results of this fieldwork, C14 dates and subsequent analyses of artifacts, fauna and flora are summarised in this paper.

Macdonald, Danielle [149] see Jones, Matthew

MacDonald, Sarah (Northern Arizona University) and Jack Broughton (University of Utah)

[316] *Late Holocene Resource Depression in San Francisco Bay: New Mammalian Indices from the Yerba Buena Shellmound*

Resource depression has become a key issue in human foraging ecology in archaeology. As high-ranked prey decrease in abundance due to predator (in this case human) activity, people begin to exploit smaller, lower-ranked prey. This transition can be measured using abundance indices, with relative values decreasing over time. In this study, artiodactyl abundance indices were created for the terrestrial faunal material at the Yerba Buena Shellmound site, located on the tip of the San Francisco Bay Peninsula. Relative abundances of artiodactyls and large mammals (due to the relatively high amount of long bone shaft fragments) in relation to lagomorphs and rodents were measured over time. This poster presents the results of zooarchaeological analysis at the site. While it was expected that the relative abundance of artiodactyls and large mammals would decrease over time if resource depression was occurring, the indices instead exhibited an increase over time. There are likely a number of factors influencing these results, including NISP inflation due to increased fragmentation or a shift in foraging patch use. Exploration of ethnographic literature can elucidate these factors and identify others contributing to these results.

Macdonald, Danielle (Centre national de la recherche scientifique)

[335] *Micro-topographies and Human Action: Interpreting Behaviour through Surface Traces*

Surfaces act as a barrier between objects and it is these surfaces which ultimately interact when two objects come into contact. Traces of these interactions are often left on surfaces, allowing us to interpret past actions. Lithic use-wear analysis is based on the concept that different materials and motions will produce distinct traces on the surfaces of stone tools. Recent developments in the field have applied

microscopy techniques developed for the field of surface metrology to lithic assemblages, creating microscopic three-dimensional 'landscapes' of tool surfaces. This presentation focuses on how we make interpretations from these traces and the epistemological challenges faced when asking questions related to human behaviour from microscopic data.

MacEachern, Scott (Bowdoin College)**[198] (Un)becoming States: Their Neighbors and the Wandala South of Lake Chad**

Expansionistic states like Wandala came to occupy the plains around the northern Mandara Mountains of Cameroon and Nigeria in the middle of the second millennium AD. This is conventionally seen as generating a set of core-periphery relations with 'marginal' societies, especially diverse and decentralized Mandara montagnard communities. Archaeological and other data indicate that this image of sociopolitical relations is incorrect: 'state' and 'marginal' identities interpenetrated and mutually constituted each other in the area. Mandara societies did not exist 'against' the state as much as beside, within and around it. Such perspectives may also be useful in understanding modern frontier phenomena in the area.

[108] Chair

MacFarland, Kathryn (School of Anthropology, University of Arizona)**[92] The Tengri's Home: A Deer Stone**

The Scythian, Saka, and Xiongnu religious landscape is differentially expressed across Central Eurasia, throughout the Iron Age (ca. 1,000-100 BCE). This is demonstrated archaeologically by the concentration of architectural features (i.e., kurgans, khirigsuurs, deer stones) and ritualized locations throughout Central Eurasia. Additionally, artifacts and iconography depicted on variably anthropomorphized Deer Stones are predictive of burial assemblages found within kurgan burials throughout Central Eurasia. The closest analog to this religious belief system is Tngriism, a belief system documented by the Secret History of the Mongols (ca. 1227 CE) and in ethnographic accounts of Mongolian prayers documented by Western travelers (Heissig 1970). Tngriism is associated with the pantheon of 99 gods or heavenly beings (Tngri) which are geographically grouped; each grouping is variously worshipped by prayers and sacrifices. Deer stones mark significant locations within the Iron Age Central Eurasian religious landscape. This paper proposes that deer stone sites mark particular spots in which rituals and prayers were devoted to a particular Tngri; deer stone locations are potential "homes" for Tngri. It is also possible that deer stones themselves are physical representations of iconography and other aspects of material culture, such as tattoos, for the Tngri associated with a location and/or region.

[92] Chair

Machado, Lisa [168] see Cowie, Sarah

Macias, Juan Ignacio (Instituto de Investigaciones Antropologicas UNAM/UNICACH) and Citlallitl Villagrana Prieto (Universidad Autónoma de Zacatecas/Colegio de Cervia)**[60] Shrines on High Places: An Analysis of Settlements on Hilltops in North Central Mexico During the Epiclassic (600-900 A.D.)**

For a long time, settlements on hilltops in the north central region of Mexico have been interpreted as a defensive response to risk and confrontation between village societies that inhabited the northern frontier of Mesoamerica. Although such confrontation is evident in some cases, these generalizations about the archaeological record have obscured our understanding of other meanings related to the construction of structures in prominent points in the landscape. This paper aims to make contributions to the discussion on the symbolic and ceremonial nature of some settlements located on the north side of the El Río Verde-San Pedro and Los Altos de Jalisco. Through an analysis of the landscape where these sites are located, as well as other key indicators such as rock art, caves, petroglyphs and altars, we propose two ideas: in the first place, the location of sites on hilltops is not a regional settlement pattern trend, and consequently a situation of confrontation and conflict is doubtful; and second, some of these sites, instead of serving as defensive locations, could have been shrines related to the cult of caves and mountains.

MacIntosh, Sarah (University of Nevada, Las Vegas) and Levent Atici (University of Nevada, Las Vegas)**[84] An Experimental Approach to Antler Working at Körtik Tepe (SE Turkey) during Pre-Pottery Neolithic A (PPNA)**

The recent archaeological projects in southeastern Anatolia (Turkey) have shed new light on the revolutionary socioeconomic transformation of human lifeways during the Terminal Pleistocene and Early

Holocene. Körtik Tepe is an important Pre-Pottery Neolithic A (PPNA; 10th millennium BP) site excavated in the region due to its fascinating mortuary practices that contain rich and diverse grave goods and sophisticated symbolism as well as round architectural structures. This paper presents an experimental work on antler technology to add new data to ongoing zooarchaeological and archaeological research at Körtik Tepe. The experiments specifically probe blank production, antler reduction sequencing, and manufacturing strategies to gain insight into antler working. First, we replicated antler tools to test the validity of our previous morphological and functional categories for the Körtik Tepe antler assemblage. Second, we documented and investigated various manufacturing techniques more closely. Lastly, we contextualize antler work and technology during a period of rapid social, ideological, and economic change at the end of the Pleistocene.

Mack, Stephanie (University of New Mexico)**[10] Sizing Up: Chert Cobble Bed Sourcing within the Petrified Forest National Park**

Petrified Forest National Park is rich in raw material sources: in addition to petrified wood, beds of secondary chert cobbles from the Triassic period (250-200 myr) are an abundant lithic raw material source. Although petrified wood is by far the most exploited lithic raw material in the park's history of human occupation, it is not the best material for flake stone production because while it yields and retains a sharp edge, it still fractures along imperfections caused by crystallization of the original tree ring structure. The cryptocrystalline fracture properties of local chert however are more conducive to lithic reduction (Wandler 2011 et al.). This poster analyzes the availability and average size of chert cobbles within the park in order to identify why chert appears less often than petrified wood in archaeological assemblages throughout the history of occupation of Petrified Forest National Park.

Mack, Jennifer [155] see Lillie, Robin

Mack, Jennifer (University of Iowa, Dept. of Anthropology, Office of the State Archaeologist), Katina Lillios (University of Iowa), Anna Waterman (Mount Mercy University), Joe Alan Artz (Earth View Environmental) and Ana-Monica Racila (University of Iowa)**[241] Osteological Landmark Quantification and the Taphonomy of the Late Neolithic Rock-Cut Tomb of Bolores, Portugal**

Five seasons of excavation at Bolores, a Late Neolithic (2800-2600 cal B.C.) collective burial in a rock-cut tomb in the Portuguese Estremadura, yielded thousands of human bone fragments. Because few articulated segments were recovered from the commingled remains at the site, standard human osteological data collection protocols developed primarily for recording complete individuals found in discrete contexts were found to be difficult to apply. Zooarchaeological methods for recording disordered and fragmentary animal remains yielded more precise information on the site's population and taphonomy. Our methodology, which builds upon the previous work of Christopher Knüsel and Alan Outram, has helped to refine the MNI (minimum number of individuals) and has helped to define use areas within this ritual space.

Mackay, Alexander (University of Wollongong)**[255] The Iceberg's Fundament: The Role of Bipolar Technology in the Later Pleistocene Archaeology of the Western Cape, South Africa**

Descriptions of technological change in late Pleistocene southern Africa have often focused on the outstanding elements of technological systems – those which allow the development of contrasts between periods. To an extent this has led through-time similarities in some technological components to be overlooked. Bipolar reduction is one element of technology that persists through the late Pleistocene, fluctuating in frequency but rarely if ever absent. Using data from several sites in the Western Cape of South Africa this paper documents the role of bipolar as a critical strategy facilitating changes in material selection and flake production that likely underwrote adaptation to diverse sets of conditions from >75 ka through to the Holocene.

Mackenzie, Simon [273] see Davis, Terressa

Mackie, Madeline (University of Wyoming)**[90] Determining the Age and Sex of Rock Art Hand Spray Artists, Johnson County, Wyoming**

The opportunity to determine information about the artists behind rock art rarely occurs, however hand

sprays make this possible. A series of sites within Johnson County, Wyoming contain an unusual amount of hand sprays which were analyzed to learn more about the creators of prehistoric rock art in Wyoming. Rock art panels were recorded through use of stereo photography from which three-dimensional computer models were produced. A comparative collection of hand sprays from individuals of known age and sex were collected and digitally measured. This collection was used to determine a set of measurements which best represented relative and morphologically changes with are related to age and sex. The measurements from the comparative collection were applied to the rock art hand sprays in order to determine the age and sex of individuals who created the site. This study shows the potential of using three-dimensional computer modeling for rock art research and offers a large database of known hand sprays which could be utilized for future research.

Mackie, Quentin (University of Victoria)

[282] *The Middle of Somewhere: Periphery as Centre on the Northwest Coast of North America*
Southern Haida Gwaii lies on the westernmost margin of the North American continental shelf. To the east, it is over 100 kilometers of open water to the British Columbia mainland, while to the west the abyssal depths of the NE Pacific are only a few kilometers offshore. Nonetheless, over 100 terminal Pleistocene or earliest Holocene sites are recorded from its shores, one of the densest known concentrations on the Pacific Coast. These include the 10,700 year old Kilgii Gwaay wet site, which shows a logically-organized and fluently maritime economy. Its location on a small island near the southern end of Haida Gwaii encourages us to characterize it as "remote", perhaps because it is far from a viable terrestrial homeland. In this paper I explore how archaeologists and anthropologists have described and characterized the apparent remoteness of Haida Gwaii. I then offer a commentary based around place, environmental shape, maritime landscape theory, and locational centrality within complex coastlines.

MacLellan, Jessica (University of Arizona), Takeshi Inomata (University of Arizona) and Daniela Triadan (University of Arizona)

[61] *The Foundation of a Very Early Maya Ceremonial Center: Investigations at Ceibal, Guatemala, Since the Harvard Seibal Project*

The lowland Maya center of Ceibal was first investigated in the 1960s, by the Harvard Seibal Project, which showed that Ceibal was founded surprisingly early, by 900 B.C. Building on Harvard's work, the Ceibal-Petexbatún Archaeological Project has conducted further excavations at Ceibal, focusing on the site's earliest components. Takeshi Inomata and colleagues discovered that a formal public plaza was constructed at the site's foundation, around 1000 BC, and that Ceibal's founders were influenced by non-Maya settlements to the west, in Chiapas. The E-group complex at Ceibal is one of the earliest known in Mesoamerica. Early domestic areas have also been uncovered. In addition, Inomata has refined Jeremy Sabloff's original ceramic chronology using new carbon dates. Ceibal's initial ceremonial space and public rituals – including Olmec-style greenstone axe caches – set it apart from the majority of early Maya sites, such as Cuello, which began with small domestic structures and developed public spaces over time. New data from Ceibal have dramatically changed our understanding of interregional interactions within Mesoamerica during the Middle Preclassic period.

Macrae, Scott [302] see Demarte, Pete

Macrae, Scott (University of Florida), Pete Demarte (Trent University) and Gyles Iannone (Trent University)

[335] *Changes in Scale and Survey in the Maya Subarea*

The scale of archaeological survey has significantly changed over the past few decades. It is imperative to understand how these changes of scale and methodology have influenced research. The primary motivation for changes is the development of new technologies and techniques. Surveyors in the Maya subarea have often been at the forefront of these changes. This paper addresses the historical development of survey in Belize, identifying important developments and consequent changes in the research questions. To address recent advances, the ancient Maya center of Waybil located within dense tropical forest of western Belize provides an excellent case study. Over several years Waybil has been subjected to a variety of different survey methods, progressively increasing the scale of analysis. Survey methods utilized at Waybil include tape and compass, theodolite, total station, and recently LiDAR imagery. Examining how survey progressed at Waybil provides insight into how different methodologies facilitated different research questions and ultimately influenced the interpretation of both settlement and agricultural strategies. Archaeologists today have access to powerful survey techniques

increasing the scale of analysis. This makes it ever more important to understand how changes in scale affect not only what questions are asked but also what interpretations are made.

Macri, Martha [193] see Munson, Jessica

MacWilliams, A. C. [47] see Hard, Robert

Madden, Michael [152] see Barber, Michael

Madsen, Christian (The National Museum of Denmark) and Jette Arneborg (National Museum of Denmark)

[29] *The Farms of Hunters in Norse Greenland*

The settlements of the Greenland Norse lasted from c.980-1450 A.D., throughout their existence constituting the ultimate geographical and environmental frontier of Northern Europe. Through the Vatnahverfi-Project, research on settlement and dietary patterns of the Norse has shown how they were quick to adapt to local conditions and resource availability, resulting in settlement and economic patterns quite distinct from elsewhere in the North Atlantic. Our research suggests that these transformations were partly driven by climatic deterioration, but primarily as these exacerbated other already existing societal structures: low population densities and increased isolation from the European networks on which the Norse depended could have left them increasingly vulnerable to change in spite of their apparent economic adaptability.

In our new ongoing research project Diet, Health, and Social Status in Norse Greenland – Human Securities in a Changing World we investigate new and detailed combined evidence of dietary, organizational, and economic developments in the Norse settlements to explore what 'here and now' solutions were available to the Norse, the responsive range of their cultural toolbox and societal setup to change, or even transformation, and how human strategies and solutions impact the individuals and society, in one way or the other.

Madsen, Christian [29] see Simpson, Ian

Madsen, Mark (University of Washington) and Carl Lipo (California State University at Long Beach)

[193] *Cultural Transmission of Structured Knowledge and Technological Complexity: Axelrod's Model Extended*

Cultural transmission models are coming to the fore in explaining increases in the Paleolithic toolkit richness and diversity. Analyses suggest that diversity increased due to relaxation of conformism, due to the effects of demographic expansion on cultural diversity, and the effects of extinction and recolonization in metapopulations. During the Paleolithic, however, technologies increase not only in terms of diversity but also in their complexity and interdependence. As Mesoudi and O'Brien (2008) have shown selection broadly favors social learning that is hierarchical and structured, rather than information which is piecemeal and independent. The addition of structured information acquisition potentially explains how the complexity of technology changes along with diversity. Here, we introduce a variant of Axelrod's model of cultural differentiation, modified such that homophily and conformism refers to the content or "semantics" of traits, instead of simply their frequencies. We examine the conditions under which structured suites of traits develop and differentiate in the model, which can represent the chains of prerequisites, "background" information, and local specializations characteristic of real technology traditions. Our results point to ways in which we can build more comprehensive explanations of the archaeological record of the Paleolithic as well as other cases of technological change.

Magargal, Kate

[207] *Fetching Firewood: Exploring the Relationship between Site Locations and Fuel Sources Access*

to environmental resources is an important factor in determining prehistoric settlement decisions. The location of wood resources, for example, was important to societies with wood-based architecture. Access to woody fuels should also be a constraint for populations subsisting on cooked foods. A more detailed understanding of the distribution of temporary camps and habitation sites relating to the probable distribution of plant communities drawn from historic maps may provide important insight into site location factors relative to fuel sources. This study examines archaeological site distributions as a

function of historic vegetation. The results provide insights into the ecological constraints individuals face within variable environmental landscapes.

Magdalena, Matczak (University of Poznan)

[241] *Emotion in Archaeological and Paleopathological Perspective. Medieval Kaldus in Poland as a Case Study.*

In my paper I present a view on emotions from a social bioarchaeological perspective. I present skeletons with markers associated with diseases from the sites of the early medieval (10th–13th century) Kaldus in Poland. The research questions are: 1) How to find emotions which are hidden in the skeletons? Such emotions might include: fear of the ill, empathy and compassion for them, sadness and sorrow after the bereavement, aggression toward outcasts, hope for healing, respect for the deceased, anxiety etc. 2) How to investigate social relationships between the ill and the healthy? Understanding the emotions of the healthy towards the ill might help clarify the social status of the ill in past communities. In terms of archaeological research, cultural analysis of the so-called anti-vampire or atypical graves might examine the relationship between illness and emotions. Specifically, the setting of the body in the grave might show hidden or explicit emotions of the living toward the dead.

Magee, Peter (Bryn Mawr College, Department of Archaeology)

[67] *Discussant*

Magennis, Ann

[292] *Dietary Implications of Exchange from Kichpanha, Belize*

This paper reports the results of analysis of skeletal and dental pathological conditions and stable carbon isotope ratios derived from collagen and tooth enamel from Kichpanha, Belize. The site was occupied from the Middle Preclassic through the early Postclassic, but the greatest number of skeletons are associated with the Late Preclassic and Late Classic. Maize was an obvious part of the diet throughout the occupation, but protein sources are derived from meat and aquatic sources. Exchange or trade must have occurred for residents of Kichpanha to acquire the aquatic protein sources.

Magoon, Dane (JPAC-CIL), Brianna Maguire (New Mexico State University) and Stephanie King (Virginia Commonwealth University)

[306] *A Bioarchaeological Analysis of Late Prehistoric Health and Diet at the Hatch (44PG51) and Claremont (44SY5) Sites*

The Coastal Plain of Virginia provides a highly dynamic environmental context that contains a diverse array of potential dietary resources. This study provides a bioarchaeological assessment of overall health and diet for two sites located on the south side of the James River: the Hatch (44PG51) and Claremont (44SY5) sites. The assemblages provide a unique opportunity for comparative study, representing different portions of the Late Woodland period with marked differences in mortuary patterning. The Hatch site (MNI = 36) dates to the first half of the Late Woodland period (A.D. 900 to 1250) and the burials were mostly single, primary interments. Claremont Ossuary 1, a secondary burial deposit (MNI = 14), likely dates to the second half of the Late Woodland period (A.D. 1250 to 1607). Both sites had ready access to a variety of marine, riverine, and terrestrial foods, and span the period when maize is assumed to have become a dietary staple throughout Virginia. This study focuses upon the analysis of carious lesions, linear enamel hypoplasias, cribra orbitalia, and porotic hyperostosis to develop a more refined understanding of the potential introduction and impacts of maize agriculture within the Middle Atlantic region.

Maguire, Brianna [306] see Magoon, Dane

Mahan, Shannon [13] see Lail, Warren

Maher, Lisa [149] see Jones, Matthew

Maher, Lisa (University of California Berkeley)

[236] *Occupying Wide Open Spaces? Late Pleistocene Hunter-Gatherer Activities in the Eastern*

Levant

With a specific focus on eastern Jordan, the Epipalaeolithic Foragers in Azraq Project explores changing hunter-gatherer strategies, behaviors and adaptations to this vast area throughout the Late Pleistocene. In particular, we examine how lifeways here (may have) differed from those in surrounding areas and what circumstances drew human and animal populations to the region. Integrating multiple material cultural and environmental datasets, we explore some of the strategies of these eastern Jordanian groups that resulted in changes in settlement, subsistence and interaction and, in some areas, the occupation of substantial aggregation sites. Four years of excavation at the aggregation site of Kharaneh IV suggest some very intriguing technological and social on-site activities, as well as adaptations to a dynamic landscape unlike that of today. Here we discuss particular aspects of the Kharaneh IV material record within the context of ongoing palaeoenvironmental reconstructions and place these findings in the wider spatial and temporal narratives of the Azraq Basin.

[236] *Chair*

Mahoney, Shannon (ASM Affiliates)

[125] *Post-Emancipation Community Building at Charles' Corner in Tidewater Virginia From 1862-1922*

In 1918, nearly 11,000 acres of land on Virginia's lower peninsula were commandeered in order to create the Yorktown Mine Depot, now known as the Yorktown Naval Weapons Station (NWSY). Charles' Corner was one of three neighborhoods on property appropriated by the U.S. Navy and had been a majority African American settlement established during the Peninsula Campaign of the Civil War. Superstructures were razed soon after residents left; however, the homesteads were left relatively undisturbed for the last ninety years. As a result, the archaeological sites encapsulate a critical period of African American history during the socially and economically difficult transition following Emancipation. Phase II archaeological assessments conducted in 2008 focused on four sites representing thirteen different households at Charles' Corner. Recovered artifacts and recorded features, including brick-lined wells and a modified spring, serve as a testament to the African American families who were able to build a community and become economically self-sufficient in the Jim Crow South.

Majewski, Teresita (Statistical Research, Inc.)

[151] *The Business of CRM: Achieving Sustainability and Sustaining Professionalism*

The development of cultural resource management (CRM) as a profession/industry intensified in the United States after key federal legislation was passed in 1974. After several decades, practitioners realized that already established professional organizations, with more scholarly roots, could not fully serve the complex needs of a "profession" that was intimately tied to both heritage advocacy and business. The American Cultural Resources Association (ACRA) was formed in 1995, and today, with over 150 firms as members, is a hybrid between a professional organization and a trade association. ACRA's goal is to be the voice of the billion dollar CRM industry. The association's efforts to provide members with the tools to professionalize and sustain the industry are exemplified by the services it provides: e.g., building a solid image for the industry; supporting and promoting CRM at the national level by "educating" legislators about preservation and the industry; disseminating information via conferences, networking opportunities, workshops, newsletters and updates, printed materials, and the Internet and the World Wide Web; establishing and maintaining relationships with organizations having common or overlapping purposes; collecting metrics on the industry and its practitioners; and establishing and encouraging best practices.

[100] *Discussant*

Makarewicz, Cheryl [149] see Contreras, Daniel

Makowski, Krzysztof, Iván Ghezzi (Instituto de Investigaciones Arqueológicas, Perú), Hector Neff (California State University at Long Beach) and Gabriela Oré (Pontificia Universidad Católica del Perú)

[19] *Networks of Ceramic Production and Exchange in the Late Horizon: Characterization of Ceramic Styles and Clays on the Central Coast of Peru*

Our goal is to reconstruct networks of ceramic production and exchange during the Late Horizon through LA-TOF-ICP-MS, INAA, and petrographic characterization of ceramic styles and clay sources from the central coast of Peru. The Inca empire created the conditions of a mini world system. The products and networks of exchange connected heterogeneous populations, and thus the identities of producers,

traders, and builders of public and domestic spaces did not coincide. Imperial ideology materialized in official architecture and paraphernalia, but not always in vernacular versions. Its producers followed local and regional styles and technologies. We believe the pottery styles preceding the Inca conquest were not that affected by the new scenario. Besides, the empire's political complexity was reflected in a variety of styles, due to the co-existence of local traditions, with production that imitated foreign styles, and the forced displacement of potters. Our research identifies such scenario on the central coast. Focusing on technological traditions, which are more resistant to change, we evaluate hypotheses about multi-ethnic communities and multi-stylistic ceramic production by contrasting compositional groups with clay sources and pottery pastes, wares, and styles previously defined by macroscopic methods.

Malainey, Mary (Brandon University), James Skibo (Illinois State University) and Timothy Figol (Brandon University)

[322] *Using Computer-Assisted Design and Information Sharing Technology to Enhance Our Study of Archaeological Vessels and the People Who Made Them*

The analysis of archaeological pottery has long been recognized as a valuable endeavor because the combination of functional and stylistic attributes provides a wealth of information about the vessel and its maker. Intra- and inter-site comparisons are essential; however, grayscale images of pot fragments may not convey the salient features of vessels. Access to institutional pottery collections can be difficult, expensive and time-consuming. We are addressing these issues by performing morphological, use-alteration and stylistic analyses of individual vessels and creating precise three-dimensional vessel models using computer-assisted design (CAD) software. "Whole vessel" morphological analysis is then performed on the models using the CAD program. We are developing a web-based, interactive searchable pottery database to share our results with others. Each record will include high resolution digital images and detailed descriptions of vessel morphology, decoration and evidence of function obtained through residue analysis and use-wear analysis. Relevant published sources about the site and pottery typology will be included. Our training materials showing how to conduct the detailed analyses and generate accurate CAD models of whole or partially reconstructed vessels using software that is free-of-charge to students and educators are available to interested researchers.

[322] *Chair*

Maldonado, Ronald (Navajo Nation Historic Preservation Dept)

[18] *The Navajo-Gallup Water Supply Project as seen from the Navajo Nation Historic Preservation Department*

The Bureau of Reclamation's Navajo-Gallup Water Supply Project (NGWSP) will bring domestic water to the eastern portion of the Navajo Nation as part of the New Mexico Water Settlement. Construction of the pipeline will directly impact hundreds of ancient and modern cultural resources within the San Juan Basin, a landscape that figures prominently in Navajo clan origin and ceremonial histories. Unlike many previous archaeological projects that have examined a relatively small area, construction of NGWSP will cross the western, southern, and eastern portions of the San Juan Basin. This will allow for a broader examination of the cultural resources across the entire basin. The success of the project in avoiding damage to sites important to Navajo traditions will rely on planning through consultation with the Historic Preservation Department. Perhaps the greater value of the project to the Navajo Nation is that it will provide the Historic Preservation Department with the means to develop a digital database for cultural resource information. In this way, the project will have a long term effect that will benefit the whole reservation.

Maldonado, Antonio [69] see Méndez Melgar, César

Maldonado, Blanca (El Colegio de Michoacan, A.C.), Diego Salazar (Universidad de Chile) and Thilo Rehren (UCL Qatar)

[211] *Precolumbian Mining in the Atacama Region of Northern Chile: Present Knowledge and Future Research*

The second-highest mountain range in the world, the Andes are particularly rich in mineral resources and have given origin to a long tradition of mining and metallurgy, which has led to one of the most important metal industries in the world. While a variety of minerals for gold, silver, and tin occur in the region, copper was and has continued to be the most important metal produced in the south central Andes to this day. Richest veins of copper ore are found throughout the Atacama Desert, where they are broadly distributed as a product of ancient hydrothermal actions. Pre-Columbian populations made various uses of these and a wealth of other minerals, as early as the second millennium BC. The evidence for ancient

mining in the Atacama region of northern Chile is reviewed, and directions for future research in the area are discussed.

Malhi, Ripan S. [147] see Marshall, Charla

Malischke, LisaMarie (University of Alabama, Tuscaloosa)

[221] *The Short-Lived Site of Fort St. Pierre (1719-1729) in Comparison to Other Early Colonial Louisiane Locales throughout the Mississippi River Corridor.*

Fort St. Pierre (1719-1729), located near present-day Vicksburg, Mississippi, was a short-lived and lightly manned frontier fort. Absent were an accompanying French settlement and mission. The site was excavated in the mid-1970s, and the whole assemblage was recently re-evaluated using correspondence analysis. Though correspondence analysis is an interesting tool for examining and comparing whole assemblages, it is best used as a starting point for the discussion of the uniqueness of each site, the forms of adaptation and adjustment adopted by the inhabitants, and how material culture both shaped their lives and was shaped by their individual stories. Several defining artifact classes characterize the site of Fort St. Pierre in comparison to the assemblages from other early Mississippi River corridor locales such as: French forts with civilian settlements, private French plantations, French entrepôts, and contemporaneous Native village sites. Each of these site types have artifact classes that characterize their overall artifact assemblages. Correspondence analysis compares similarities and differences among all of the sites while simultaneously comparing the artifact classes. The results of this process were confirmed by both cluster analysis and seriation analysis, and will be discussed in this presentation.

[221] Chair

Mallegni, Francesco [241] see Mannino, Marcello A.

Malloy, Maureen (Society for American Arch)

[96] *Archaeology Education in the U.S.: Past, Present, and Future*

Archaeology education has been a part of archaeological practice in the U.S. for the past 30 years and is firmly rooted in the discipline's widely shared belief that public education about archaeology is key to protecting and preserving sites. But to be truly effective, archaeology education efforts must look beyond our own discipline's needs and focus on meeting the needs of educators and other publics. It must be situated in, informed by, and evolve with theory and practice in the emerging subdiscipline of public archaeology. As a shared endeavor designed to meet common goals, archaeology education today can both inform and help solve contemporary problems beyond the looting and destruction of archaeological sites. This paper provides an overview of the history of archaeology education as it has been practiced in the U.S. since the 1980's. The development of the award-winning curriculum guide "Project Archaeology: Investigating Shelter," serves as a model of best practice in creating formal archaeology education materials today.

Malloy, Kevin (University of Wyoming) and Derek Hall

[201] *Conspicuous Consumption as Conservation?: The Effects of Climatic and Environmental Change on Park Landscape Design in Medieval Scotland, AD 1100–1600*

Unlike their English counterparts, research into the emergence, function, and symbolism of medieval parks in Scotland has been woefully neglected. Parks emerge in the late twelfth century during the height of the Medieval Climate Anomaly, remain popular through the Little Ice Age, and continue to be used in some form up to the present day. Until recently, descriptions of these sites tended to present parks as one-dimensional, expensive, aristocratic deer hunting arenas, rarely taking into account the wider environmental, climatic, and social context of the period, or any additional site functions. Through a series of archaeological excavations, archival research, and environmental examinations, this on-going study attempts to demonstrate that parks were complex in design by exploring the link between their emergence and functions and the environmental and climatic conditions of the medieval period. This study has found evidence that changing climate and environment played a role in the social issues that led to deforestation and timber depletion, leading some parks to become an avenue for conspicuous consumption through the limiting of resource access, while simultaneously becoming a means of woodland conservation.

Maloney, Tim (Australian National University, School of Archaeology and Natural History)

[217] *Detecting Changing Technological Investment in Bifacial Point Technologies from Northern*

Australia

Analyses of Australian stone tool assemblages frequently depict a two phase industrial sequence, where major change in technological investment is represented only by the appearance of new artefact morphologies in the Holocene, such as bifacial points. Archaeologists working in the Kimberley region of northern Australia have focused lithic artefact studies on the production of pressure flaked points or Kimberley Points. The manufacturing process of Kimberley Points, involving a staged sequence of preform production and different methods of pressure flaking to the margins, was observed ethnographically. Reduction sequences and morphological variability of these aesthetically amazing bifacial points have seldom been contrasted with the morphological range of direct percussion point and retouched flake technologies. Temporal and technological associations between Kimberley Points and direct percussion points are poorly understood. New data from surface and excavated assemblages offers a robust explanation of bifacial point variability within a framework of technological organisation and reduction thesis data. New radiocarbon dates suggest a major shift in technological investment, from an emphasis on maintainable and flexible direct percussion points from around 5000 BP, to a later development of a specialised, staged, and teleological production process of Kimberley Point manufacture beginning around 1000 years ago.

Maloney, Tim [298] see Marwick, Ben

Maloof, George (Centro de Investigación Arqueológica-PH El Diquís)**[288] Long-Term Social Stability in Precolumbian Costa Rica**

Costa Rican archaeology has long been characterized by very prolonged cultural phases with relatively subtle changes in the ceramic complexes which represent each phase. There have been two general explanations for this; first, that there still has been too little research with too few radiometric dates to be able to divide these phases further, and, second, that these long phases are actually representative of the Pre-Colombian societies. Gradual changes in some ceramic types as well as temporal differences in the appearance of these changes between types point to relatively stable societies that existed over the course of 3000 years of permanent settlement. However, as evidenced by changes in architectural practices and the increase in the presence of sumptuary goods, these societies gradually grew more complex, evolving from egalitarian horticulturalists into complex chiefdoms that most probably boasted the existence of a warrior class. Nevertheless, even these seemingly major changes were very gradual. This paper will present data from recent excavations as well as bibliographical research that supports this model and demonstrates social stability in Pre-Columbian Costa Rica.

Malpass, Michael (Ithaca College)**[38] Sonay: A Reassessment of Its Age and Implications for Coastal Wari Sites**

Sonay is considered to be a small Wari center in southern Peru. It consists of an orthogonal compound with very few artifacts. It was dated to the late Middle Horizon by two calibrated dates in the tenth century and architectural similarities to other Wari sites. However, the late dates and absence of good Wari ceramics are an issue. Colleagues have suggested the site represents an attempt by a later local lord to copy Wari material culture in order to improve her or his status. This paper will review the evidence for Wari affiliation and consider the alternative hypothesis. The broader issue to be addressed is how much and what kind of data are needed to establish cultural affiliations. Are some data types given preference over others? Other late coastal or near coastal sites will be discussed for comparison.

Manahan, T. Kam [305] see Munro-Stasiuk, Mandy

Mandel, Rolfe (Kansas Geological Survey)**[117] The Co-Evolution of Geoarchaeology and Cultural Resource Management (CRM): A Great Plains Perspective**

A strong case is made in this paper that the most important factor contributing to the rapid development of geoarchaeology over the past 35 years has been the growth of federally mandated cultural resource management (CRM), and that the Great Plains has been at the epicenter of this development. More than 95% of the archaeological investigations conducted in the Plains since the late 1960s have been tied to CRM projects. During the first decade of CRM, geoscientists were often limited to describing soil profiles at sites and/or providing terrain analysis for survey areas. However, by the 1980s geoarchaeology moved beyond the descriptive stage: geoscientists were providing archaeologists with insights about the nature of the archaeological record. Today, earth-science specialists involved with CRM often are called upon to

map landform sediment assemblages and determine the potential for buried cultural resources. At individual sites, they are usually expected to interpret depositional environments and site-formation processes, and to reconstruct paleoenvironments. Hence, as the needs of CRM evolved, geoarchaeology evolved from something done by a specialist at an old and/or deeply buried site to a cooperative effort among archaeologists and earth-science specialists in a wide variety of archaeological contexts.

[24] Chair

Mandel, Rolfe [24] see Dempsey, Erin

Maniery, Andrea (University of Nevada, Reno)

[262] *The Alluvial Geochronology of Pharo Village and Implications for Cycles of Site Occupation and Abandonment*

The results of geoarchaeological investigations at Pharo Village, a Fremont hamlet situated on a large alluvial fan in central Utah, are discussed in order to reveal ways in which changes in alluvial dynamics contributed to the rise of Fremont farming there as well as the site's eventual abandonment. Cutbanks along Pharo Creek, the meandering stream adjacent to Pharo Village, were mapped and sampled during fieldwork in 2013. Field and subsequent laboratory analysis allowed reconstruction of the alluvial geochronology at the site. Carbon samples from mapped sections and buried paleosols were radiocarbon dated and correlated to additional dates generated from the site's archaeological collection housed at the Natural History Museum of Utah. Buried soils examined in mapped sections indicate a period of stability on the landform where Pharo Village is located, and could explain when and why the Fremont utilized this location. The relationship of high energy flood deposits above the buried soil contributes to discussion of site abandonment. From these data, interpretations are made concerning the contributions of local alluvial shifts to the overall termination of Pharo Village occupations and by association, the larger Fremont Complex around 600 BP.

Manion, Jessica (University of Calgary)

[153] *Memory and Manipulation in the Greater Nicoya*

Ceramic vessels from the Greater Nicoya region of Central America are characterised by great variation occurring throughout several periods. The form and decoration of these vessels are related to their cultural associations, and the examination of the materialization of social memory presented in these vessels helps to elucidate the political landscape presented by different factions and agents. Migrations into the area are cited as the impetus behind changes in iconography and other vessel characteristics between time periods, and these cultural differences are visible through changing aspects of memorialisation, and even erasure, as evident in the material record. Analysis of a collection of vessels from the region reveals how the social memory was presented and manipulated over time, and can give clues as to the identities of the people controlling the formation of social memory within the Greater Nicoya region.

Manne, Tiina (University of Queensland) and Kane Ditchfield (University of Western Australia)

[244] *Barrow Island Arid Coastal Economies of the Pleistocene and Early Holocene*

Barrow Island archaeofaunas provide unique insight into understanding long-term arid coastal economies of Australia's northwestern coast. The island's limestone geology, coupled with its large well-protected caverns, is highly unusual in northern Australia, which is dominated by acidic sandstones creating poor preservational environments for bone. The exceptional preservation of skeletal material at Barrow is evidenced by the recovery of delicate bird tracheal rings and fish cranial elements. The Barrow Island Archaeology Project thus provides an exciting opportunity to explore a range of questions regarding human behavior, including responses to eventual island adaptation. Preliminary findings from the 2013 excavation season indicate that early Holocene economies consisted of mixed marine-terrestrial faunas, while the Pleistocene assemblage was markedly more terrestrial in nature, as the area became part of the coastal hinterland ranges. However, despite significant environmental shifts and increased distance to the coastline during the Pleistocene, people continued to utilize marine resources both as dietary and utilitarian items.

Mannheim, Bruce (University of Michigan) and Alison R. Davis (Isaacson, Miller)

[25] *Cranial Modification in the Central Andes: Person, Language, Political Economy*

Our goal is to interpret the practice of cranial modification in terms of what we know archaeologically, historically, and ethnographically about the relationships between developing personhood, place, language and social differentiation (some which have endured until now). We will track this practice in the south central Andes along a diachronic axis from the Formative period until the time of the European invasion, tracing changes in a child care practice that became an index in an ideological complex that connected personhood to place and language within an "organization of diversity".

During the Formative period in Cusco, a single ubiquitous child care practice produced a variety of non-standardized head shapes that can neither be categorized by form nor used by archaeologists as proxies for cultural or linguistic difference. In contrast, in Inka and early colonial contexts, varied techniques crafted standardized and distinct head shapes that provide one of the few forms of material evidence for the ways in which cultural and linguistic differentiation played out in everyday settings. Our goal, then, is to understand cranial modification as the outcome of social processes differentiated by locality, gender, and age rather than simply as a classificatory device.

Manning, Katie (UCL, Institute of Archaeology)

[187] Cycles of Change in Neolithic Animal Exploitation Strategies

The domestication of plants and animals facilitated major changes in human ecology, demography, and social organization. Despite the seeming advantages of domestication, however, it is clear the process was not a linear one. This paper explores the stability of early domestic economies in Neolithic Europe from the perspective of animal resource exploitation. We focus on a number of regional case studies, using over 400,000 animal remains to assess changing cycles in domestic vs wild animal resource exploitation. We present our results in relation to regional climatic events and explore potential links between animal exploitation strategies on the one hand, and human population dynamics on the other.

Manning, Sturt [200] see Turkon, Paula

Manning, Nikki (University of Montana), Kelly Dixon (University of Montana, Missoula), Pei-Lin Yu (National Park Service Rocky Mountains Cooperative), Mary Bobbitt (University of Montana, Missoula) and Ayme Swartz (University of Montana, Missoula)

[230] What Lies Beneath? The Missoula Historic Underground Project

The American West's urban undergrounds are laced with mystique and lore. Well-known historic undergrounds exist in cities such as Portland, Seattle, and Sacramento. Tales exist of secret underground passages to houses of prostitution, Chinese opium dens, and Prohibition-era alcohol smuggling operations. In some cases, archaeological evidence supports these stories, but it appears that many underground spaces were less nefarious than imagination might suggest. In Missoula, Montana, an urban archaeological survey was conducted to investigate subterranean archaeological features including steam tunnels, sidewalk voids, and a mix of mundane and clandestine basement spaces. Archival, architectural, and archaeological evidence, along with local collective memories were integrated to document extant physical remains of Missoula's urban underground landscape and to explore how the political and social climate of early Missoula may have affected the use of space and the built environment. The results of this research is being utilized to understand how local cultural heritage can be used to develop preservation plans for the remaining physical features of urban planning and urban ecosystem transformations in the American West.

Mannino, Marcello A. (Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany), Sahra Talamo (Max Planck Institute for Evolutionary Anthropology), Renata Grifoni Cremonesi (Università degli Studi di Pisa, Pisa, Italy), Francesco Mallegni (Università degli Studi di Pisa, Pisa, Italy) and Michael P. Richards (University of British Columbia, Vancouver, Canada)

[241] Plenty More Fish in the Sea! An Isotopic Investigation of Hunting and Gathering at Grotta Continenza (Italy) during the Pleistocene/Holocene Transition

Hunter-gatherers increase nutritional yields per land unit by raising predation pressure on specific mammalian herbivores, and extracting more food from their carcasses, and/or by consuming a wider breadth of progressively harder-to-obtain plant and animal resources. To investigate the levels of specialization, diversification and intensification attained by Mediterranean foragers at the Pleistocene/Holocene transition, we undertook carbon and nitrogen isotope analyses on human and faunal bone collagen from Grotta Continenza. The isotopic data show that hunter-gatherers in central Italy acquired their dietary protein mainly from terrestrial herbivores feeding on C3 plants. Mesolithic individuals, however, have higher carbon and nitrogen isotope values than Upper Palaeolithic ones, due

to high levels of fish consumption by the former. The most likely sources of fish protein were trout of the species *Salmo trutta*, introduced by the thousands to Grotta Continenza by its human occupants. Numerous specimens of *S. trutta* yielded carbon isotope ratios significantly higher than those of fish living exclusively in freshwater habitats, indicating that this trout was anadromous in the Mediterranean during the Pleistocene/Holocene transition. Our findings have implications for understanding the productivity of non-analogue Mediterranean environments for prehistoric foragers, as well as their potential for intensification and diversification in resource exploitation.

Mansilla, Josefina [25] see Pijoan, Carmen

Mansilla, Josefina, Carmen Pijoan (Instituto Nacional de Antropología e Historia Méxi) and Pedro Bosch (Universidad Nacional Autónoma de México)

[164] *Huesos humanos del México antiguo con diferentes pigmentos: análisis e interpretación cultural*
En el México antiguo, se han encontrado huesos humanos con pigmentos rojos, azules, negros y amarillos. El objetivo de este estudio es analizar, comparar y discutir los resultados de muestras óseas preispánicas con distintos colores de Jaina, Campeche; Cueva de Los Frailes, Baja California Sur; Chupícuaro, Guanajuato; Tlatelolco, ciudad de México y Tlapacoya, Estado de México. Es importante conocer si los colores, analizando el contexto de los entierros, se deben a diagénesis por reacción del pigmento original con otros elementos (compuestos) del entorno, si son producto de una coloración como parte de un tratamiento mortuorio intencional, o también es posible que la coloración sea parte de un proceso accidental. Las técnicas utilizadas para el análisis fueron: fluorescencia y difracción de rayos X, microscopio electrónico de transmisión, de barrido y de fuerza atómica. Se demuestra que el pigmento rojo en las muestras es hematina, sólo en Jaina el pigmento rojo resultó ser cinabrio. El amarillo de Jaina fue originalmente rojo y las condiciones de su entorno lo transformaron a amarillo. El color negro en los huesos de Tlatelolco es bitumen. Con base en estos resultados se proponen posibles explicaciones de cómo los diferentes colores quedaron plasmados en los esqueletos.

Manthi, Fredrick [209] see Ferraro, Joseph

Manzanilla, Linda (U Nacional Autonoma de Mexico)

[21] *Mobility and Multiethnic Neighborhoods in Teotihuacan: The Teopancazco Case*

Teotihuacan in Central Mexico was a huge planned settlement that housed a multiethnic population. In ethnic neighborhoods in the periphery archaeologists have detected people and behaviors that refer to Oaxaca, Michoacan and Veracruz. Nevertheless, another pattern is emerging where Teotihuacan intermediate elites interact closely with people from Tlaxcala, Hidalgo, Puebla, Veracruz and other areas in a way that suggests the presence of foreign elite individuals, specialized foreign craftsmen, foreign carriers and porters, particularly in the Teopancazco neighborhood center excavated by Linda R. Manzanilla and her team (1997-2005). In this neighborhood population, some stable isotope and paleopathological results suggest that some of these individuals displayed dietary stresses when they were young, and some may have come to the city with caravans moving between Teotihuacan and the Gulf Coast, in order to have a better diet and more opportunities to work. The city needed labor and presented itself as a land of opportunities and abundance. Nevertheless, some of these workers were based in the neighborhood center perhaps as full-time craft workers, who often stood many hours in a squatting position, sometimes with no exposure to the sun. Nevertheless, most of them did not return to their homeland.

[63] *Discussant*

Manzanilla Naim, Linda R. [25] see Alvarado Viñas, Luis

Marabea, Christina [332] see Gilstrap, William

Maran, Joseph [5] see Day, Peter

Marchand, Grégor (Centre National de la Recherche Scientifique (CNRS)) and Thomas Perrin (Centre National de la Recherche Scientifique (CNRS))

[201] *Why This revolution? Explaining the Technical Shift of the Late Mesolithic in Western Europe (7th millennium cal B.C.)*

During the 7th millennium cal B.C., a major change affected the composition of Mesolithic lithic industries throughout Western Europe (except the British Isles) and North Africa. This change took place rapidly 1500 years before neolithization and is one of the major mysteries of Old World prehistory. A wide range of archaeological analyses has shown the spread of a combination of new techniques, new types of tools, and new functions. In this paper we examine the links between these large-scale phenomena and the climatic events of the Holocene, as revealed by recent international research programs.

Marek-Martinez, Ora (Navajo Nation)**[97]** *Discussant***Marie, Shelby****[285] Architectural Characteristics of the Public and Private Sphere of Panquimla**

This paper will examine the architectural aspects of the public and private sectors at the Panquimla excavation site. It is based upon the findings of recent excavations as well as maps to illustrate the possible similarities and differences of the two sectors by analyzing the construction materials and techniques, the use of space, and the inhabitants which occupied the structures.

Marin-Arroyo, Ana Belen [246] see Straus, Lawrence

Marinkovich, Erik (Humboldt State University), Sarah Boudreaux (University of Texas at San Antonio), Nicole Chenault (Humboldt State University), Robert Gustas (University of Alberta) and Ty Swavely (SWCA Environmental Consultants)**[137] A Preliminary Analysis of a Sacbe System in Northwestern Belize**

The scope of this research is to provide a preliminary geospatial and comparative analysis of an ancient Maya sacbe system associated with the Dos Hombres to Gran Cacao Archaeology Project (DH2GC) led by Dr. Cortes-Rincon in northwestern Belize. A small section of this linear feature was discovered at the end of the 2012 field season. During the 2013 field season, extensive survey and geospatial data collection was conducted on the sacbe system and the surrounding environment. Post-processed data analysis displays spatial relationships between the sacbe system, neighboring archaeological sites, and nearby natural resources. Interpretations of spatial relationships and labor estimates are hypothesized using statistical labor equations based on volumetric measurements for this linear feature. This data is compared to the current population estimates of the immediate vicinity in order to determine the size and availability of the required work force. This report also provides a regional comparative analysis of construction methods, raw materials, significance, and the use of these features by communities in the northwestern Belize.

Marino, Marc (University of Central Florida), Lucas Martindale Johnson (University of Florida) and Nathan Meissner (Southern Illinois University Carbondale)**[123] 'Producer-Consumer' Revisited: A Postclassic View of Stone Tool Production from Santa Rita Corozal, Belize**

The 'producer-consumer' model of lithic tools between sites outside of the Belizean Chert Bearing Zone and the site of Colha has been well established for the Maya Preclassic to Terminal Classic Periods (C.A. 1000 B.C. - A.D. 800). Unfortunately, published lithic research on this region during the Postclassic Period (A.D. 900-1539) is scarce, and it is increasingly clear that producer-consumer models may be inappropriate for this time. A recent examination of 71 chert and chalcedony small side-notched points, point preforms, and 1,060 pieces of associated manufacturing debitage from one household residence at the Postclassic site of Santa Rita Corozal, Belize, reveals the presence of cortical flakes, prepared cores, flake blanks, and bifacial thinning flakes. Such information does not coincide with earlier producer-consumer models of Northern Belize that emphasize production occurring outside of site centers. The analysis of the complete Postclassic lithic assemblage from Santa Rita Corozal, including an additional 151 projectile points and associated reduction debris located throughout the site, demonstrates the need to generate new models of stone tool production for the Postclassic Period at this Northern Belizean locale.

Marino, Matt (Washington State University) and Justin Hopt (Washington State University)**[173] Sacred or Secular? Two Perspectives from a Northwest Coast Shell Midden at Dionisio Point Locality, Galiano Island, B.C.**

Studies of shell accumulations tend to focus on themes of subsistence practices and local ecologies or

ceremonial activities and deposition, but rarely do archaeologists give both ideas proper treatment. However, many middens in the Northwest Coast should be viewed as a conglomerate of different activities, both subsistence-based as well as ritual. This study examines midden deposits at Dionisio Point (DgRv-oo6) on Galiano Island, B.C., Canada, which contain both subsistence based features, seen in the thousands of intact and fragmentary fish and mammal bones, as well as ritual deposits seen in the form of human and dog burials. We consider multiple perspectives to examine this midden as both an area of refuse as well as an important ritualistic landmark. In this manner, we can gain information on local economics as well as ritual practices and how they articulate within the same depositional environment. This study thus presents us with an opportunity to reevaluate how archaeologists view middens on the Northwest Coast.

Mark, Robert [156] see Bates, Lennon

Marklein, Kathryn (The Ohio State University) and Sherry Fox (American School of Classical Studies at Athens)

[28] *A Family Affair? Contextualizing Biological Relatedness within Roman-Period Mass Graves at Oymaagac-Nerik, Turkey*

During the second and third centuries CE, multiple mass graves were incorporated into the hoyOk at Oymaagar;-Nerik, adjacent to the nearby Roman town, Neoclaudiopolis (modern day VezirkoprO). Bioarchaeological investigations of skeletal remains from two mass graves have thus far precluded interpersonal conflict as the cause of this sudden mass death, while ancient DNA studies are being undertaken to incriminate or eliminate possible pathogenic agents. Despite the commingled state of human remains, physiological profiles have been constructed from preserved skeletal elements. Additionally, biological relatedness has been inferred from non-morphological traits (e.g., os naviculare). Current research of the Oymaagar; skeletal remains endeavors to illuminate the historical circumstances surrounding (and following) this population decline. For this study, specifically, the demographic and palaeoepidemiological profiles of two mass graves, 7384:009 and 7484:021, are compared within the scope of the [biological] family. The family unit is considered and interpreted within the sociobiological, sociocultural, and sociopolitical environs of Roman Oymaagar;-Nerik and the wider Roman world.

Marks, Anthony [26] see Rose, Jeffrey

Marks, Theodore (The University of Iowa), Grant McCall (Tulane University), James Enloe (University of Iowa) and Jordan Krummel

[109] *Preliminary Report on New Excavations at Mirabib, a Middle and Later Stone Age Rockshelter in the Central Namib Desert, Namibia*

This paper provides a preliminary report on new excavations at Mirabib rockshelter, a Middle and Later Stone Age site in Central Namib Desert in west-central Namibia. This site was first excavated by Beatrice Sandelowsky in the late 1960s, providing important evidence of prehistoric human occupation of the hyper-arid regions of western Namibia. These early excavations focused on the LSA remains and succeeded in demonstrating surprisingly early and complex patterns of pastoralist economy prior to 1500BP. Our excavations offer some new perspectives on these findings, providing additional chronological information through AMS and OSL dating. We also consider both cultural and geological processes of site formation, as well as the changing nature of site use activities over time. Finally, we discuss the Upper Pleistocene MSA archaeological remains, which were only analyzed ephemerally during the original fieldwork activities due to limitation in terms of available dating techniques. Our findings confirm a substantial presence of humans with MSA technologies in the late Upper Pleistocene with unique forms of foraging behavior, representing adaptations to extreme regional environmental conditions.

Marlowe, Frank [16] see Raichlen, David

Marlowe, Frank (Lecturer, University of Cambridge, Biological Anthropology)

[73] *Hadzaland*

The Hadza, hunter-gatherers of Tanzania, occupy an area of 4,000 km². There are about 1,000 Hadza who move several times a year. We researchers have asked individuals where the boundaries of Hadzaland are, a question which some can and do answer with ease and accuracy. One common feature is a lower elevation (< 1,700m), lower than that of surrounding tribes, where the Hadza say it is

too cold. One location that is special has giant rocks that when slapped with the hand sound a bit like timpani drums. The most puzzling thing is that there are several places in Hadzaland with rock art, which is no longer created. When asked if the art was made by their Hadza ancestors, some say yes, many others say they have no idea. One thing Hadza do sometimes mark is bee hives. When the hive is almost ready to raid, a man often finds a good rock to place in the entrance of the hive to block entry by other animals until the honey is ready. They appear to make a claim of ownership, but other men will usually simply remove the rock and take the honey without any qualms.

Marquardt, William (New Mexico Highlands University)**[42] Domestic Violence in the Ancient Puebloan World**

Conflict, whether interpersonal or intergroup, often leaves its clear and dramatic imprint in the archaeological record, often visible in the form of burned structures, hastily abandoned sites, and traumatic damage to skeletal remains. Violence in the pre-Hispanic Southwest has drawn the attention of a number of archaeologists over the years. However, among many Ancestral Puebloan cultures, the context of violence is poorly understood. Recent studies have begun to refute the notion of "the peaceful Puebloans" that was popular among archaeologists in the 1930s. However, little research has been devoted to the cultural context of violence among these peoples. Perhaps the least studied aspect of prehistoric violence is that directed toward women. At a number of Ancestral Puebloan sites throughout the Southwest – such as the La Plata Valley of northwestern New Mexico – there is a high incidence of traumatic skeletal injuries among women. Why or how these women came to be the victims of such violence is unknown. The purpose of this research is to investigate the incidences of violence through time and across space and to better describe explain the context of violence against women in the Ancestral Puebloan world of A.D. 750 to 1350.

Marreiros, Joao (NAP.FCHS. Universidade do Algarve (Portugal)), Eduardo Paixao (NAP. FCHS. Universidade do Algarve (Portugal)), Nuno Bicho (NAP. FCHS. Universidade do Algarve (Portugal)) and Juan Gibaja (Consejo Superior de Investigaciones Cientificas, I)**[116] Living and Hunting during the Mesolithic. Lithic Functional Analysis from the Cabeço da Amoreira Shellmidden (Muge, Portugal)**

During the last decades, the Mesolithic shellmiddens of Muge (Central of Portugal) have been seen as the result of an intensive human ecological exploitation associated with the onset of the Holocene climatic shifts ca. 8200 ka cal B.P. Based on techno-typological patterns and artifact density from archaeological deposits, each shellmidden was linked to specific functionality, in a residential and logistic land-use strategy. Recently, new data from the site of Cabo da Amoreira seems to show evidences of different diachronic functionalities and spatial organization, within and between sites.

One of the most interesting novelties is the presence of several archaeological horizons adjacent to the shellmidden deposit characterized by abundant lithic remains. In this paper we present preliminary lithic use-wear analysis from two loci: (1) shell mound and (2) one excavation area outside the midden, characterized by a rich archaeological horizon. Despite the initial idea that all human activities were conducted in the midden, this new data shows that surrounding occupation areas have been used as shellmidden support spaces. This data lead to new interpretations for shellmidden diachronic construction phases and intra-site settlement organization.

Marreiros, João [116] see Pereira, Telmo

Marsh, Laura (Stanford University), Isabelle Druc (University of Wisconsin) and Cesar Sara Repetto (Proyecto Arqueológico Chavín de Huantar)**[19] Sampling Paste for Thin Section: An Andean Case Study of the Initial Steps of Petrographic Research**

Thin-section analysis yields information about the manufacture and origin of archaeological ceramic material. However, due to associated costs and destructiveness to samples, it is not feasible for overly extensive amounts of ceramic fragments. Therefore, careful selection of sherds plays a large role in determining the quality of the following analysis. In the case of the monumental center of Chavín de Huántar, Peru, the process of selecting samples for thin-section analysis to investigate ceramic origin and contact with contemporaneous sites began with choosing sherds for the preliminary macroscopic analysis. Key contexts were chosen based on the presence of Chavín-phase ceramics, diagnostic fragments, and various morphological and decorative traits that suggested significant styles or patterns of use or purpose. Sherds were analyzed for form, decoration, treatment, and other basic attributes. A digital USB microscope was then used to examine and photograph the pastes, which were then grouped

by similarities in matrix and inclusions. From within these groupings, samples with sufficient diagnostic information from the macroscopic analysis, large enough size, and enough plain area to allow for cutting without too much loss, were chosen for thin-sectioning, in order to achieve the most representative sampling of pastes possible from the contexts under study.

Marsh, Ben [41] see Johnson, Peri

Marsh, Anke (Institute of Archaeology, UCL) and Mark Altaweel (Institute of Archaeology, UCL)

[257] *Palaeoenvironmental Investigations in the Shahrizor Plain, Iraqi Kurdistan*

In 2011, University College London initiated a project focusing on palaeoenvironmental research in the Shahrizor plain of Iraq, with University of Munich and University of Heidelberg, who are leading the archaeological survey and excavations of a large multi-period site respectively. The primary research goal of the project is to apply a multidisciplinary approach to bring forth new information on the region's palaeoenvironment, history, and archaeology, in order to better understand how these three components interrelated and influenced the region's social and socioecological development in the past. Before 2011, little palaeoenvironmental research had been done in Iraqi Kurdistan, and nothing regarding change during the Holocene in the Shahrizor plain. The Shahrizor stretches from the northwest to the southeast along the western edge of the Zagros and southeast of Sulaymaniyah between Arbat and Halabja. In order to better understand Holocene climate and vegetation change in the region, several programs were initiated, including trenching and coring, speleothem collection and analysis, and sampling and analysis of sediments and microfossils (particularly phytoliths). Preliminary findings are presented here, mainly derived from sedimentary and phytolith analysis of onsite and offsite contexts from the area north of Halabja, which formed part of a PhD research project.

Marshall, Maureen [20] see Chazin, Hannah

Marshall, Charla (ISAS-UIUC), Cris Hughes (Department of Anthropology, UIUC), Timothy Pugh (Department of Anthropology, Queens College CUNY) and Ripan S. Malhi (Department of Anthropology, UIUC)

[147] *Mitochondrial Genetic Variation among Burials from the San Bernabé Mission, Tayasal: Preliminary Results from an Ancient DNA Feasibility Study*

The 2010-2012 excavations of Tayasal's San Bernabé Mission uncovered 28 graves, or sepulchers, buried beneath the church floor. Discovered in nine or more rows, these graves contained the remains of one or more individuals, and were possibly organized by kinship ties. Given the paucity of Spanish artifacts recovered from the San Bernabé excavations, it is likely that Colonial period Maya were the primary grave occupants, although persons with Spanish, African, and non-Maya indigenous ancestry might have been included among the burials as well. To assess the feasibility of ancient DNA (aDNA) research that may lead to insights into ancestry, identity and health during the Colonial period at Tayasal, we attempted to extract DNA from teeth from seven San Bernabé burials. We successfully recovered mitochondrial DNA from five individuals, which were assigned to Native American haplogroups A and C. A sixth individual yielded a mitochondrial haplotype indicative of European ancestry, although additional data are needed to confirm this result. Furthermore, our preliminary analysis shows that co-buried persons did not always share the same mitochondrial DNA. The larger implications of this study are presented, and future goals for the aDNA project are discussed.

Marshall, Maureen (University of Chicago)

[291] "Sharing Death": Double Interments in the Late Bronze Age South Caucasus

The Late Bronze Age (1500-1150 B.C.) appears to be a period of dramatic restructuring of political society in the South Caucasus with the sudden appearance of hilltop fortresses that demonstrate evidence of administration and ritual activity. Mortuary practices seem to be dominated by individual interments and examples of 'warriors' and 'metalworkers' that point to emergent socio-political complexity. Double and multiple interments have also been recorded, but are most commonly interpreted as "couple burials" or "mother and child" burials. Such interpretations imply a kinship system understood in terms of 'marriage' and birth. Yet, there are numerous examples of individuals with the same skeletal sex buried together as well as multiple interments varying in both age and sex. Drawing on anthropological perspectives that view kinship as transpersonal relations as well as the bioarchaeological emphasis on practice and lived experience, this paper discusses the double interment of two adult individuals in the Tsaghkahovit Plain, Armenia. Using an osteobiographic approach, I explore how

subjects 'shared death' and life in Late Bronze Age society.

Martin, Debra (University of Nevada/Las Vegas)**[67] *The Tomb at Tell Abraq (2200-2000 BC): Demographic Structure and Mortuary Complexity***

The tomb at Tell Abraq (c. 2200-2000 BC) was the repository for over 400 individuals of all ages and both sexes. Situated on the Persian Gulf near Sharjah and Um al-Quwain in the United Arab Emirates, the tomb contained the commingled remains of at least 276 adults and 127 subadults. Of the subadults, there was a relatively high frequency of premature (28%) and newborn (9%) infants in the tomb. This overview provides the demographic structure of the tomb population based on a detailed MNI study, and the complex nature of the mortuary program. Based on the overall MNI determined by the talus bone, observed versus expected ratios show that many long bones as well as hands and feet are underrepresented. We propose these can be accounted for by excavation and retrieval strategies. The mortuary program appears to be what Boz and Hager have described as being "primary disturbed". Grossly underrepresented elements such as the cranium could have been removed and used in other contexts. This late Bronze Age tomb is unusual in many ways and does not fit any Umm an Nar patterns.

[28] *Discussant***[126] *Chair*****Martin, Terrance (Illinois State Museum) and Dennis Lawler (Illinois State Museum)****[53] *Animal Pathologies at French Colonial Sites in the Midwest: Case studies of White-tailed Deer at Forts St. Joseph and Ouiatenon***

Investigations of large archaeological faunal assemblages often reveal unique incidences of animal pathology. Although interesting as curiosities, pathological specimens can disclose insights on past animal populations and the human groups that were exploiting these populations. Four specimens from the Fort St. Joseph (20BE23) and Fort Ouiatenon (12T9) sites illustrate incidences of trauma suffered by white-tailed deer (*Odocoileus virginianus*) at eighteenth-century trading posts that were inhabited by French settlers and their Native American wives and trading partners. Gross examination and application of micro-computed tomography shows a pattern of severely broken front legs on individual deer that survived their initial injuries long enough to permit bone healing and remodeling before the deer ultimately became the victims of Native American or French hunters. Specifically, environmental sheltering from predation, food and water availability in immediate surroundings, and fractured bone ends in reasonable apposition could accomplish functional healing through the downward pull of gravity, heavy limb weight, and limited movement. Individual diagnoses can reveal details about the traumatic injury, malnutrition, and/or infections, and the resiliency of the animal in surviving injuries that initially might be considered to be fatal.

Martin, Debra [64] see Hammond, Krystal

Martin, Erik (University of Utah)**[132] *The Evaluation of Costly Signaling as a Motivator in Human Subsistence Behavior***

The application of optimal foraging theory to the analysis of human subsistence remains provides valuable insights into variability in behavior over time. Analyses utilizing this theoretical framework often cite the caloric return rates of resource types as predicting prey choice. However, a body of literature within anthropology, biology, and economics known as costly signaling theory predicts that there are social benefits to individuals who communicate their fitness to an audience through the production of honest signals. If the acquisition and distribution of difficult to acquire resources meet these criteria, the fitness benefits of costly signaling via subsistence activities may also be an important consideration in understanding prey choice. Here I construct a formal signaling model and evaluate its predictions using ethnographic accounts of feasting. I then examine the archaeological implications to assess whether ecological conditions during particular periods of North American prehistory would have favored the signaling benefits of prey acquisition as an alternative to caloric return rates in motivating subsistence behavior.

Martin, Lana (University of California Los Angeles), Richard Lesure (University of California Los Angeles) and Katelyn Bishop (University of California Los Angeles)**[140] *The Neolithic Demographic Transition in Mesoamerica and Its Implications for Early Farming Dispersals***

In the Near East and elsewhere, the Neolithic Demographic Transition (NDT) refers to the relatively rapid

increase in population and population growth rate following a shift in subsistence economy from one based on foraging to one based on farming. In Mesoamerica, the NDT was a more gradual process that unfolded over the entire Formative period (1800 BC-A.D. 200). An analysis of published records of over 6700 prehispanic burials, focusing on changing proportions of juveniles 5 to 19 years of age, suggests that fertility rates rose steadily over the second and first millennia BC. The gradual pace of the demographic transition was likely related to the low initial productivity of maize. Comparison of our results with NDT patterns observed in other regions provides insight into the large-scale picture of the transition to agriculture in Mesoamerica, specifically models of early farming dispersals.

Martin, Paul (University of Mississippi)

- [283] *Evaluation of Geophysical Methods in the Detection of Toddler Sized Burials within the First Six Months of Burial*

Geophysical survey has become a major tool in the search for clandestine graves associated with missing persons cases. However, relatively little effort has been made in evaluating different instruments. GPR, magnetometry, resistivity, conductivity and susceptibility survey data were collected every 30 days for two research plots: an open grassy area and a wooded area. Each area contained five pig burials representing toddler-size (less than 50 pounds) remains and two areas of disturbance or false burials. The resultant imagery is evaluated in terms of relative utility in burial detection.

Martindale, Andrew [173] see Letham, Bryn

Martindale, Andrew (University of British Columbia)

- [290] *Cans of Worms: Explanation in Tsimshian Archaeology*

The distance between the fragmented and imperfectly sampled archaeological record and the grandeur of history can be spanned, as Ken Ames suggests, by rope bridges of entwined logical cables, including general and specific analogies. In Tsimshian archaeology the weakest of these are ethnographic analogies, although the weakness emerges from the archaeological analogy rather than the ethnography. In many ways, the ethnographic analogy is a chimera as the ethnographic subject is contemporary rather than historic. The archaeological expectation that the ancient can be understood in terms of the modern is, as many have noted, teleological. The deeper error, however, is the lack of explanation in archaeology for cultural continuity beyond the parameters of adaptation (both homeostatic and evolutionary). In contrast, the source of ethnographic data on history, the oral records of Tsimshian people themselves, provide clear scholarship on both the nature and causes of historical change. In this paper I outline the Tsimshian explanation for the emergence of their own 'complexity' and compare this to extant causal explanations in archaeology. The data are a best fit to the former, suggesting that orthodox archaeological explanations of these developments are, as many ethnographers have argued, vulnerable to ethnocentrism.

Martindale Johnson, Lucas [123] see Marino, Marc

Martinez, Gustavo (INCUAPA-CONICET/ FACSO-UNICEN), Luciano Prates (CONICET-FCNyM. UNLP), Gustavo Flensburg (INCUAPA-CONICET; FACSO-UNICEN), Luciana Stoessel (INCUAPA-CONICET; FACSO-UNICEN) and Ana Paula Alcaraz (INCUAPA-CONICET; FACSO-UNICEN)

- [6] *Radiocarbon Chronology of the Humid Pampa Subregion of Argentina: Archaeological Signal, Demographic Processes and Population Dynamics*

The Humid Pampa subregion of Argentina has been inhabited by hunter-gatherer populations since ca. 12,200 14C years BP. Archaeological research indicates that during the Final Late Pleistocene and the Holocene the areas that composed the subregion show differences in chronological trends as well as intensity of occupation. Also, models that proposed population continuity and/or discontinuity implying expansion, contraction, replacement or even extinction have been suggested. The discussion of these issues has been focused on specific lapses such as the early mid-Holocene and the early late-Holocene. In this work, a complete data base of all radiocarbon data available for the subregion is compiled, and temporal frequency distributions are used to assess the variations in the intensity of human occupation through time. Within this framework the above mentioned hunter-gatherer demographic processes and population dynamics are discussed.

Martinez, Valentina and Carmen Sanchez (Florida Atlantic University)

- [11] *Ceramic Technological Traditions in Coastal Ecuador*

The southern coast of Manabí province, Ecuador, has been the scenario of a long term research project focused on the complex interactions between humans and nature; in particular we are interested in the exploitation of resources through time in this highly environmentally diverse region. Our survey has identified more than 300 sites distributed in at least 4 broad environmental zones. For the later periods, domestic settlements have a tendency to concentrate alongside the coastal line and to spread throughout the riverine ecotones. Salango site 40, located in the riverine ecotone yielded, approximately 20 clay ovens, between complete and incomplete. From the site, a sample was selected to analyze ceramic technological traditions and food preparation traditions. A variety of approaches were used to recognize cultural dynamics: ethnoarchaeology, ethnography and material culture analysis. The results were surprising. Although, ancient technological traditions of pottery making have disappeared in the area, food preparation traditions have persisted throughout the centuries. Furthermore, food preparation traditions have undergone changes (as suggested by the ethnographic data) but they have been continuous for at least the last 2000 years (as suggested by the archaeological data).

Martinez, Marco (Archaeologist) and Dolores Dávalos (MA Student at Tulsa University)**[47] Today's Understanding of Casas Grandes' Architectural Variety**

Recent investigations in the Casas Grandes area have led us to a new perspective regarding its architectural variety. In the past, the Paquime construction type was accepted as a norm for other types of pueblo construction inside the region. Now we can find other types outside Paquime; among its closest neighbors.

The first one is comprised by Paquime's thick-walled architecture described by Di Peso, the second one is a thin-walled construction type found in several sites inside the core area, like site 231; and the simplest architecture, a third type characterized by really thin walls. The former being found inside plazas, needs minimal construction. Using visual, descriptive and statistical comparisons to divide recently excavated Casas Grandes sites by their architectural differences, we will try to demonstrate the relationship between the three architectural types first described. Also, current chronological data and associated materials help us to point out chronological similarities and the short or long term use of such construction types.

As a result, we expect to find out that the region of Casas Grandes had a significant population growth in where the addition of temporal edifications in the sites involved was used in a time period.

Martinez, Valentina [103] see Van Voorhis, Laura

Martinez, Silvia and SERGIO SUAREZ (INAH-PUEBLA, MEXICO)**[112] Cholula y Cacaxtla; ciudades hermanas?**

Cholula ciudad milenaria, con una ocupación casi ininterrumpida que supera los dos milenios, tiene una etapa compartida con la vecina Cacaxtla y por ende, esperaríamos encontrar similitudes en su arquitectura, cerámica y costumbres funerarias. Ya las fuentes tlaxcaltecas, entre ellos Muñoz Camargo, citan con frecuencia la relación existente entre Tlaxcala y Cholula en los años previos a la conquista. Así por ejemplo menciona el caso de diversos individuos que siendo de Tlaxcala, se fueron a vivir a Cholula, como una muestra de la relación que existía entre ambas ciudades. La etapa de interés corresponde al Posclásico Temprano, momento en que Cholula empieza a repoblarlse luego del abandono que sufrió al final del Clásico, representada en la ciudad por pequeños altares localizados encima de La Gran Pirámide y en su entorno inmediato, asociados a una cerámica que por sus formas y acabados resulta diferente a la del Clásico que le antecede y a la polícroma que trajeron los grupos tolteca chichimeca que arribaron en el siglo XII y que se atribuye a los Olmecas Xicalancas, grupo que también pobló Cacaxtla; siendo a partir de estos elementos que trataremos de mostrar la similitud o discrepancia que existió entre ambas entidades.

Martinez, Desiree (Cogstone & Harvard University)**[142] The Ramifications of the Historical Romanticism of the Catalina Island Tongva**

From giants to white Indians to Indian princess clutching the sides of a large stone bowl, explorer's journals, historical newspaper accounts, "scholarly reports," and popular literature provide interesting depictions of the Catalina Island Tongva. Since 2007, the Pimu Catalina Island Archaeology Project has been collecting provenance and provenience information about Catalina Island's archaeological collections. This research has uncovered some accounts that often paint an unrealistic and romanticized

image of the Catalina Island Tongva. This paper will describe some of these fanciful images and stories from a variety of sources and discuss how these representations have influenced the public's perception of the Island Tongva and how they have derailed the expansion of scientific research surrounding the Tongva on Catalina and the mainland.

[142] Chair

Martinez, Eva

[197] *Trajectories of Social Change in Prehispanic Honduras*

This paper deals with evidence derived from the comparison of different social trajectories in regions of western, central, and eastern Honduras, which points to three common factors that stand out as crucial elements for understanding the development of social hierarchies in those regions: access to prime agricultural land, craft production and local exchange and interregional interactions. Each of these factors can be understood as components of two basic political strategies: economically or prestige-based ones. The articulation or combination of these factors, and the ability to connect economic and prestige strategies to each other, enabled the consolidation of permanent forms of social inequality in many regions of prehispanic Honduras.

Martinez, Jupiter (INAH-Sonora)

[200] *Casas Grandes Regional System in Sonora: architecture and organic artifacts as indicators of daily life and social complexity.*

In this paper I discuss architecture and organic artifacts as material culture indicators that help us understand the Serrana communities of the Casas Grandes Culture in the State of Sonora, México. The data come from two sites: the cliff dwelling Cueva de Ochoa and the Bavispe site, both located in the municipality of Bavispe in Sonora. Our results lead us to reconsider previous perspectives that placed the state of Sonora as a peripheral area and to support an earlier model that sees major social complexity and interaction in the region. This research also leads to a greater understanding of the Casas Grandes ethnic identity and concludes that this ethnic group could be ancestral to the Opata people.

Martínez, Gustavo [69] see Gutierrez, Maria

Martínez, Pablo (Universidad Veracruzana), Janeth Castillo (Escuela Nacional de Antropología e Historia), Victor H. Valdovinos (Escuela Nacional de Antropología e Historia) and Daniela Rodríguez (Escuela Nacional de Antropología e Historia)

[200] *Archaeology of Batacosa and Onavas valley in southeastern Sonora, Mexico*

We intend to present the results obtained by the Proyecto Arqueológico Sur de Sonora, over six years of research in southeastern Sonora, Mexico, specifically in the Batacosa and Onavas valleys between the Mayo and Yaqui rivers.

We propose that Batacosa emerged as a local development resulting from the diversification of the Huatabampo and Serrana traditions at the beginning of the Middle Ceramic period, around 500 AD. and suggest that Batacosa continued to be active during the branching of the Serrana tradition into the Serrana Baja and Alta around 700 AD, keeping features from both traditions.

At Onavas, we have focused our work on the Casa Pima and El Cementerio sites, dating between 1474 and 1644 AD, and 943 and 1481 AD., respectively. While Casa Pima is a residential area, El Cementerio is a burial site where we have recovered more than 50 burials, some exhibiting cranial deformation and dental mutilation, characteristics which support our argument that this population had greater cultural affinity with coastal populations of northern Sinaloa and Nayarit. In this paper, we present an analysis of the material culture at Casa Pima and El Cementerio.

Martínez, Estela (Estela M. Mora)

[253] *The Blue Stones Funerary Contexts in Prehispanic burials from Chalchihuites region, Zacatecas, Mexico*

Agricultural groups settled the Chalchihuites region since the first millennium AD; these societies developed an intense lapidary production, crafted mainly on blue-green stones, motivated by the appreciation of these objects, always associated to a high symbolic meaning. The economic activities, such as lapidary and the exchange networks for these and other products influenced deeply in the social complexity processes of these people. In my work, I will present the funerary contexts of individuals buried with such objects and analyze its transformation over time as evidence for social change.

Martínez Galicia, Marco Antonio [144] see Dávalos Navarro, Dolores

Martínez Lara, Mario (Mario Martínez)

[293] Análisis iconográfico de los Once Señores de Cacaxtla

Esta ponencia se deriva de un análisis iconográfico realizado a once esculturas que se encontraron en las inmediaciones del sitio arqueológico de Cacaxtla en el estado de Tlaxcala, México de manera fortuita en el año de 1998. La poca difusión y los escasos estudios sobre estas fue el principal motivo para llevar a cabo este trabajo y contribuir a las investigaciones arqueológicas que se realizan en este estado.

Las esculturas presentan una serie de elementos iconográficos que aluden a la propiciación de fuerzas fecundadoras y que además tienen similitudes estilísticas con otros sitios del periodo Clásico y Epiclásico mesoamericano como son Tajín, Teotenango, Monte Albán y particularmente Teotihuacan. Los resultados del análisis permitieron la identificación de deidades y personajes asociados a un ritual cuya práctica pudo ser común en diferentes sitios contemporáneos a Cacaxtla.

Por otro lado, se pudo inferir el posible uso y desacralización de las once esculturas resultado de los movimientos sociales importantes que se suscitaron en consecuencia de la caída de Teotihuacan. Este panorama sociohistórico pretende explicarse brevemente en esta ponencia, además de dar a conocer las esculturas, su importancia y significado a fin de abrir nuevas líneas de estudio enfocadas a esculturas de este tipo.

Martínez-Muñiz, Isabelle [305] see Plank, Shannon

Martinez-Yrizar, Diana (IIA-UNAM) and Emily McClung de Tapia (IIA-UNAM)

[63] The Potential of Paleoethnobotanical Evidence in the Study of Teotihuacan Foodways

Macro- and microscopic plant remains recovered from excavations at Teotihuacan over several decades contribute to an understanding of the subsistence resources available to the city's inhabitants. However, associated contextual evidence may be inconclusive regarding the specific uses of the plants in question and, particularly, whether their presence or relative abundance indicates processing and consumption or the consequence of depositional processes. While the analysis of archaeological plant remains is necessarily an interdisciplinary endeavor, involving aspects of botany, ecology, ethnography and history among other disciplines, contextual archaeological evidence provides the matrix for interpretation. This presentation explores the significance of appropriate contextual evidence (e.g. activity areas, associated ceramics, lithics, etc.) and the potential complementary role of analytical techniques such as residue analyses, and isotopic signatures in faunal and human osteological remains as well as stratigraphic sediments.

Martirosyan - Olshansky, Kristine

[20] Masis Blur, a Neolithic Settlement in the Ararat Plain, Armenia

The advent of the Neolithic period marks the beginning of one of the most significant changes in socio-economic and political development, yet this period is the least studied cultural phase in the archaeological sequence of Armenia. Until recently, the Neolithic period in Armenian was known only through sites discovered in the 1960s and 1980s, though the material from these excavations remains largely unstudied and unpublished. The fragmentary nature of archaeological investigations has not allowed us to construct a chronological sequence for the Neolithic period or to characterize the trajectory in the development of early settled communities in this part of the Armenian Highlands.

The Neolithic settlement of Masis Blur is a mound site located some 13 km to the south-west of the capital of Yerevan, in the Ararat plain. The first season of excavations uncovered 3 undisturbed architectural layers, complete with houses, hearths, fire pits, and an abundance of lithic, bone tool, and faunal assemblages. These layers date to the early 6th millennium cal. B.C. and are contemporaneous with two other recently excavated Neolithic settlements in the Ararat plain. This talk will present some preliminary results, with a focus on geochemical analysis of the obsidian artifacts.

Marwan, Norbert [201] see Aquino, Valorie

Marwick, Ben [214] see Kretzler, Ian

Marwick, Ben (University of Washington) and Tim Maloney (The Australian National University)

[298] Identification and Visualization of Lithic Reduction Pathways Using Elliptical Fourier Analysis
Ethnographic and archaeological research into stone artifacts in the Kimberley region of northern Australia has been dominated by investigation of the numerous reduction pathways that result in pressure flaked points. However, this focus on pressure flaked points has neglected to detect a range of other point reduction pathways in the archaeological record. Typically, sites in this region lack evidence of pressure flaked point production and so it is important to understand the processes that generate assemblages at sites without pressure flaked points. We analysed seven surface assemblages from southern Kimberley to determine if there are multiple reduction trajectories producing a wide range of retouched morphologies. We processed digital images to obtain outlines of their plan views. We applied elliptical Fourier analysis to the outlines of artifacts as a tool for discriminating between different morphologies and showing how they are related. This method does not require landmarks and therefore can accommodate significantly more complex and irregular shapes than other morphometry methods. The results show staged sequences of point production, resulting in pressure-flaked points as well as a wider range of direct percussion point morphologies and demonstrate the potential of surface assemblages for reduction sequence analysis.

Maschner, Herbert (Idaho State University)

[246] Band, Tribe, Chiefdom, State: Who Do We Appreciate?

Social complexity, intensification, group size, economy, hierarchy: terms used to measure and evaluate social evolution at all levels of society. Mike Jochim and I had many conversations on these topics and reflecting on them for the last 25 years returns one simple conclusion; that there is only one major transition in the history of human cultural evolution. The transition from mobile foragers to villagers, where people had a permanent place to keep their things and cohabitated full-time with unrelated neighbors, set in motion all of the social interactions that would eventually lead to states and empires – just at a larger scale. At this time social change took off at a rate that could not be tracked by biological evolution, and maintaining sociopolitical efficiency often trumped any attempts at subsistence / economic efficiency because we are simply not biologically adapted to live full-time with a large number of unrelated people. It was at this time that some of our deepest and oldest biological adaptations such as in-group out-group behavior, within-group cooperation, status competition, and territoriality were morphed into the social and ethnic dynamics of larger scale organizations.

Masini, Nicola [295] see Giardino, Marco

Masinton, Anthony (University of York)

[107] It's Junk Until It Matters: Building Meaning from Visualization

One of the most important benefits of 3d computer modelling of archaeological and historical data is that it forces the researcher to interpret all of the available evidence in a concrete and systematic way. This frequently yields new insights and opens up new questions. The process of creating a visualization of the past is also, fundamentally, an imaginative one where meaning and subjective interpretation are key. Many archaeologists find this daunting, even risky. But, without this engagement with our visions of the past, our evidence and, perhaps, our interpretations will remain a disconnected assemblage. Drawing on a range of recent and ongoing visualization projects focused on medieval and post-medieval English buildings, the dangerous, provocative and valuable process of visualization will be explored.

Mason, Ashley

[137] What's in a Chultun? Identifying Formation Processes at La Milpa, Belize: A Comparative Life History Approach

In the Maya region, subterranean chultun features are most commonly associated with storage despite variability in form, context, and assemblages. To discern patterns among the variability, I examined the formation processes acting upon chultuns in the region, and identified three unique life history trajectories. These trajectories acted as comparative tools for the results of work performed in Chultun 2 at La Milpa, Belize. The formal attributes, context, and assemblage associated with Chultun 2, align it with a unique group of chultuns hypothesized to have served as symbolic features within the Maya cultural landscape.

Masson, Marilyn [52] see Russell, Bradley

Masson, Marilyn (University at Albany SUNY)

[113] Shell Money through Time in the Maya Area

Multiple Contact Period accounts are clear about the use of shell beads as an all-purpose marketplace currency in the Maya area. This paper explores the archaeological evidence for shell money in the deeper past (Classic and Postclassic Periods). Identifying currency units from objects used purely for decorative or social purposes is aided by tracking variables such as standardization, relative scarcity, renewability, and long term continuity as these criteria are useful elsewhere in world history. The "bead" monies of the Colonial era probably referred to a limited range of suspended objects, particularly, olive shells and morphologically similar marine gastropods. I argue against classifying Maya shell monies as "primitive" as their use context is a poor fit for the explicit anthropological meanings of that term. Probable shell monies from Postclassic era Mayapan bridge the temporal gap of Classic Period objects and Colonial sources and facilitate the use of the direct historical approach.

[113] Chair

Masucci, Maria (Drew University)

[19] Discussant

Mata-Miguez, Jaime (University of Texas at Austin), Lisa Overholtzer (Wichita State University), Enrique Rodríguez-Alegría (University of Texas at Austin), Brian Kemp (Washington State University) and Deborah Bolnick (University of Texas at Austin)

[291] Using Household Bioarchaeology to Assess the Demographic Effects of Aztec Imperialism: A Kinship Study Based on Ancient Mitochondrial and Nuclear DNA from Xaltocan, Mexico

Between AD 1428 and 1521, the Aztec empire conquered numerous polities in the Basin of Mexico. At Xaltocan, an influential Otomi town, historical and archaeological evidence provide conflicting accounts of the demographic effects of Aztec imperialism. While colonial documents state that the Aztec conquest led to a replacement of the Otomi population, archaeological finds suggest a substantial degree of population and cultural continuity. To better understand the demographic consequences of Aztec imperialism, we extracted ancient DNA from 42 individuals unearthed during bioarchaeological research at Xaltocan. These individuals belonged to six households and included pre-Aztec and Aztec residents. We analyzed mitochondrial DNA sequences, 15 autosomal short tandem repeats (STRs), and 23 Y-chromosome STRs to help assess kinship relationships among individuals. We identified kin groups in pre-Aztec and Aztec burials, but no close biological relationships when comparing pre-Aztec individuals with Aztec individuals. Additionally, we found that the Aztec conquest was associated with a replacement of matrilineal lines. These results indicate that a genetic shift occurred at these households across the Aztec transition, suggesting that Aztec imperialism might have led to important demographic changes yet substantial cultural continuity. This research illustrates how studies of kinship in household bioarchaeology can help address broader anthropological questions.

Mata-Míguez, Jaime [93] see Bolnick, Deborah

Mathers, Clay (The Coronado Institute)

[276] 'Missing Links' and the War of the Worlds in Tiguex (1540-1542)

Although the link between conflict and sixteenth-century entradas has never been remote or ambiguous, Native-European combat in North America remains poorly documented archaeologically. Ironically, material evidence of major encounters in the American Southwest has been extant for nearly a century, but until recently went largely unrecognized. Our focus is on sites of conflict associated with the 1540-1542 entrada of Vázquez de Coronado and the Tiguex War in New Mexico – a sustained period of armed conflict between Southern Tiwa Pueblos and a large combined force of Spaniards and their Native Mexican auxiliaries. A new battle-related assemblage connected with this conflict is reported and arguments are presented to suggest it may be Moho - the site of a historically documented two-month siege in the winter of 1540-1541. We compare this assemblage with contemporary sites and entrada activities to better define conflict and other assemblage types. By examining new sites and older collections, we focus on how small components of the archaeological record contribute to understanding

Native-European interactions at a broader regional and inter-regional scale. Furthermore, we suggest how early, large-scale conflicts reoriented Native-Spanish relations with regard to warfare, defense, and settlement throughout New Spain during the later sixteenth century.

[276] Chair

Mathews, Darcy (University of Victoria)

[160] *Ancestral Presence and the Public Secret: Hiding the Dead in Plain Sight*

The Straits Salish peoples of southern Vancouver Island built distinctive funerary petroforms for their ancestral dead. Based on the results of a spatial and visibility analysis of 420 funerary petroforms distributed in two neighbouring cemeteries, these monumental burials were often built at the threshold of perception. While notions of materiality and monumentality rely on the visibility of things, the unseen and the intangible have a power of their own. Secrecy magnifies reality and the concealing or controlling of access to forbidden places or things heightens their potency. These burials were active and powerful agents and shielding them from the day-to-day enhanced their power. Building these burials, as multi-layered ritualized acts of concealing the dead, was a process that produced a monument and memories retained by the living, even if they were associated with private knowledge or space. Secrets held in public trust entail knowing what not to know, and as something outside of regular discourse, they were invested with social power. As such, this act of concealment is also revealing. The dichotomous dead were both a source of fear and danger, yet retained a posthumous social, economic, and political life central to the process of history and place making.

Mathews, Ruth [169] see Everett, Mark

Mathews, Jennifer (Trinity University)

[330] *Cosmopolitan Living? Examining the Sugar and Rum Industry of the Costa Escondida, Quintana Roo Mexico*

This paper examines our research into the history of the development of the sugar and rum industry in a remote region of northern Quintana Roo known as the “Costa Escondida” from the 1870s to the mid-twentieth century. Since 2009, we have been conducting archival and archaeological research at the site of Xuxub and several nearby plantations to acquire material evidence of what daily life was like for the people who lived at these sites and worked in the industry. Foreigners often managed these small-scale businesses with regional laborers on small ranches using relatively primitive technology and producing small yields. Despite the remote locations of these sites and small production amounts of sugar and rum, we have recovered a surprising number of artifacts imported from the U.S. and other countries, including luxury goods and construction materials. This paper will examine how the value placed on the crude commodities of sugar and rum combined with the benefit of coastal access may have allowed for access to cosmopolitan goods within the swampy mangroves of the north coast.

[330] Chair

Mathiowetz, Michael (CSU Dominguez Hills)

[339] *The Origin of Mitote Ceremonialism in Postclassic West Mexico*

Mitotes are a widespread and central element of indigenous ceremonialism in the Gran Nayar, a region encompassing parts of the modern Mexican states of Nayarit, Jalisco, Durango and Zacatecas. These round dances, known among such groups as the Cora, Huichol, Tepehuan, and Mexicaneros, are a part of ceremonial cycles that are closely tied to agriculture and the cultivation of maize. In examining the origins of present-day indigenous religion and ritual in West Mexico, many studies tend to examine archaeological data from the Formative and Classic period, such as art from Shaft Tomb cultures and the Teuchitlán tradition. While these earlier eras certainly are relevant, data from the Postclassic period (AD 900-1521) has been largely bypassed, undoubtedly due to the paucity of archaeological work conducted in the last 50 years, especially in the core Aztatlán heartland of Nayarit, southern Sinaloa, and northern Jalisco. This presentation explores some of the core ritual elements of contemporary mitote ceremonialism in the ethnographic and ethnohistoric literature, including Sun and Morning Star worship, and traces evidence of these elements in the archaeological record. This effort seeks to discern the historical origin of core indigenous religious practices associated with mitotes in the Aztatlán region during the Postclassic.

[339] Chair

Mathwich, Nicole (University of Arizona)

[119] Ranching in Native Cultural Landscapes: Preliminary Faunal Analysis from Mission Guevavi
The colonial period in the Southwest has been framed and romanticized by Anglo-American Western expansion and the colonized/colonizer binary. While documentary and oral histories have helped to upend this Eurocentric paradigm, Southwestern archaeological and material studies have only recently begun to view missions through the lens of indigenous cultural landscapes inclusive of multiple and conflicting viewpoints. The Pimería Alta, a colonial geo-political region constituting southern Arizona and northern Sonora, was a complex cultural landscape; domesticated animals and their products were an important aspect in the economic relationship of indigenous groups and various colonial actors. Recent excavations at Mission Los Santos Ángeles de Guevavi, located near Nogales, Arizona, investigate the early period of the Spanish mission enterprise in the greater Southwest. This paper presents preliminary faunal data from the materials collected during the 2013 NPS and University of Arizona field school excavations of a midden associated with the mission complex. Initial interpretation of the faunal remains, with a focus on the O'Odham at Guevavi as the primary consumers and laborers negotiating regional demands, better reflects the reality of weak and intermittent European control of the mission and the power continuum of economic relationships between various indigenous groups and settlers.

[119] Chair

Matisoo-Smith, Lisa (University of Otago)

[286] Ancient DNA of Pacific Commensals—New Methods New Questions

New methods in DNA analyses, particularly the development of Next Generation Sequencing has opened up new opportunities for aDNA studies in general and provide new possibilities for zooarchaeological studies. However, regardless of the data that can be obtained from faunal samples, archaeological context and geographic sampling remains a critical issue. This paper will discuss how new methods and better sampling of Pacific commensals particularly when combined with other genetic and archaeological data can be used to tease out complex histories of Pacific settlement and interactions.

Matsumoto, Go (Southern Illinois University Carbondale)

[27] Creation of Political Subjectivity in the Middle Sicán Great Plaza

Recent discoveries at the capital of the Middle Sicán state in the mid-La Leche Valley have led archaeologists to suspect that the state might have been governed and maintained by a federation of multiple elite lineages in competition or alliance. Underlying this new explanatory model are the documentations of the same architectural configuration and associated ceremonial activities among multiple ceremonial mounds (coined as "Pomac Mortuary Complex"). This architectural complex is characterized by a tripartite, concentric organization of (1) a platform mound, (2) an immediately associated cemetery ground, and (3) an open space for large-scale ceremonial activities. The last is a non-walled space in contrast to the Late Sicán walled plazas, and the complexes of Huaca Loro and Huaca Las Ventanas seem to be coterminous within what is known as the Great Plaza. This presentation focuses on the documented activities around Huaca Loro and discusses the sociopolitical significance of the Great Plaza.

[27] Chair

Matternes, Hugh B. [155] see Graham, Lain

Mauldin, Raymond P. [103] see Jones, Ashley

Mauldin, Raymond (UT San Antonio), Cynthia Munoz (UT San Antonio), Robert Hard (UT San Antonio), Jennifer Rice (UT San Antonio) and Kirsten Verostick (UT San Antonio)

[265] Stable Carbon ($\delta^{13}\text{C}_{\text{collagen}}$, $\delta^{13}\text{C}_{\text{carbonate}}$) and Nitrogen ($\delta^{15}\text{N}$) Isotopic Shifts in Central Texas Hunter-Gatherers over the last 7,000 Years

The prehistory of Central Texas reflects hunter-gatherer occupations. Direct information on resource use, increasingly available through stable isotope analysis of interments, allows researchers in this area to investigate long-term processes of stability, change, and intensification. We present carbon and nitrogen stable isotope results from roughly 80 individuals, most of whom are adults. This sample spans roughly 7,000 years from multiple sites. At around 7,000 BP (Early Archaic), isotopic data show a mix of CAM/C4 and C3 plant and animal use. While sample size is variable, data show a gradual decline in CAM/C4 resource use over the next 4,000 years. Around 950 BP (Initial Late Prehistoric), little CAM/C4 resource

use is indicated. This trend changes in the Terminal Late Prehistoric period (700-300 BP) with isotopes indicating a dramatic diversification of diet. Isotopes from some individuals continue to have a C3 focus. Others show a mix of C3 and CAM/C4 resource use, and still others have a pattern consistent with a CAM/C4 coastal-based diet. This sudden diversity may indicate dietary change. However, as turnover rates for bone in adults are slow, it may also reflect changes in mobility and alliance structures at this time, with increased movement of individuals between regions.

Mauricio, Ana (University of Maine)

[245] *Los Morteros: Geoarchaeological Investigations and Environmental Reconstruction of an Early Mound and Its Milieu*

Los Morteros is a mound-shaped archaeological site, located on the Pampa de las Salinas, lower Chao Valley, north coast of Peru. Despite the aridity and apparent isolation of this milieu, Pampa de las Salinas seems to have been a very different environment in the past, judging from the evidence of an ancient and long history of human occupation. Just in the area of Pampa Las Salinas (~3 km x 6 km), 21 archaeological sites have been reported, most of which seem to be pre-pottery settlements. Previous investigations considered Los Morteros as a "stabilized dune" whose top was used as cemetery during Preceramic times. However, geo-radar explorations carried out in 2006 and 2010 by a team of the University of Maine indicated the existence of architecture covered by thick layers of sand. Within this context, a comprehensive investigation carried out by the Los Morteros-Pampa de Las Salinas project in 2012 has revealed a complex history of formation of this site, which includes the existence of mud-brick architecture with monumental characteristics. Geo-archaeological and environmental approaches have produced data that allow a general reconstruction of the transformation processes of the environment that hosted this early social development.

Maus, Mathew [139] see Riley, Jenny

Mavko, Jonathan (PIARA), Rebecca Bria (PIARA and Vanderbilt University) and Rachel Shea (PIARA and Purdue University)

[105] *Middle Horizon Mortuary Architecture and Social Organization at Hualcayán, Ancash, Peru*

This poster presents the architectural and spatial analyses of Middle Horizon (ca. 600–1000 CE) Chullpa-type mortuary structures at the site of Hualcayán in highland Ancash, Peru. This research reveals how the construction and modification of clustered chullpas and their exterior patios indicate changes in inter- and intra-group membership at Hualcayán during the Middle Horizon. A total of eight Chullpas—above-ground, free-standing stone ossuaries—clustered in two distinct groups were analyzed, noting several characteristics including entryway size and orientation, interior chamber layout, interior and exterior surface area, construction sequences, and construction quality, as well as their spatial relationships to one another and to other architectural features (walls, plazas, etc). Both chullpa groups indicate different phases of use and modification, and this evidence points to how people in the Middle Horizon restructured space in and around these chullpas to both accommodate new social relationships and mark difference between themselves and other lineage or sub-lineage groups. Furthermore, measures of architectural sophistication and investment within each chullpa group point to existing and changing social hierarchies in the ancient Hualcayán community. In this way, this research on mortuary architecture reveals new insights on changing social relationships during the Middle Horizon in the Ancash highlands.

Mavroudas, Sophia [103] see Springs, Lauren

Mawk, E. Joe [156] see Cole, Sally

Maxwell, David (Simon Fraser University)

[192] *Stings and Puffers: Ritual Fish Use at Tikal*

The "cult of the sea" resulted in the inclusion of fish remains in dozens of votive caches at Tikal and other sites. Context suggests that these were more than simple offerings; rather, it appears that these may have been utilized as blood letters, for ritual envenomation, and possibly for other types of activities. The spatial and temporal patterning of these remains is discussed for the North Acropolis at Tikal. Stings show strong temporal and behavioral patterning, with bone imitation stings predominant during the politically strong era of the Early Classic, replaced by real stings during the Hiatus Period; further, bone replicas and real stings are rarely found together, suggesting a strong behavioral division between these two artifact types.

Puffer fish remains are largely restricted to the political downturn of the Hiatus Period, suggesting that these remains played a very different role in ritual, although their actual use is unclear.

May, Keith [36] see Wright, Holly

May, J. (Schiele Museum of Natural History)

[232] *Holly Bend, Mecklenburg County, North Carolina: Two Centuries of Piedmont Architectural and Cultural History*

Recent excavations at this historic, National Register property have uncovered traces of the dependencies that surrounded this standing structure until recently. From the federal five bay frame construction to the exterior end fireplaces, Holly Bend was and continues to be an example of vernacular architecture. Changes in the economic status and agricultural practices of the Davidson and subsequent families are reflected in the construction and abandonment of outbuildings formerly surrounding the house. Elements of these changes are exhibited in the poster along with images of recovered domestic material culture.

Mayfield, Tracie (University of Arizona), David Pendergast (University College London) and Elizabeth Graham (University College London)

[72] *Consumerism, Industrialism, and Agriculture: Consumption and Productive Practices at Lamanai, Belize, During the Nineteenth Century*

Very few historical-period studies have focused on the Mesoamerican lowlands and to this end, the relationships between people, material culture, space, and technology in this region are poorly understood. Clearly, archaeological and historiographical investigations are needed in order to add perspectives inaccessible by any other means, such as the make-up and internal nature of small-scale, colonial-administered enterprises, which appear to have dotted the landscape in an attempt to extract or produce raw materials such as logwood and sugar. Much like the history that came before European contact, colonialism in Belize was not a uniform movement. Maya, Europeans, and other groups such as Chinese immigrants and emancipated slaves of African descent were incorporating or rejecting objects, technologies, and spatial practices differently, depending on time and place. This presentation will explore the material, social, and technological dialectics active at Lamanai, Belize, during the nineteenth century when British colonists established a short-lived sugar plantation at the site. Previous archaeological investigations recovered data that clearly indicated the presence of materials associated with day-to-day behaviors generally linked to late-colonial industrial and residential activities such as cooking and eating, building maintenance and construction, health and hygiene, and sugar agriculture and production.

Mayo Torne, Julia

[197] *La Necrópolis de El Caño. Nuevos aportes al conocimiento de las sociedades del istmo centroamericano.*

Recientemente se han descubierto en El Caño, valle de Río Grande de Coclé, región cultural "Gran Coclé", en Panamá, una necrópolis con tumbas de personas de alto rango fechadas entre el 700 y el 1000 d. C. Éstas son coetáneas a las halladas en el cercano Sitio Conte, cementerio en el cual Samuel K. Lothrop del Museo Peabody de la Universidad de Harvard y John A. Mason del Museo de Antropología de la Universidad de Pennsylvania descubrieron, hace ochenta años, la primera evidencia arqueológica de la complejidad de las jefaturas panameñas. La existencia en Sitio Conte y El Caño de elementos semejantes –basaltos columnares dispuestos en hileras, calzadas de cantos rodados y ricas tumbas- organizados espacialmente de forma similar a lo observado en Sitio Conte indica la existencia de un patrón funerario en el valle de Río Grande. Además de esta multiplicidad de sitios que entran muy probablemente en una dinámica regional de rivalidad competitiva entre grupos, la presencia de niños con ricos ajuares indica que entre el año 700 y el 1000 d.C. se encuentra el momento de máximo desarrollo, en lo que a complejidad se refiere, de las jefaturas del istmo centroamericano.

Mayro, Linda (Pima County Administration) and William Doelle (Archaeology Southwest)

[151] *Conservation Archaeology in Action: Using CRM Results for Long-term Research Programs, Land Conservation, and Outreach*

As the new field of cultural resource management was taking shape in the early 1970s, Bill Lipe in his foundational statement, "A Conservation Model for American Archaeology," rightly challenged archaeologists to understand that "all sites are rather immediately threatened...," not only from

development and construction, but also by the profession itself, especially as the business of doing archaeology became a growth industry. It soon became apparent that there was a need to balance the exploitative aspects of cultural resources management with a conservation ethic, where entire archaeological sites and even communities and cultural landscapes could be preserved in-place. Throughout our respective careers, we have embraced this ethic in the practice of cultural resources management, resulting in public policy for the protection of cultural resources, the creation and implementation of the regional Sonoran Desert Conservation Plan, nearly \$30 million in public bond funding for archaeological site protection and historic preservation, and an innovative approach that we call Preservation Archaeology, which seeks to balance research, site protection, and public outreach.

Mazin, Anna (The College of Wooster), Olivia Navarro-Farr (The College of Wooster) and P. Nick Kardulias (The College of Wooster)

[11] Gendering Ceramic Production in Hohokam Society

The Hohokam culture thrived in the Sonoran Desert of Arizona from roughly 300 BCE to 1450 CE. Hohokam pottery is divided into four general types: plainware, redware, buffware, and Salado polychrome. In this study I seek to identify who would have been responsible for ceramic production and consider how the organization of production reflects the structure of Hohokam society. I argue that the continuation and evolution of ceramic designs reflects the transmission of the craft from teacher to student. One may theoretically follow these lines of transmission by studying similarities and differences of design, and then use transmission as a proxy to trace larger social concepts, such as matrilocality or the political, social, and economic relationship between communities. Expanding on previous work in which I discussed Hohokam production sites and materials, I examine ceramic samples and ethnographic data for evidence of generational design transmission, and then utilize ceramic designs as a proxy to infer social patterns such as matrilineal descent.

McAnany, Patricia [31] see Dedrick, Maia

McAnany, Patricia (University of North Carolina, Chapel Hill), Adolfo Ivan Batun Alpuche (Universidad del Oriente, Yucatan, Mexico), Sarah Rowe (University of Illinois) and Maia Dedrick (University of North Carolina, Chapel Hill)

[57] What Lies Beneath the Basketball Court? Community Archaeology and Managing the Dead

Sixteenth-to-eighteenth century missionization in Yucatan often included forced relocation of Maya peoples, construction of monumental church complexes, and burial of converts around the perimeters of churches. Mission churches are still highly visible today and the adjacent burial grounds provide a focus for studies of colonial disease/health, but little is known of the dwellings in which relocated Maya peoples lived. Archaeologists from UNC-Chapel Hill and Universidad del Oriente (UNO) formed PACOY (Proyecto Arqueologico Colaborativo del Oriente de Yucatan) to find and investigate colonial Maya dwellings. One locale that holds significant potential for this investigation is Tahcabo--an eastern Yucatec town founded in 1549 and still occupied today. During the summer of 2013, the mission complex and associated town features--such as rejolladas--were scanned, mapped and limited surface collection conducted. Town meetings and dialogue with community members revealed the layer of colonial burials beneath the town plaza to be a source of concern in trying to balance a respect for the dead with civic improvements (such as a basketball court). PACOY researchers and the community have now joined together to pursue techniques of mapping the perimeter of the burials to assist in managing the dead and to conserve cultural heritage in situ.

Mcardle, Angela

[167] Finding Meaning in a Postclassic Obsidian Core Cache

This Paper examines an obsidian cache offering excavated from underneath the foundation of the southeastern corner of a Postclassic Maya structure in Flores, Guatemala. The cache consists of approximately 200 exhausted prismatic cores, 100 prismatic blades, and 10 flakes, all of various types of obsidian. The components of this offering were found arranged in a radiating circle underneath the structure floor in a concentrated area measuring 30 cm in depth. Post-excavation data collection consisted of sourcing the obsidian and documenting the measurements, degree and type of rejuvenation, presence and type of use-wear, and the number and variation of platforms, blade terminations, and blade scars for each artifact. This information is used to examine the core-blade technology responsible for creating this assemblage as well as to comment on procurement practices and the role of trade and polity interaction in the Postclassic Maya period. This paper will also explore the relationship these cores, blades, and flakes have with the structure they were found underneath and the kind of caching behavior

at play that resulted in this offering's deposition. Analysis of this cache provides information on lithic technology, trade networks, and cache-structure behavior of the Maya inhabiting the southern lowlands during the Postclassic.

McBrearty, Sally [209] see Melville-Mant, Alison

McBride, Pamela [18] see Moore, James

McBride, Alexis

[84] *Parks, Piazzas, or Abandoned Lots? Archaeology of Outdoor Spaces in the Near Eastern Neolithic*

Exploration of communities and community interaction in prehistoric settlements has traditionally focussed on architecture and buildings; however, a lot of activity would have taken place outside. People would have been cooking, talking, building, tending animals, weaving, sewing, and a million other daily tasks in the spaces between buildings and around the fringes of the village. These spaces have been largely ignored by archaeologists, however, and this means missing a big proportion of daily life. I look at the physical reality of the outdoor spaces at a number of Near Eastern Neolithic settlements and present a methodology for modelling the way people could have occupied and moved through these spaces. I also examine the evidence for activities that might have been taking place outdoors. This elucidates how people might have been interacting in these early villages and whether they functioned as parks, piazzas, or simply as abandoned space, and demonstrates how explorations of exterior space contribute to our understandings of the past.

McBride, Pamela (Museum of New Mexico, Office of Archaeological Studies)

[294] *Chuska Archaeobotany: From Rooffall to Floorfill, Plant Remains from Late Archaic to Ancestral Pueblo Contexts*

More than 200 flotation samples were analyzed from data recovery conducted along U. S. Highway 491, documenting Late Archaic, Basketmaker, and Puebloan subsistence in the southern Chuska Valley. This data set offers opportunities for comparison to others in the region, including Chaco Canyon, Mexican Springs, and Twin Lakes, to name only a few. The maize assemblage, consisting of over 100 cobs and about 80 kernels, has the potential to provide especially intriguing comparative results.

McBrinn, Maxine (Museum of Indian Arts and Culture, Santa Fe)

[202] *Linda Cordell: Her Life and Legacy*

Linda Cordell's primary research focus remained where she began, on understanding life in the late, large pueblos of the northern Rio Grande. Her range of interests, however, was broad and deep and her influence equaled her interests. Over the course of a long career, she examined a wide range of archaeological research topics from landscape use and trade patterns to the possibility of priestly power at Chaco Canyon. Her long tenure as museum curator and then museum director led to an interest in museology. Her thoughtfulness about the lives of Native Americans, past and present, informed her involvement in questions of traditional territory, affiliation, and justice. Cordell's understanding of the history of the profession in the Southwest influenced her actions and views. She energetically mentored young scholars in archaeology and anthropology, including many who were not officially her students. This presentation sketches Linda Cordell's life and continuing legacy.

[202] *Chair*

McCafferty, Geoffrey (University of Calgary)

[197] *Sonzapote, Power and Authority at an Early Urban Center in Nicaragua*

The Sonzapote site on Zapatera Island (Nicaragua) is well-known for dozens of monumental stone statues representing human figures, many of which are seated on thrones. Yet little attention has been paid to the archaeological context of the site, including the statues and associated architectural features. In 2013, a joint archaeological project involving the University of Calgary, Mi Museo (Granada), and the Universidad Nacional Autonoma de Nicaragua conducted preliminary investigations at the site. The objectives of the project were to map the architecture, inventory the existing mounds and monuments, and establish the archaeological context of the occupation. This paper presents the results of excavations at Mound 14, including both the construction history as well as post-abandonment use as a mortuary site. The revised chronology results in major changes to interpretation of Sonzapote within the regional politico-religious network.

[153] *Chair*

McCafferty, Geoffrey [153] see McCafferty, Sharisse

McCafferty, Sharisse (University of Calgary) and Geoffrey McCafferty (University of Calgary)

[153] *Monumentality at Sonzapote, Nicaragua*

Since its initial discovery in the late 19th century, Sonzapote on Zapatera Island has been famous for its monumental statuary. Published in 1886 by Carl Bovallius in Nicaraguan Antiquities, the many huge statues representing standing and seated figures have inspired diverse interpretations. Little, however, has been done in terms of archaeological research at the site to determine the cultural context of these monuments, resulting in more wild speculation than rigorous empirical understanding. In 2013 a National Geographic-funded project began preliminary investigations at Sonzapote that included a topographic map of the site center, an inventory of extant monuments, and excavations around Mound 14 which uncovered numerous burial urns as well as contextual evidence that tentatively dates construction to the Late Tempisque period (ca. 100-300 CE). This paper summarizes the monuments at the site, consisting of statues, petroglyphs, and utilized boulder work areas.

McCafferty , Geoffrey [153] see Friesen, Kelsey

McCaffrey, Tara [148] see Dexter, Jaime

McCall, Grant [109] see Marks, Theodore

McCall, Grant (Tulane University), Theodore Marks (University of Iowa) and James Enloe (University of Iowa)

[109] *Update on the Middle and Later Stone Age Excavations at Erb Tanks, Namibia*

This paper reports on our further fieldwork at Erb Tanks, a Middle and Later Stone Age rockshelter in west-central Namibia. Specifically, we offer updates on the dating of site through optically stimulated luminescence (OSL), the analysis of lithic and faunal remains, and studies of the site's geological taphonomy. We also provide some further context for the terminal MSA painted stone plaque discovered during the 2011 field season, as well as other artifacts bearing traces of pigment. We briefly discuss the implications of these objects for other similar phenomena known from the region, especially the MSA painted plaques from Apollo 11 in southern Namibia. Finally, we close by considering the nature of cultural changes in terms of the organization of foraging and pastoralist economic systems over the course of the late Upper Pleistocene and Holocene. Our excavations to date offer some surprising insights concerning relationships between patterns of technological organization, mobility and settlement systems, and subsistence intensification. Specifically, we show several adaptive trajectories in terms of site use and mobility patterns that are consistent with increasingly specialized strategies for dealing with the hyper-arid environmental conditions of the Central Namib Desert gravel plains.

[109] *Chair*

McCane, Carmen [302] see Demarte, Pete

McCarthy, Elizabeth (Univeristy of Missouri), Christine VanPool (University of Missouri) and Andrew Fernandez

[44] *A Comparative Study of Turkey Burials in the American Southwest*

During the 2013 field season at the 76 Draw site in southwestern New Mexico, a single bird burial was discovered and excavated. Large quantities of photographs were taken during excavation in order to construct a detailed map of the orientation of the remains. From these photographs and maps, the sealed context burial can be compared to bird burials from other American Southwestern cultures. Tentatively identified as an individual adult turkey (*Meleagris gallopavo*), a comparative study of Turkey use in the region was undertaken to place the remains in context of the site's complex cultural history, which includes influence from Casas Grandes culture to the south and the Jornada-Mogollon culture to the north and east.

McCarthy, Elizabeth [44] see Rakita, Gordon

McCarty, Rose [340] see Enloe, James

McClain, Maggie (Texas State University)

[306] *A Skeletal Marker of Agriculturalists: Investigations on Coalesced Porosity on the Patella*

This research examines the frequency of coalesced porosity on the articular surface of the patella among prehistoric Native Americans. The five groups ($n=180$ individuals) examined in this study varied temporally (Archaic–Late Prehistoric) and geographically (Tennessee, South Dakota, and Texas), and practiced hunter-gatherer, horticultural, and agricultural subsistence regimes. This analysis found that coalesced porosity occurs at a high frequency among agriculturalists (41%), but at a low frequency among horticulturalists and hunter-gatherers (7–18%). Different subsistence regimes require certain repetitive physical activities, some of which leave particular signatures on the skeleton. Although previously considered an indicator of arthritis, coalesced porosity on the patella results from prolonged hyperflexion while kneeling, which places the patella in direct contact with the femur. Friction from the femur and localized pressure from kneeling on a hard surface causes destruction and pitting of the articular surface of the patella. The posture required to create this articular surface change is identical to the corn-grinding posture that is well documented ethnographically. This research indicates that subsistence activities involving long hours grinding corn or other grain results in coalesced porosity on the patella, and that a high frequency of coalesced porosity is a clear skeletal marker of agricultural populations.

McCleary, Alexandra (University of California, Berkeley)

[215] *Affective and Effective Objects: the Museological Odyssey of a New Mexican Accession*

In March of 1897, artifacts ranging from samples of potter's clay to local renditions of Catholic iconography from New Mexican Rio Grande pueblos were accessioned into the Smithsonian National Museum's ethnographic collections. The perfunctory designations first ascribed to these artifacts have had an enduring and profound effect on their fate as objects of study, display, and cultural mediation. Using this accession as a guiding framework, I will assess how the construction of historical narratives and nominal cultural designations have come to shape the Institution's ethnographic collections, and how they in turn are made to perpetuate such narratives. The Smithsonian Institution, whose age, depth, and breadth of material culture is unparalleled in the United States, provides a natural environment to study historical disciplinary trends and practices within the United States. While there is increased sensitivity to simplistic distillations of complex social relationships in contemporary archaeological study, museum collections are still influenced and structured by previously employed curatorial methods. A greater sensitivity to the potential biases associated with previous curatorial strategies will increase the effectiveness of museum-based research, leading to more accurate portrayals of daily life in post-contact New Mexico.

McClelland, John (Arizona State Museum)

[247] *Revisiting Hohokam Paleodemography*

Archaeological evidence documents an apparent depopulation of the Hohokam region of Southern Arizona at the end of the Late Classic Period (A.D. 1350-1450). It is clear that major population centers were no longer occupied and many of the distinctive material culture traits associated with the Hohokam tradition seem to disappear. Possible explanations include migration, dispersion of the population into less archaeologically visible settlements, and wholesale population decline. The latter hypothesis gained currency partly because of a seminal study of paleodemography and health at the Classic Period site of Pueblo Grande in the Phoenix Basin (Van Gerven and Sheridan 1994). The authors reported very low life expectancy, a very high dependency ratio of juveniles to adults, and other indicators of biological stress, suggesting that the population was not sustainable. Reevaluation of the original demographic data, combined with new data from subsequent excavations suggests that overall life expectancy was in the expected range for prehistoric populations and that there is no evidence of a dependency crisis. Comparing Late Classic and Early Classic samples shows no evidence of a sharp decline, suggesting that we should look beyond health factors in trying to account for the disappearance of Hohokam traditions.

McClung de Tapia, Emily [63] see Martinez-Yrizar, Diana

McClung De Tapia, Emily (IIA-UNAM MEXICO)

[149] *Landscape and Paleoenvironment in the Teotihuacan Valley, México: Questions, Data, Interpretations*

The analysis of archaeological plant remains together with macro- and microbotanical materials from off-site stratigraphic profiles, contributes significantly to attempts to detect changes through time in past landscapes. Material evidence for past vegetation (groups of plants characteristic of a specific landscape) at different moments in time provide indicators for paleoenvironmental change related to anthropogenic factors, natural climate events, and the interaction of both. Recent research in the Teotihuacan region attempts to sort out the combined influences of human and natural events and processes as they were manifest in the landscape over a period of three millenia. However, no single technique alone offers sufficient evidence, nor is change easily understood within a strictly local or regional framework. It is argued that complementary suites of data offer better hypotheses and more satisfactory interpretations.

McClure, Sarah (Penn State) and Douglas Kennett (Penn State)**[246] *Agricultural Origins and the Behavioral Ecology of Niche Construction***

Niche construction has become an important organizing concept in the study of agricultural origins worldwide. The concept brings focus to the intentional and unintentional manipulation of plant/animal species and their environments (e.g., terracing) within an evolutionary perspective. In this paper we consider the concept of niche construction within the framework of the Ideal Free Distribution (IFD), a model adapted from population ecology. We use this integrated framework to develop a dynamic model for the spread of agricultural economies, the subsequent intensification of farming systems and the construction of increasingly sophisticated ecological niches to feed growing populations.

McClure, Sarah B. [300] see Zavodny, Emily

McCool, Weston (University of California at Santa Barbara) and Bradley Parker (University of Utah)**[6] *Household Maize Beer Production in the Andes: An Ethnoarchaeological Investigation***

Recent literature on the role of alcohol in the ancient world has shown that the production and consumption of fermented beverages played a key role in the organization of many prehistoric political and household economies. The study of alcohol as a lubricant in social dynamics is especially pertinent in the Andes where reciprocity is the primary form of traditional economic transactions. In spite of the fact that scholars studying ancient Peru have long acknowledged the central role that the production and consumption of chicha played in traditional Andean societies, surprisingly little information is currently available about how to recognize the loci of small-scale chicha production and consumption in the archaeological record. The premise of this paper is that the modern production and consumption of chicha in traditional settings can provide valuable interpretive information for archaeologists working in the Andes. In this article, we develop fifteen independent indices of household chicha production to construct a methodology capable of aiding archaeologists in the recognition of domestic chicha production and consumption in the archaeological record.

McCormick, Sarah (New Mexico State University), Kayla Hurd (Grand Valley State University) and Elizabeth Arnold (Grand Valley State University)**[208] *An Ethnoarchaeological Examination of the Utility of Tool Preparation Methods for the Production and Use of Bone and Antler Needles***

Previous ethnoarchaeological research evaluated the ease and expedience of various preparation techniques of bone and antler for tool manufacture. Using both fresh and dry bone, specimens were soaked, frozen and boiled as preparation methods prior to fashioning into a variety of needles. Control samples were selected and exposed to no additional processing. The same was repeated for antler in both fresh and dry condition. No preparation method yielded a clear choice for ease of manufacture as it was possible to create usable tools in a timely manner in all cases. However, boiling and/or soaking as a means of preparation does not enhance (and may impede) manufacture of bone and antler tools. The new research presented here examines questions of use and utility of the artifacts produced. How well would each tool hold up to use over time? Which material would need or tolerate reshaping? Each bone and antler needle produced in the first phase of research has been utilized for leather working and single needle knitting (naalbinding). Size and shape of the needles were significant factors on duration of use (until breakage). Both qualitative and quantitative measures are used to evaluate and test the utility and durability of the tools.

McCorvie, Mary [248] see Simek, Jan

McCoy, Mark D. [242] see Mulrooney, Mara

McCray, Brian (Vanderbilt University)

[104] *Publicity, Pathways, and Production: Evaluating Regional Diversity in Settlement Patterning and Architecture in Northeastern Peru*

Posic B, an archaeological complex in the cloud forest ceja de selva in the Department of San Martín, Peru, includes mound structures, raised pathways, and an extensive array of terraces laid out on an alluvial fan. Early colonial documents indicate that the inhabitants of Posic B were Chachapoya, a loosely defined ethnic group that inhabited the region in the Late Intermediate Period (A.D. 1000-1450).

Chachapoya sites are characterized by ridge or mountaintop locations, elaborate houses, and lack of public space. Posic B is located in a valley, has few house foundations, and does have evidence of public space. There are 3 suggested explanations for the different settlement strategy: (1) it could be a region-specific adaptation by a Chachapoya sub-group (2) it could have been imposed by Inka imperial administration, or (3) it could be evidence that Posic B was inhabited by a third ethnic group, the Orimona. Each possibility assumes unique sociopolitical organization of the site. This poster integrates excavation and survey results from Posic B with a consideration of the regional networks in which site inhabitants participated, in order to evaluate the sociopolitical organization and social identity of Posic B society.

McCurdy, Leah (University of Texas at San Antonio)

[107] *Virtual Architectural Energetics: An Innovative Digital Analysis*

Digital archaeology and virtual reconstruction, in particular, are sometimes pigeon-holed as practices that merely result in the creation of presentation images or displays with little value for archaeological research. Virtual reconstruction is a specific digital methodology that has and will continue to move beyond labels of superficiality and offer innovative means to analyze and interpret archaeological data. As an example, I will discuss my current research on ancient Maya architectural construction practices and how I plan to use virtual reconstruction to analyze the energetics of construction labor. While founded in the established literature on architectural energetics, this methodology transforms the analytical techniques for producing energetic estimates and allows for both synchronic and diachronic labor analysis. Virtual architectural energetics and other innovative digital methodologies are concrete examples of the great value digital archaeology offers modern research.

[107] *Chair*

McCutcheon, Patrick [10] see Parfitt, Anne

McDavid, Carol (University of Houston)

[152] *Discussant*

McDonald, Josephine (University of Western Australia)

[156] *The Art of Science and the Science of Art*

A hallmark of Marvin Rowe's contribution to rock art dating has been the demonstrated importance of collaboration between chronographer and archaeologist. For science to be successfully deployed to understand how old rock art might be, the scientist must understand how the art "fits" culturally into the archaeological record. This paper explores the interface between science and art at a rock shelter site called Pinpi 5. One of the largest recorded assemblages in the Jilakurru Ranges, this site has numerous phases of art production with changing style(s), subject matter and superimpositions. There is also a suite of motifs here that could be part of a composition: a large snake interweaves itself across the panel, with numerous headdress figures and other unusual anthropomorphs. Thirty paint samples were collected from this site (including several replicates), making it one of the most intensively sampled painting sites in the world. This paper discusses the interplay of science and art – and details the highs and lows of AMS radiocarbon dating of a rock art assemblage in this detailed case study from Australia's Western Desert.

McDonald, Erin (University at Buffalo)

[300] *Social and Political Organization in Late Bronze Age and Iron Age Ireland: Application of the Dual-Processual Approach to Settlement and Pollen Evidence*

Traditionally, cultural complexity was viewed as a linear, forward-moving evolution from band to tribe to

chiefdom to state. In more recent decades however, archaeologists have begun to recognize cyclical patterns of socio-political organization in prehistoric societies, and the processes that influence change. Theories on political and social organization and complexity in pre-state societies, such as Blanton et al's dual-processual theory (1996) and Johnson's scalar stress theory (1982) may be applied to the evidence for socio-political and settlement organization in Ireland during the Late Bronze Age and Early Iron Age transition. Land-use patterns, as determined through pollen samples, can be linked with changes in economic, political and social organization (Plunkett 2007; Plunkett et al 2008: 182). Through Plunkett's interpretation of pollen data, this paper explores the economic, social and political factors that may have influenced changes in the socio-political organization of communities during the Late Bronze Age – Early Iron Age transition in Ireland. The ultimate goal of this paper is to apply Blanton et al's dual-processual theory to Plunkett's interpretation of the Irish pollen data.

McElhoes, Jennifer (CSULB), Carl Lipo (CSULB), Sherri Gust (Cogstone), Joe Cocke and Jeanette Harlow (CSULB)

[315] Pleistocene Butchering of *Bison Antiquus*: Evidence from Palos Verde, California

In 2012, a *Bison antiquus* pelvis bone was found in a Pleistocene aged deposit of the Palos Verdes region of Southern California. In one location of the bone there is evidence of linear surface modifications that may be the result of prehistoric butchering. Here, we present the results of a project that sought to determine if these indentations were the result of human activities or from naturally occurring processes. Through high-resolution surface reconstruction, SEM analyses and replicas, our results suggest that these marks are best explained as cut marks made on the bone while it was fresh and with a stone tool. The results of this investigation contribute to our understanding of the subsistence of Pleistocene human populations of Southern California.

McElrath, Dale [74] see Emerson, Thomas

McEwan, Colin (Dumbarton Oaks)

[27] The Liquid Plaza: Haucaypata, Cuzco

This paper opens up a new dimension on Inca plazas by considering how liquids flowed through, into and under these public spaces. The vertical conduit known as the ushnu played a key role in maintaining the circulation of liquid offerings. I take as a case study the Haucaypata Plaza in Cuzco where we have more direct, eyewitness descriptions available through the ethnohistoric documents than for any other comparable public plaza in the Andes. These accounts highlight not only the importance of moving revered objects from the Coricancha, but also the reciprocal flow of liquid libations via the ushnu into an underground channel leading back to the Coricancha. I will discuss when and why these ritual events took place in the agricultural calendar.

McFarlane, William (Johnson Co. Community College, KS) and Miranda Stockett Suri (Queens College)

[161] Reconsidering the Reality of Southeastern Mesoamerica: Continuity, Diversity, and Inter-Valley Interaction in Western Honduras

The late fifth century AD was a time of rapid transformation in non-Maya Southeastern Mesoamerica. From this time forward, the landscape of western Honduras would become filled with increasingly complex polities and rising populations. So too is there evidence for a distinctive change in material culture, such as the development of widely shared regional polychrome ceramic traditions and the stabilization of obsidian exchange networks. Arguably, more than any other period in prehistory, it is during the Late Classic that a unique cultural identity emerges from this part of Southeastern Mesoamerica. In this paper we seek to answer the question, can we characterize the diverse peoples and communities of Late Classic western Honduras as belonging to a culture area of shared affiliation and concordant identities, or is "Southeastern Mesoamerica" nothing more than a geographic designation, which encompasses a diversity of strategies just different enough to defy uniform classification? To address this question we place the findings of our own research in the broader context of the long-term research projects conducted by our colleagues since the 1980s. In particular, we emphasize the inter-valley interactions among these polities to illuminate the shared and divergent paths taken by these communities during this period.

McGarry, Ashley (Department of Anthropology, University of Auckland) and Judith Littleton (Department of Anthropology, University of Auckland)

[67] An Unusual Case of Burned Remains from Bahrain: A Violent Incursion?

Burned human remains dating to the Dilmun period are a rare occurrence in Bahrain. One such instance are the burned remains, found at the Qala'at al-Bahrain site in the 1960's. Due to the unusual nature of the remains and their association with an extraordinary number of seals predating the Mature Dilmun style, the Qala'at al-Bahrain remains are thought to signify a confrontation between the immigrating Amorite tribes and the local population. In this paper we reanalyse the skeletal material in order to determine whether the remains were burned while in a fleshed, green or dry state. The results provide insight into whether the deaths of the individuals were contemporaneous with the fire event, indicating that the remains had been intentionally burned during or soon after conflict; or whether the remains were burned sometime after death, possibly indicating unrelated events. Two burned control samples, a modern cremation sample and an archaeological sample representing varying states of decomposition, are examined to evaluate burning characteristics specific to dry, green and fleshed remains. The resulting methods are applied to the Bahrain assemblage, allowing a more accurate and precise investigation of the burning event and the processes that act on skeletal assemblages following inhumation.

McGee, Ben [230] see Beck, Colleen

McGill, Kendall**[42] Modern Environmental Datasets and the Reanalysis of Cedar Mesa (Utah) Settlement Patterns**

Modern geographic information systems and web-accessible environmental datasets have created an opportunity to supplement earlier settlement models and provide additional insight into Ancestral Pueblo occupation of the Cedar Mesa area of southeast Utah. The settlement pattern analysis published by Matson, Lipe, and Haase (1988) contributed basic understandings of the distribution of the many small dispersed sites on Cedar Mesa, and of the environmental factors that influenced these settlement behaviors. Unable to access the surplus of environmental data available today, the initial analysis tested only a small number of environmental variables and employed an environmental proxy if the desired variable data was unavailable. This project will compile geospatial data from the archived site survey records and a collection of geological, botanical and hydrological datasets to test site location relationships with an expanded set of environmental variables. Leveraging the temporal and site type classifications from the prior study, further analysis will assess occupational period trends and variation among site types.

McGill, Dru (Indiana University)**[327] Big Pots for Big Shots Revisited: Mound and Village Pottery from the Mississippian Site of Angel Mounds**

In 1993, John Blitz authored an important article on the power of "big pots" in efforts by "big shots" to create and augment social ranking, elite control, and elite hegemony in Mississippian societies. Specifically, Blitz discussed episodes of feasting on mound surfaces at Lubub Creek, evidenced by the overabundance of "big pots" when compared to pottery found in village contexts. As part of a larger dissertation project examining culturally-meaningful variability within plainware assemblages from the Mississippian site of Angel Mounds, Indiana (12Vg1), I revisited Blitz's arguments by comparing pottery samples from village contexts and the surface of the second largest platform mound at Angel (Mound F). Compared to samples from the village, the archaeological record at Mound F was found to contain greater proportions of plain jars and decorated plates, fewer craft production artifacts, and a restricted range of vessel forms and sizes skewed towards large vessels (and missing small ones). While these findings are similar to those found by Blitz, my interpretation somewhat differs and focuses on the unique technological styles of pottery production found in Mound F samples, highlighting the roles diverse individual pottery and food producers played in building community-identity through collective action at Angel Mounds.

McGovern, Thomas**[75] The GHEA Vision: Connecting Communities and Promoting Collaboration**

The Global Human Ecodynamics Alliance (GHEA, www.gheahome.org) grew from an NSF sponsored meeting at Eagle Hill Maine in 2009. The Eagle Hill meeting was aimed at connecting research teams active in different world areas who were working to make the long term record of past human ecodynamics relevant and accessible to policy makers and the public. This was a high energy gathering, and produced *Surviving Sudden Environmental Change: Lessons from Archaeology* edited by Cooper and Sheets. This volume is aimed at practitioners and the wider public and is available as an inexpensive

paperback or can be freely downloaded. This embodies the spirit of open scholarship, effective use of cyberinfrastructure, and community engagement in sustainability science and education at the core of the GHEA effort. GHEA is open access, web-based, participant structured, and has no governing structure. It has grown rapidly and GHEA projects have attracted external funding, including an NSF Research Coordination Network 2012-16 that has sponsored a series of workshops promoting cross-regional comparisons of our completed long term human ecodynamics experiments of the past, developing models and visualization tools, and going beyond outreach to engage local communities in heritage rescue and education for sustainability. Join the Alliance and contribute!

[29] Discussant

McGovern, Thomas [29] see Brewington, Seth

McGrath, James [66] see Hegmon, Michelle

McGraw, Matt

[232] Sweet Misery: Labor and Power at the Chatsworth Plantation Sugar Mill

The LSU Rural Life Museum conducted Phase III data recovery excavations at the sugar mill portion of the Chatsworth Plantation site (16EBR192) now in Baton Rouge, Louisiana from January to June 2013. Chatsworth Plantation existed as a sugar producer along the banks of the Mississippi River from the 1840s until the property was sold at a Sheriff's sale in 1928. The purpose of this poster is to explore the question of whether the highly technical nature of sugar mill machinery, as well as the temporal constraints of sugar cultivation in Louisiana, provided the workers with a degree of power. Research is still ongoing and all results are preliminary.

McGuire, Randall (Binghamton University)

[237] The Cult of Quetzalcoatl and Late Prehispanic Religion in the Southwest US and Northwest México

One of the things that distinguishes James Neely's career is that he has done research in both the Southwest/Northwest and in Mesoamerica. As an undergraduate student at the University of Texas, he taught me not to regard the two regions as clearly bounded separate entities. The late Prehispanic period (CE 1300 to 1450) in the southwest of the United States and the northwest of México witnessed the spread of Quetzalcoatl iconography across the region in several related but distinctive religious movements. These movements embraced Mesoamerican iconography and presumably cosmology but realized it in distinctive ways. We see this iconography on polychrome ceramics, wall murals and rock art. Southwest/Northwest peoples clearly expressed the symbols of the Cult of Quetzalcoatl in these media but they executed them in a style distinct from Mesoamerica. This comparison of shared symbols realized in a distinctive style becomes a metaphor for understanding the relationship between the two regions. By the time of the Spanish conquista in the 16th century, only one of these religions, the Pueblo Katsina Religion, survived. This paper will examine the relationship of these religions to Mesoamerica and how differences in this relationship might account for why one survived and the others disappeared.

[57] Discussant

McGuire, Kelly (Far Western Anthropological) and Nathan Stevens (Far Western Anthropological Research Group)

[166] Following the Cat-tail Highway: Geophytes, Digging Sticks, Formed Flake Tools, and Paleoarchaic Expansion in the New World

Most scholars view the earliest inhabitants of the New World as either specialized hunters or generalized foragers, both perspectives subject to an often strained and incoherent framework of subsistence, technology, gender, work organization, and land-use. A much more parsimonious approach recognizes the energetic potential of geophytes, particular cat-tail (*Typha latifolia*), and allows us to re-imagine how these early populations organized their flaked stone technologies with regard to the subsistence efforts of both men and women; how these groups might have gained a toe-hold in the New World; and how they may have expanded so quickly in such an unfamiliar environment.

McIntosh, Brandon

[113] The Archaeofauna of Isla Cilvituk: Socioeconomic Niche Construction in a Lowland Maya Lacustrine Environment

The archaeofauna of Isla Cilvituk, a Postclassic (A.D. 900-1520) Maya site in the state of Campeche, Mexico, offers a unique opportunity to understand differential subsistence and economic strategies across the Postclassic Yucatan. With significant ecological diversity found throughout the peninsula, the production of empirical data from the zooarchaeological record can provide a solution to what Kitty Emery has referred to as the “ill-defined Maya diet.” It can also provide a contextual framework through which the evolution of prehistoric human behavioral ecology may be interpreted in terms of resilience following the so called “Maya Collapse.” In this paper, the archaeofauna assemblage of the inland lacustrine site of Isla Cilvituk is compared to sites closely connected geographically to the macro-economic core near coastal regions during the Postclassic Period. An account of differential faunal biodiversity across sites from various ecological regions will provide context for how people at Isla Cilvituk utilized their local environment to sustain daily life and participate in market exchange. Such comparison should highlight differential niche construction strategies across the Maya landscape. It is possible that the Maya at Isla Cilvituk extracted commodities specific to their local ecosystem to remain socially, politically, and economically relevant during the Postclassic Period.

McKaig, Rachael (University of Wisconsin-Whitewater, Instituto de Estudios Peruanos)**[285] Material Wealth and Socioeconomic Connections in the Lurin valley – Panquilmá and Pachacamac as a Case Study**

This paper will focus on comparing the different interpretations proposed not only for Panquilmá itself, but also for other Late Intermediate and Late Horizon Period sites in the Lurín Valley. Through the analysis and interpretation of the material goods and other artifacts found at Panquilmá and Pachacamac, along with consideration of existing hypotheses of Lurin Valley life, a hypothesis for a material wealth connection will be made. If such a connection between Panquilmá and Pachacamac did exist, it will be determined if it is also possible that there existed a material wealth inequality that favored Pachacamac, which could have helped form a socioeconomic hierarchy that strengthened Pachacamac's role as being central to Lurin Valley life during the LI-LH periods. In addition, an analysis and comparison of the materials found in both central and peripheral household compounds at Panquilmá will be done to determine whether or not there were material wealth inequalities in the domestic sector which might have created a complex social hierarchy within the community itself, mimicking the previously posited larger socioeconomic organization. This work will resume the debate on issues such as chronological sequences, social organization and power relationships in the Lurín Valley during the LI-LH periods.

McKeand, Peggy [117] see Gilliland, Krista

McKechnie, Iain (University of British Columbia), Dana Lepofsky (Simon Fraser University) and Madonna Moss (University of Oregon)**[160] Move Over Salmon: New Perspectives on Indigenous Fisheries along the Northwest Coast**

For many Indigenous peoples, the right and ability to fish is inseparably linked to their history, social relations, economy, and physical well-being. On the Pacific Northwest Coast, salmon are an iconic genera that have greatly enriched archaeological perspectives on the importance and antiquity of these linkages. However, the emphasis on salmon has been disproportionate relative to the rich mosaic of other species, particularly small fish that pass through conventional screens.

Here, we report on zooarchaeological data compiled using fine mesh screening from over 170 sites from Alaska, British Columbia, and Washington to provide proxy measures of Northwest Coast fisheries over the Holocene. We observe that herring (not salmon) are the most ubiquitous and abundant fish in the majority of zooarchaeological assemblages (NISP) indicating an under-recognized importance to ecosystems and Indigenous peoples on the Northwest Coast. Analyses of temporal variability in 50 well-sampled sites reveals that herring exhibits consistently high abundance and consistently low variance within the majority of sites. We conclude this archaeological dataset reflects a higher and less variable mean abundance of herring prior to the onset of industrial fisheries and provides a new ability to explore regional and temporal variability in Indigenous fisheries on the Northwest Coast.

McKee, Arlo and Charles Frederick**[264] Site Formation Processes at the Murvaul Creek Caddo Site**

Archaeological sites situated in the upland sandy mantle of East Texas often show complex postdepositional alteration. Buried site components are commonly identified and attributed to bioturbation or eolian processes. The Murvaul Creek site (41PN175) is a small Middle-to-Late Caddo

settlement located on an upland ridge above a broad stream valley in Panola County. Although the ground surface is relatively flat, a portion of the site has been buried by sandy sediments. The geoarchaeological studies, sponsored by the Texas Department of Transportation, focused on understanding the causes and timing of site burial. Multiple dating techniques were employed that suggest that site burial occurred immediately following the abandonment of the site and continued through the early historic period.

McKillop, Heather (Louisiana State University)**[85] *The Role of the Sea in the Rise of Maya Civilization***

The sea was integrated into the social and economic lives of the inland dynastic Maya as a supplier of coastal salt and other less critical marine resources, as a platform for transportation of goods and resources across various distances, and as a source of stingray spines and other ritual paraphernalia and symbolism basic to Maya ideology. Sea-level rise has submerged many coastal sites on the mainland, offshore islands, and underwater in the Maya area, leaving them invisible to research. The expertise of the maritime Maya in navigation provided a degree of autonomy from the hierarchical organization of nearby inland city-states, leading to heterarchical organization. I evaluate the importance of the sea for trade during the Preclassic, the role of inland trade of coastal salt during the urban expansion of Classic period Maya city-states in the southern Maya lowlands, and the flexibility of the coastal Maya to re-orient their allegiances with the rise of northern polities during the Postclassic. Case studies from the trading ports of Moho Cay and Wild Cane Cay and the Paynes Creek salt works in Belize are used as a platform to examine broader patterns for the Maya region.

[123] *Discussant*

McKillop, Heather [138] see Vines, Patrick

McKinnon, Duncan P. [157] see Watters, Margaret

McMahon, Kate (Howard University)**[111] "A Sufficient Number": The Historic African American Community of Peterborough in Warren, Maine**

Warren, Maine is located in the midcoast region of southeastern Maine. The small town has a long history that is intrinsically linked to the maritime activities of the region, which began in the mid-seventeenth century. Sometime around 1782, Sarah Peters was brought to Warren as a slave on a ship owned by Captain James McIntyre. After slavery was outlawed in Massachusetts in 1783/1784, Sarah successfully sued for her freedom and married a man named Amos Peters. Together, they raised a large, mixed-racial family, and settled near South Pond, a good distance away from the main village. By the 1820s, they had their own school district, were part of the Baptist church, and had a good deal of land. Their population peaked in the 1850s and 1860s, with as many as eighty-two mixed-race people living in Peterborough. This paper focuses on how African American and mixed-racial communities were able to establish themselves in maritime northern New England in the years prior to the Civil War, particularly during the antebellum period. Peterborough is a case study toward understanding African American communities outside of the plantation setting, and their relationships between agriculture and the sea.

[111] *Chair***McManamon, Francis (Center for Digital Antiquity)****[239] *RBS to CRM (1974-2014)--Continuing and New Challenges and Opportunities***

CRM (Cultural Resource Management) was a new term in the early 1970s, but its foundation is in the concerns about the protection of archaeological sites that developed in the late 19th/early 20th century and continued with the development of emergency/salvage archaeology in the mid-20th century. CRM continued (and expanded) the conservationist approach to archaeological resources, as well as some methodological and technical approaches. One substantial change with CRM has been the focus on project planning. Most of the contemporary archaeological investigations in the US are tied to some aspect of CRM. Topics related to CRM, e.g., professionalism, quality of results, sharing and preservation of information, costs, etc. are important to all American archaeologists. Most, professional archeologists support conservation as the appropriate treatment of the in situ archaeological record. Operationally this approach has the goal of managing archaeological resources for long term preservation, yet allowing prudent, justifiable use of the resource for research. There is general agreement that the network of

professional archaeologists in the various sectors of the discipline, e.g., public agencies, CRM firms, and academic settings, and the statutes, policies, regulations, and guidelines that protect archaeological resources are important to maintain and, preferably, strengthen.

[30] *Discussant*

[151] *Chair*

McNatt, Logan

[70] *Composite Three-Prong Censers From Caves in the Maya Lowlands*

Initial investigations of the Chiquibul River cave system in southwestern Belize in 1984 and 1986 included an archaeological reconnaissance. One area in Actun Kabal was named the Ledge of Offerings because it contained a large quantity and variety of artifacts. The assemblage included elements of the lowland Maya variety of composite three-prong incense burners first described by Stephan F. Borhegyi in 1959. He recognized that separate elements recovered in the 1930s from San Jose, Belize were actually components of a single vessel. This paper discusses the distribution of these censers in caves in the lowland Maya area.

McNeil, Cameron L [161] see Barrios, Edy

McNeil, Cameron (Lehman College, CUNY)

[191] *Negotiating Identity at Río Amarillo: Preservation and Resilience from the Late Classic to the Postclassic Period*

Investigations at Río Amarillo, located in the eastern section of the Copan Valley, have documented changes over time in architectural forms, settlement choices, and the origin of trade items. Within its ceremonial core Late Classic structures and artifacts demonstrate the influence of Copan while a residential group to the north embodies a mixture of influences including those of the interior of Honduras. The site's Classic period inhabitants embraced important aspects of the ideology and identity of the great Maya city, including the ritual use of a censer lid in the form of K'inich Yax K'uk' Mo', the first Copan king. Late Classic contexts contain Ulua polychrome and Copador ceramics echoing patterns found in Copan's center. A wall, likely built during the Terminal Classic, demonstrates a distinctive change at the site, where inhabitants went from a town with few defenses to a more fortified center. Some scholars have suggested that the Valley was completely abandoned between the Classic and Postclassic periods, however it is unclear if this occurred at Río Amarillo, or whether the loss of Copan's influence instead brought about a change in settlement choices for the inhabitants and a return to practices found in the Early Classic period.

[191] *Chair*

McNeill, James (Geonics Limited (retired)), Jonathan Fowler (St. Mary's University, Halifax, NS), Robert Ferguson (Parks Canada (retired)), Rebecca Duggan (Parks Canada, Fortress Louisbourg, Louisbourg, NS) and Sara Beanlands (Boreas Heritage, Halifax, NS)

[157] *Exploration for Early French and Acadian Building Sites in Eastern North America Using EM Magnetic Susceptibility Instrumentation*

A gradient magnetometer detects archaeological anomalies by measuring perturbations in the earth's magnetic field caused by variations in terrain magnetic susceptibility. However, many years ago, Tabbagh suggested that short-spacing, dipole-dipole electromagnetic instrumentation that directly measures near-surface susceptibility should offer some interesting advantages. These include: 1) Excellent spatial resolution combined with reasonable depth of exploration (instrumentation with one-meter intercoil spacing provides both spatial resolution and exploration depth of the order of one-half meter). 2) Simultaneous measurement of terrain magnetic susceptibility and electrical conductivity (the conductivity has two useful components, normal DC conductivity and a component arising from soil magnetic relaxation effects). 3) Ability to directly detect changes in susceptibility of a horizontally-layered earth (approximate layered earth-response calculations are simple and a two-layered earth can be identified either by using either a single-spacing instrument in both vertical and horizontal dipole modes of operation or using a dual-spaced instrument). 4) Survey speed is comparable to that of a single-unit gradient magnetometer. 5) Direct susceptibility measurement provides improved survey interpretability due to freedom from response from remnant magnetism and independence from geomagnetic latitude effects. Several case-histories illustrate use of this technique to identify archaeological features associated with early French and Acadian settlements.

McNeill, Casey (Cultural Landscapes of the Irish Coast Project) and Ian Kuijt (University of Notre Dame)

[259] *Breathing Life into the Village: Microhistories and Residential Genealogies of Domestic Life on Inishark, Co. Galway*

Although widely recognized as an important topic in Historic Archaeology, surprisingly little research has examined the evolution of coastal villages after the Irish Famine. Drawing upon archaeological excavations, archival research, and historical documentation, this presentation explores the spatial interweaving of human action that reshaped the early 19th to mid-20th century village of Inishark, Co. Galway, a historic fishing village off Western Ireland that was abandoned in 1960. Integrating historical ordnance survey maps dating to 1838 and 1898, a 2008 village map, and LiDAR imaging with archaeological survey, we are able to reconstruct shifts in village patterns, residential densities, and land use.

McNeill, Casey [259] see Couey, Lauren

McNiven, Ian (Monash University, Australia)

[85] *Kulkalgal and Tudugal: Geopolitical Manipulation and Domination of Torres Strait Islander Social Networks*

The tropical waters of Torres Strait abound in marine resources but terrestrial resources are less pervasive. The Kulkalgal people occupied the relatively infertile and drought-prone sandy cays of the Central Islands in contrast to fellow Torres Strait Islanders who inhabited the resource rich Western and Eastern Islands. High investment survival for the Kulkalgal centred upon water conservation, inter-island mobility, importation of garden produce, and social network development and domination. To help mitigate terrestrial resource vulnerability, the Kulkalgal orchestrated a regional polity and cemented a vast and complex web of social alliances and trade relationships spread across 700km of seospace. To obviate political vulnerability, a sub-group of the Kulkalgal, the Tudugal, manipulated the regional exchange system by capitalizing upon their privileged access to marine resources and manufacturing shell valuables that became the primary means of purchasing imported and highly prized sea-going canoes which underpinned Torres Strait Islander society. Economic, social and political control and security was further enhanced by introduction of a headhunting ritual cult across the Central Islands and ascendancy of the Tudugal as the most feared warriors across Torres Strait.

McPeek, Kirstie

[142] *An Analysis of Ammunition Found at SCAI-39, Santa Catalina Island*

The coast of Los Angeles Pimu/Catalina Island has been occupied for more than 8,000 years. Early European explorers dropped anchor in the beautiful Isthmus Cove and forged trade relationships with its inhabitants. While always portrayed as peaceful encounters, one object type that would logically reveal the unabridged nature of this trade relationship is spent and unspent ammunition. This presentation provides a discussion and analysis of the metal ammunition found at the village of Nàjquuar (SCAI-39) on the Catalina Isthmus based on material from excavations by Schumacher (1876) and UCLA (1969). Both spatial and chronological considerations aid in understanding the nature and extent of the relationships with European explorers from 1602 through the 1800s.

McTavish, Rachel (University of Wisconsin-Milwaukee)

[48] *Upper Mississippian Large Mammal Butchering Practices: A Case Study from Langford Sites in Northern Illinois*

The focus of this paper is an analysis of how people use a diverse subsistence economy, engaging in agriculture, hunting, gathering, and fishing practices. Choices relating to large game hunting may hold important implications for understanding group interactions within the same ecological region, and relates to culinary preferences and environmental adaptations. People using Langford ceramics occupied the northern Illinois region for 300 years (circa A.D. 1150-1450) before disappearing from the archaeological record. However, the full nature of their subsistence economy remains in doubt. This analysis focus upon the utilization of deer and elk by these groups using data recovered from the several Langford sites located in the Upper Illinois River Valley and its tributaries in northeastern Illinois.

Meadow, Richard H. [286] see Kansa, Sarah

Means, Bernard (Virtual Curation Laboratory)

[152] Promoting a More Interactive Public Archaeology: Archaeological Visualization and Reflexivity through Virtual Artifact Curation

The Virtual Curation Laboratory at Virginia Commonwealth University was established in August 2011 with funding from the Department of Defense's Legacy Program. Since its establishment, the Virtual Curation Laboratory has created hundreds of 3D digital artifact models from a wide range of archaeological sites located in the eastern United States, as well as printed plastic replicas of many 3D digital models. Some have questioned whether our efforts and those of similar projects are curiosities or novelties with little to contribute meaningfully to scholarly research or public engagement. In this paper, I will argue that 3D digital models and printed replicas allow for new ways of visualizing the past, while preserving the actual artifacts themselves. These forms of archaeological visualization enable the broader public and not just a narrow band of researchers to dynamically and meaningfully interact with rare and fragile objects in ways that would otherwise not be possible, empowering their own contributions to interpreting and understanding the past.

[74] Discussant

[74] Chair

Medeiros, Melanie (William Self Associates) and Jocelyn Bernatchez (William Self Associates)**[42] Exploring Virgin Anasazi Settlement Patterns and Community Structure in the St. George Basin, Southwestern Utah**

Archaeological research on the Virgin Anasazi has expanded tremendously during the last 30 years. However, the vast majority of this research has been primarily concerned with answering basic cultural-historical questions, including those related to chronology, the basic characteristics of material culture, and subsistence strategies. As a result, our knowledge about more complex aspects of the Virgin Anasazi culture, such as social organization and integration, community structure, and interaction and exchange, lacks the depth and resolution available for most of the Puebloan region, and the Greater Southwest in general. Despite these caveats, there is a vast amount of data available documenting the Virgin Anasazi cultural sequence capable of addressing the more nuanced complexities of the Virgin occupation and greatly advancing our understanding of the Virgin Anasazi and their place in the history of the Southwest. Using a GIS-based model, we explore settlement pattern(s), landscape use, and community organization from Basketmaker II (300 B.C.–A.D. 400) through the end of the Virgin sequence in late Pueblo II/early Pueblo III (A.D. 1150/1250) based primarily on survey-level data from the many compliance projects from the Virgin Anasazi region, and specifically from the St. George Basin.

Medeiros, Melanie [141] see Bernatchez, Jocelyn

Medina, Paulo (Boston University) and Mario Giron-Ábrego (Boston University)**[70] Mesoamerican Caves: Supernatural Ideas, Real Places**

In their 1979 publication, "Pathways Into Darkness" MacLeod and Puleston formulated the first model for the cosmological significance of caves. They applied the widely accepted model of a three level universe onto the Popol Vuh. Then they equated their work in Petroglyph Cave directly to Xibalba and the underworld. In recent years, many of the fundamental premises of the model have come under attack. Recently, Nielsen and Sellner Reunert have argued that the layer model of the universe was introduced by the Spanish and is not a Pre-Columbian indigenous concept. In addition, advances in cave archaeology by James Brady and others have suggested that caves are far more closely associated with an animate earth rather than the underworld. This paper challenges the very concept of caves as "portals." Instead it argues that the notion of a portal is a Western concept based on the idea that god exists in a different dimension. Thus, the way to connect with the supernatural is through a portal. For the Maya, on the other hand, supernatural figures are much more immediate and real. The cave is the Earth Lord's stone house. The Maya enter and are in his presence.

Medina, C. Lorena**[309] The Importance of the Secular Clergy during the Sixteenth Century in Guerrero State, Mexico**

At the beginning of the sixteenth century, the American continent and its inhabitants were immersed, as it has been called by Miguel Leon-Portilla, in a encounter of two worlds; two worlds with a vast cultural differences, differences that at the same time found analogies in the historical process among them. Thus, the territory called Mesoamerica was conquered by the Spanish in both military and religious terms. In the religious aspect is important to note that while much of the evangelization was the responsibility of

the regular clergy, it is also important to mention that the secular clergy reinforced and formed an important part of that process. Thus, the present disclosure denotes different aspects involving the evangelization process by the secular clergy in the state of Guerrero. The evangelization procedures by the secular clergy as well as their interactions with indigenous groups will be raised. Foregoing, within the policies of the government of New Spain, the rules establishes by the Archdiocese of Mexico and the entrenched relations with the regular clergy.

Meehan, Pascale [341] see Egan, Rachel

Mehta, Jayur (Tulane University) and Scott Johnson (Washington University in St. Louis)

[177] *A Preliminary Analysis of Surface Soils at Emal, Yucatan, Mexico*

Surficial sediments, local depositional environments, and inter-and-intra-site variations in soil profiles were evaluated in the field at Emal between June 17th and July 10th, 2013. Emal is located at the very northern edge of the Yucatan Peninsula. The site was constructed on a promontory that extends into an inland estuary, Rio Lagartos, that is delimited from the Gulf of Mexico by a Quaternary barrier island. Surface soils were sampled to a depth of 80 cmbs across the Emal landform using an AMS split-tube auger and taken from a broad range of contexts. Sediments were described in the field according to USGS and NRCS guidelines. Soil salinity was measured using an electrical conductivity meter and preliminary analysis of salinity and surface soils indicates potential areas for salt production at Emal. Furthermore, spatial analysis of surface sediments indicates three main soil classes were present; beachhead (Bh), Lower Platform (Lp) and Upper Platform (Up). Lp and Up soils presented darkened organic horizons with charcoal and sherds to depths of 80 cmbs and may potentially indicate the presence of a hortic horizon or mollic epipedon. These data help inform our understanding of salt production and subsistence at this long-occupied coastal site.

[177] *Chair*

Meier, Holly [109] see Bousman, Britt

Meierhoff, James (University of Illinois at Chicago), Philip Millhouse (Illinois State Archaeological Survey) and Edward Jakaitis III (Illinois State Archaeological Survey)

[176] *Locating Kellogg's Tavern; Prairie Way Station and Frontier Battlefield during the Black Hawk War 1832*

This presentation will discuss the recent attempt to locate "Old Kellogg's Place"; a pioneer settlement and frontier tavern located on the edge of America's old Northwest frontier. Functioning as an early frontier institution for decades, this stop over on the Peoria-Galena trail would host two separate engagements between Illinois militia and native forces during the Black Hawk War of 1832. This presentation will discuss the conflicting images of the Black Hawk War, past and present, and its importance to the establishment of Midwest Statehood and further national territorial expansion. Contextualized at the Kellogg's Grove settlement, the investigation for this frontier settlement elucidates the nature of Native-Anglo relations in 1830's Illinois. Despite documentary evidence, as well as local knowledge and lore (including the graves of American combatants and a stone monument commemorating the battles), the true location of Kellogg's tavern and the accompanying battlefield may still be unidentified.

Meiggs, David (Rochester Institute of Technology)

[124] *Chair*

Meiggs, David [124] see Chase, Brad

Meissner, Nathan [123] see Marino, Marc

Meissner, Nathan (Southern Illinois University Carbondale)

[147] *The Economics of Point Manufacture and Factionalism in the Postclassic/Contact Period Petén Lakes Region, Guatemala*

The Late Postclassic (A.D. 1400 - 1525) and Early Contact Periods (A.D. 1525 - 1697) of the Petén Lakes region are marked by intensified political restructurings including hostilities, alliances, and factional competition among local polities. This paper examines the role of political geography and its impacts on lithic production through a technological systems approach to chert and obsidian small projectile

weaponry. New research that includes resampling techniques and Social Network Analysis (SNA) indicates that the Chak'an Itza of Nixtun-Ch'ich', the Itza of Tayasal and Quexil, and the Kowoj of Zacpetén had complex methods of raw material procurement for points that brought certain ethnopolitical groups into exchange networks with one another while pushing others apart. A macroscopic analysis of the technological styles of arrow points among Petén polities reveals interesting patterns in manufacturing design, including the invasiveness of flaking, blank selection, blank orientation, and preferred morphology. Distant connections to the Xiu, Itza, Chetumal, Dzuluinicob, and Chuj polities are also explored in terms of point production and their potential interactions with Petén groups. Such information adds to anthropological literature by focusing on the complex intersection of technological systems, micro/macro-regional exchange, and ethnopolitical factions.

Mejias Pitti, Ismael [105] see Toyne, Jennifer Marla

Melgar, Emiliano [103] see Edgar, Heather

Melgar, Emiliano (Posgrado UNAM)

[253] *The Technological Analysis of the Turquoise Objects from the Great Temple of Tenochtitlan*
In the offerings of the Great Temple of Tenochtitlan in the Basin of Mexico, the Aztecs buried thousands of turquoise pieces at different constructive stages of this building beginning AD 1325 until AD 1520. The majority of them were inlays assembled in complex mosaics, like disks, ornaments of certain Nahua gods, and parts of chert knives and scepters. With the compositional analysis with UVF, XRF, FTIR, and PIXE, we know that almost all of the bluish-stones were chemical or real turquoise from Northwestern Mexico and perhaps the American Southwest. But, where these objects were produced and with which tools and techniques? The aim of this paper is to show the technological analysis applied on the turquoise pieces from Tenochtitlan, using experimental archaeology and the characterization of the manufacturing traces with SEM. As results, we identified three lapidary traditions at Tenochtitlan: one is related with the Mixtecs, another is non-Mesoamerican, and the last one shares the tools and techniques of the Tenochcan Imperial Style. Finally, we will compare them with turquoise objects from Mixtec and Huastec sites, the Chalchihuites region, Sonoran settlements, and the American Southwest, in order to confirm and discuss their places or workshops of origin.

[253] Chair

Mellars, Paul

[71] *Discussant*

Melton, Mallory A. [260] see Peles, Ashley

Meltzer, David (Southern Methodist University)

[24] *The Last Time This Happened: The 1930s Carnegie Program of Funding Paleoindian Research*

The Cramer endowments, targeting as they do a specific scientific problem and supporting the archaeological and interdisciplinary work of more than half a dozen institutions, are both extraordinarily generous and virtually unique in the annals of archaeological research in North America. But not entirely unique: in the 1930s the Carnegie Institution of Washington invested several tens of thousands of dollars into research at Late Pleistocene archaeological sites, support that was vital at a time when the country was in the depths of the Great Depression. The Carnegie funding fueled a decade-long explosion of research and knowledge that formed the basis of our understanding of North American Paleoindians in the second half of the 20th century. The success of that program owed much to the vision of John Merriam, then President of the Carnegie Institution, and to E.B. Howard, whose seminal work at Clovis convinced Merriam of the benefit to supporting interdisciplinary research in this arena.

Melville-Mant, Alison (University of Connecticut) and Sally McBrearty (University of Connecticut)

[209] *Testing Projectile Performance and Diagnostic Impact Fractures on Replica MSA Basalt Points*

This experiment aims to establish whether: 1) basalt points record diagnostic impact fractures when used as weapon tips, 2) impact fracture patterns on basalt differ to those on "high quality" raw materials, and 3)

if large, triangular points similar to those from the early MSA can function as arrow tips. Despite the wide occurrence of basalt in East African MSA assemblages, basalt has not been experimentally tested for impact fracture preservation. We compare macro-fractures on basalt arrow tips with impact damage patterns that have been consistently demonstrated in experiments on flint, chert, and quartzite. We also test assumptions that MSA points cannot function as projectiles and whether commonly used size categories for spears, darts, and arrows (derived from ethnographic collections of known function) actually correspond to functional limits. Our experimental points have tip cross-sectional areas and tip cross-sectional perimeters larger than known arrows, but comparable to MSA assemblages. We assess their projectile performance using penetration rate, penetration ratio, and durability. Our experimental points were found to function as projectile armatures and to exhibit impact damage. Although basalt is often neglected in functional studies, we suggest it can contribute important data for understanding early MSA behavioral innovations.

Menchaca, Victoria (University of Central Florida) and Sarah Barber (University of Central Florida)

[8] *Ballcourts, Ceremonial Centers, and Trade Routes in the Manialtepec Basin of Oaxaca's Central Coast*

This paper reports on the results of a recent survey of the Manialtepec Basin, located on the Central Pacific coast of Oaxaca, Mexico. The Manialtepec Basin is a small coastal pocket surrounding the 1640 ha Laguna Manialtepec. The basin has only limited arable land, but it is the endpoint of the permanent Manialtepec and Chila rivers, both of which may have been important inland-coastal transportation corridors during the Pre-Columbian era. A brief reconnaissance and one rescue excavation in the 1970s identified several sites with mounded architecture and carved stone monuments. The Proyecto Arqueológico Laguna de Manialtepec (PALM) was designed to re-identify sites from the earlier study and provide greater detail on regional settlement patterns in the precolumbian era. The results demonstrated the Manialtepec Basin had relatively dense settlement from the Late Classic period through the arrival of the Spanish. Several sites with modest monumental architecture—including ballcourts—were identified. The site of Bajos de Chila, site of the 1970s rescue excavations, was relocated, and further information was recovered about this important Formative period coastal site. Finally, the region may have corresponded to an ethnic or economic boundary, based on variability in the ceramics across the survey area.

Méndez Melgar, César (Universidad de Chile), Omar Reyes (Centro de Estudios del Hombre Austral, Instituto d), Amalia Nuevo Delaunay (Instituto Nacional de Antropología y Pensamiento L), Juan Luis García (Instituto de Geografía, Pontificia Universidad Cat) and Antonio Maldonado (CEAZA)

[69] *The Initial Peopling of Continental Aisén: Problems Faced, Recent Results and Research projections*

This paper summarizes recent research conducted to elucidate the characteristics of the initial occupation of central northern Aisén; framed within the early settlement of Central Patagonia. Essential to this endeavor was modeling the environmental conditions during the last 19,000 years through integrating palaeoecological (sedimentary cores) evidence, geomorphological analysis, and the archaeological record of Cisnes and Nirehuao basins (44°30'-45°30'S). These activities focused on contextualizing previous archaeological evidence gathered at Baño Nuevo 1 (10700 cal yr BP onwards) and El Chueco 1 (11500 cal yr BP onwards) with new information gathered through a search program at stratigraphic and surface locations. Lake Shaman and El Embudo sediment cores provide detailed records of major changes in effective moisture and temperature throughout the Holocene. Comprehensive maps and field measures of the extent of major geoforms (proglacial lake shores, moraines, erratics) provide indicators for areas available for human occupation at the Pleistocene Holocene transition. Surface findings at Pampa Coichel and stratigraphic excavations at Baño Nuevo 15 offer new archaeological datasets with material evidence for human occupations starting at 10650 cal yr BP and allow characterizing an intermittent, though recurrent initial occupation of northern Aisén. FONDECYT grant #1130128.

Mendha, Muhammad Ali (Texas A&M University)

[43] *Fauna and Identity at Goat Springs Pueblo*

Only limited research has been conducted in the Rio Abajo region regarding the social dynamics of its people. In this project I hope to further our understanding of the Rio Abajo region using data from Goat Springs Pueblo (LA 285), a site consisting of 250 rooms near Magdalena, New Mexico, overlooking the southern Rio Grande valley. This pueblo, located on a trail connecting Zuni and Rio Abajo villages, was

occupied at least two times during the late Pueblo period (A.D. 1300 - 1680). This project examines the mammalian and avian remains found within the middens and room blocks of Goat Springs Pueblo during the 2011 and 2013 excavations to help understand the identity, economy, and ritual practices of the inhabitants of the pueblo, including their response to Spanish occupation at the village. I will address questions regarding changes in diet and activity involving the use of faunal remains by identifying species and by using a variety of methods of analysis.

Mendoza, Zoila (Native American Studies Department, University of California, Davis)**[120] Contemporary Indigenous Pilgrimage: An Approach to the Andean Sensory Model**

Using the example of pilgrimage among Quechua-speaking inhabitants of Cuzco, Peru, I explore the role of the senses in the predominant form of knowledge and memory in Andean culture. I hypothesize that the keystone of such a form of knowledge and memory is the intrinsic relationship between the visual, auditory, and the kinesthetic sensory experiences. Understanding this allows us to explain why Andeans have chosen music, dance, festivals, and other kinds of public performances as privileged forms of social action throughout history. I look closely at the dance troupes that walk for three days and two nights to the sanctuary of the Lord of Qoyllorit'i (Lord of the Shining Snow) accompanied by the incessant music of flutes and drums.

Mendoza, Rubén (CSU Monterey Bay)**[288] The Olmec Resurgence: Environmental Redundancy, Resource Interdependence, and the Reciprocal Evolution of the Hierarchical-Heterarchical States of Highland-Lowland Mesoamerica**

The recent publication of Robert Carneiro's "The Circumscription Theory: A Clarification, Amplification, and Reformulation" provides an essential point of departure for assessing the role of resource concentration in prompting social complexity. Like Carneiro's 1970 treatment of the classic concept of environmental circumscription, in which demography and conflict are construed as fundamental to that panoply of processes culminating in the rise of the state, the monopolization of circumscribed and critically vital resource deposits is deemed central to the formulation of the compound chiefdom, and by extension, the incipient state. Such a model provides a particularly cogent framework for understanding those socioeconomic and political dynamics that underlie the rise of the ancient state of Teotihuacan, México. By extension, this study proposes that that modicum of "environmental redundancy" characterizing the ecology of Mesoamerica's Gulf lowlands prompted resource strategies culminating in the politico-genesis of dispersed Gulf lowland compound chiefdoms, and segmentary states or heterarchies. Ultimately, the heterarchical configuration of the Gulf lowland "states" was born of a reciprocal pattern of highland-lowland interdependence (mediated by way of the formation of pan-regional export alliances or Gulf lowland cartels identified with transacting strategic ventures) with the burgeoning populations of the hierarchically-organized paramount highland polity of Teotihuacan.

[288] Chair

Mentzer, Susan M. [14] see Vasquez, J. Javi

Menze, Bjoern [65] see Ur, Jason

Mercado-Allinger, Patricia**[151] Reflections on the Development of and Future Directions for State CRM Programs**

Passage of historic preservation and environmental protection laws in the 1960s and 1970s, coupled with the Cultural Resource Management and Airlie House conferences in 1974, all contributed to the creation and recognition of what is now commonly referred to as cultural resource management (CRM), an important and applied facet of archaeological research. Each SHPO (State Historic Preservation Officer) is tasked with carrying out the management and preservation of the state's archaeological resources. These goals present significant challenges to each SHPO program. This paper will review a selection of strategies that programs have employed in order to achieve such critical management goals as protection, preservation and public interpretation of archaeological resources; forming good working relationships with archaeological practitioners; and forging support from the archaeological community and decision makers. There will also be some consideration of "Where we go from here?" with ongoing, as well as new, issues and challenges facing state CRM programs.

Mercier, Simon [191] see Costa, Philippe

Meredith, Clayton (Idaho State University), Willa Trask (Texas A&M University), Jillian Jordan (University of New Mexico) and Shannon Lucernoni (University of New Mexico)**[137] Analysis of a Classic Period Multi-Use Tomb Assemblage in Southern Belize**

Southern Belize is typically considered geographically and culturally peripheral in Classic Maya prehistory. Although researchers have documented the development of a "southern Belize style" in terms of architecture and material culture, to date very little systematic work has been undertaken to better understand mortuary behavior in the region. In 2012, excavations at Uxbenka documented two tombs with stepped entryways in the site's L group, located adjacent to the Stela Plaza. Although looting destroyed most of Tomb L1, systematic excavations of the intact Tomb L2 yielded a large skeletal and artifact assemblage, comprised of over 10 individuals and approximately 30 ceramic vessels.

The present research utilizes skeletal and dental data, ceramic analyses, isotopic data, architecture, and contextual data from Tomb L2. We suggest that Tomb L2 was deliberately constructed to be easily accessed, and was repeatedly used for both primary and secondary burials throughout the Classic period. It may have functioned as an important location for ancestor veneration at Uxbenka. Although tombs with multiple individuals are not unknown in the Maya area, tombs with stairs for entryways are far rarer both in the region and the greater Maya area.

Meredith, Steven (Panamerican Consultants, Inc.) and Christopher L. Mickwee (Panamerican Consultants, Inc.)**[165] Investigation of Stone Features in Context of Past Interpretations**

The investigation of archaeological features constructed of stone in the Southeastern United States has a history that can be traced almost to the beginning of archaeology in the region. Current interpretation of the wide range of stone feature types has been informed through excavation, ethnographic record, as well as speculation. Because some stone features are the result of ritual activity, and may contain human remains, interpretation of these features for regulatory purposes requires careful assessment. The results of investigations into stone features and subsequent regulatory application have varied across state lines in the past. Because of this, field methods and interpretations of stone features deviate from state to state. This paper presents case studies on how the history of stone feature interpretation affected interpretation of sites for Cultural Resource Management work in Alabama and Georgia, and how it may affect archaeological interpretation and preservation.

Merewether, Jamie**[68] Working with the Public at Crow Canyon Archaeological Center in Southwestern Colorado**

Crow Canyon Archaeological Center was established in 1983, as a non-profit center for long term archaeological research that involved the public in the study of the prehistoric sites. Children from 4th grade through high school and adult participants come from across the country to attend week long programs, where they are taught about the archaeology of southwestern Colorado and the southwestern US through experiential education programs and participation in field excavations and lab work. We stress site preservation and archaeological ethics to all groups. American Indian involvement is also part of our mission. Our Native American Advisory Group advises and provides native perspectives on our programs and research projects. Our board provides financial support, advice and advocacy for archaeology and Crow Canyon in their home communities. Our president and leadership team meets with U.S. and state politicians to encourage governmental support of archaeological research, site preservation and curation. We collaborate on projects and grants with our local repositories, often borrowing artifacts for new or additional studies, thus highlighting the fact that curated artifacts and records continue to be valuable for future research.

Merewether, Jamie [333] see Schleher, Kari

Merriman, Christopher (University of New Mexico), Keith Prufer (University of New Mexico) and Megan Walsh (Central Washington University)**[341] Climatic and Anthropogenic Causes of Erosion at Uxbenká, Belize**

Uxbenká is a small Maya polity located in the Rio Blanco Basin of southern Belize. This paper outlines a landscape evolution model that incorporates geomorphology, pedology, paleoclimatology, and paleoecology to better understand variations in erosion rates to investigate human-climate-landscape interactions within the basin. Alluvial terraces on the lower Rio Blanco record 9000 years of stratified

deposits and can be considered the inverse of fluctuation in basin-wide erosion rates. Accumulation rates in alluvial terrace deposits vary in relation to the availability of basin-wide hillslope sediment. Periods of landscape stability and pedogenesis result from relatively drier conditions and/or limited inputs from anthropogenic landscape modification. Conversely, greater precipitation and/or increased anthropogenic deforestation produce landscape instability. Fluctuating erosion rates and the consequent accumulation of over-bank flood deposits on the lower Rio Blanco are reflected in a series of buried soils in a 4 meter deep profile. The timing of these fluctuations is bracketed by a five radiocarbon dates. The results indicate that following Early Holocene stability, erosion rates were highest beginning in the Middle Holocene coinciding with human colonization of the region and continue through the historic period with a return to stable conditions in recent decades.

Mesia, Christian (Museo Nacional de la Cultura Peruana)**[38] Convincing the Local and the Foreign: Political Strategies at Chavín de Huántar**

Excavations at Chavín have determined that between 1200-500 B.C., the Wacheqsa sector was extensively used and occupied. The archaeological record in this sector bears evidence of two convincing strategies developed by the authorities of Chavín, one aimed towards gaining local support and the other aimed towards gaining the support of elites from outside of Chavín. Large feasting events were material manifestations of power and prestige, a symbol of labor organization and access to resources. Chavín offered different types of wealth to different classes of people. Elites from outside the Conchucos area came to Chavín in order to be initiated in the Chavín religious system and legitimize their authority; they obtained the wealth of authority, and authority became a commodity. On the other hand, inhabitants of the Wacheqsa sector worked for the ceremonial center, gaining access to resources most likely provided by the authorities of Chavín in exchange for their labor; in addition they obtained religious fulfillment by their participation in the maintenance of the temple.

Mesoudi, Alex [193] see Schillinger, Kerstin

Messager, Erwan [201] see Naudinot, Nicolas

Messer, Andrea (Penn State)**[88] Gaddafi to Post Gaddafi, the Changing Status of Libyan Archaeology in the Media**

Libya is the site of remains of at least Phoenician, Greek, Roman and Berber settlements however, under the country's 43-year rule by Muammar Gaddafi, archaeological work by outsiders was often limited or curtailed. During the recent revolutionary activities in Libya, including the overthrow of Gaddafi, some archaeological sites were endangered by the conflict. Now, after the rise of a new government, archaeology can seemingly return to normal pathways. How did the media present the state of archaeology during Gaddafi's reign? How important were the archaeological sites considered during the conflict? And now, how do the media represent archaeology in Libya? Through an evaluation of newspaper and magazine articles covering all three time periods, a picture of how the media views archaeology in Libya will emerge.

[88] Discussant

Messinger, David [124] see Middleton, William

Metcalfe, Sarah (University of Nottingham, UK), Sarah Davies (Aberystwyth University, UK) and John Barron (USGS, Menlo Park, USA)**[158] Holocene Climate Variability across Mesoamerica: The Monsoon and Other Drivers of Change**

Although dominated today by summer precipitation associated with the seasonal migration of the ITCZ and the North American (or Mexican) Monsoon (NAM), the area encompassed by the term Mesoamerica experiences very different climatic regimes that display differential responses to forcings such as the PDO and ENSO (originating in the Pacific) and the AMO and NAO (originating in the Atlantic). Over the Holocene, other forcings also come into play that might be expected to show regionally varying responses. By drawing together palaeoclimatic data from a wide range of sites and proxies, the spatial patterns of change over Mesoamerica during the Holocene can be explored and the changing role of different forcings considered. Over the last 4000 years, ENSO-type variability appears to have become increasingly important as summer insolation forcing declined in the northern hemisphere. Differential regional sensitivities to climatic variability, including seasonality, need to be considered, although

resolving the latter is beyond the scope of most of our palaeoenvironmental proxies. Any exploration of the links between climate change and archaeology needs to take into account the complexity and inadequacies of our palaeoclimatic understanding based on both data and models.

Metcalfe, Duncan [317] see Springer, Corinne

Metcalfe, Duncan (University of Utah), Corinne Springer (University of Utah) and Shannon Boomgarden (University of Utah)

[317] Range Creek Field Station: The Advantage of "Place"

For archaeologists with strong quantitative and ecological orientations, field stations provide the opportunity for the long-term study of the past in a defined place. The Range Creek Field Station is one such place. It is a 3,000 acre field station in the heart of about 50,000 acres of very remote public lands in central Utah and is managed by the Natural History Museum of Utah at the University of Utah. This area is rich in well preserved archaeological sites related to the Fremont Complex. It also provides ongoing opportunities to collect data on the character of variation in modern fauna, flora, geomorphology, geology, hydrology and weather that contribute to the dynamic environmental landscape of the canyon today. It provides ongoing opportunities to study paleoenvironmental proxy data to recast the modern data into reconstructions of past environments. And it allows for modern experimental studies of the costs and benefits of a variety of activities to inform anthropologists about how we might expect people to have adapted to those dynamic environments in the past. We review the status of our current efforts in this multi-year, multi-disciplinary research project.

Metz, Brent (University of Kansas)

[161] An Ethnographic Approach to Exploring Indigenous Heritage and Identity in the Former Ch'orti'-Speaking Area

From 2004-2011 the author, who had lived among Ch'orti'-speakers for two years in eastern Guatemala, expanded his research to historical and embodied indigenous memory in the largest conceivable extension of the former Ch'orti'-speaking region of Guatemala, Honduras, and El Salvador. He visited the most remote areas of 31 municipios, videorecording interviews with elders and others said to know the most about local history and tradition. Nearly all acquaintances were interested in indigenous heritage, although many did not recognize it in themselves. Certain distinguishing features came into focus as indicative of ethnic ancestry, but the larger lessons learned include: a) much folklore in the region, indigenous, Ch'orti', nor not, is based in Nahua traditions, b) culture and identity are often incongruous, c) it is difficult to distinguish Ch'orti', Lenca, and Nahua-Pipil heritage, d) indigeneity today is less about unadulterated continuities from the ancient past than creative cultural trajectories distinct from those of dominant populations, and e) a divide between urban and rural cultures and identities matches considerably with the Ladino/indigenous ethnic split. Something for certain is that more archeological, historical, and ethnohistorical research is needed to reveal the ancestry of today's population.

Meyer, Regina (Missouri Army National Guard)

[54] Discussant

Meyer, William (University at Buffalo, SUNY)

[240] Mars and Venus in retrograde? An analysis of gender patterns in the stories we tell about the past

It has been observed that, while the number and variety of their practitioners may be expanding, the overall practice and content of engendered archaeologies seem to have grown static in recent years. We continue to have similar conversations in session after session, meeting after meeting. At the same time, another critique of engendered archaeologies holds that our interpretations are peopled with individuals too like modern subjects, performing modern (Western) gender roles. In a pair of 2010 presentations, I considered why this might be the case. I concluded that our material-gender relationships with non-human things in the present (relations that each of us has developed since birth) interfere as we try to understand the material culture of the past. At the time, I took the critique of how we gender subjects at face value. In this paper, I present a qualitative analysis of a corpus of recent scholarship in feminist and gender archaeologies. My goal is to demonstrate the variety (or lack thereof) in our casting of gender roles in the cultures that we study. Challenging the patterns that have crept into our engendered narratives of the past might provide an escape from the "holding pattern" in which we find ourselves.

[64] Discussant

Meyer, Michael (MoDOT)

- [111] *The Early Years of St. Louis: Evidence Gathered at the Madam Haycraft (23SL2334) and Louis Beaudoin (23SL2369) Sites*

In 2013, the Missouri Department of Transportation conducted a geophysical survey followed by ten weeks of excavation in an effort to identify and evaluate archaeological deposits prior to proposed reconstruction of the I-64/I-70 interchange with I-55 at the end of the Poplar Street Bridge in downtown St. Louis. The project, located immediately south of the Jefferson National Expansion Memorial and the Gateway Arch, is situated on the southern edge of what was historically the old French village of St. Louis. Excavation not only identified features associated with the mid-nineteenth century occupation of the area, but also remnants of one of the original French homes built in the 1770s. Results of the 2013 field season indicate that portions of two sites, the Madam Haycraft Site and the Louis Beaudoin Site, contain stratified cultural deposits that include an horizon with intact remains dating to the French founding of the city. The discovery of the house owned by Louis Beaudoin, as well as associated features, provides hope that more evidence of the old French village remains to be found.

Meyers, Katy (Michigan State University)

- [36] *Linking the Spaces of Resting Places: GIS, Anglo-Saxon Archaeology and Linked Open Data*
Placing the dead in space, both within the broader landscape and in relationship to one another, has important cultural and social implications. Spatial placement can denote broader social status, aspirational goals of the individual and mourners, religious or ancestral beliefs, or may be indicative of the community's relationship to the deceased. The importance of space within mortuary archaeology has been recognized for the past half century, and geographic information systems (GIS) has become an integral part of contemporary mortuary research projects. Despite this, primary spatial data from GIS are rarely shared, published, or stored in shareable formats, which inhibits the growth of mortuary spatial studies by forcing constant re-creation of spatial data. Linked open data (LOD) provides a much needed approach for archaeological studies of the deceased. Access and standardization would decrease redundancies, sharing would improve sample size, and linking would allow for creation of more efficient connections between data sets. However, there are numerous challenges of sharing spatial LOD from mortuary sites that need to be addressed. Using Anglo-Saxon burial practices as a case study, I argue that mortuary archaeology and spatial analysis of cemeteries would benefit greatly from the implementation of a LOD plan.

- [258] *Discussant*

- [36] *Chair*

Meyers, Maureen (University of Mississippi) and Richard Jefferies (University of Kentucky)

- [74] *C.G. Holland: Archaeological Survey in a Cultural Crossroads*

An important post-World War II archaeologist in Virginia, C.G. Holland is best known for his work on projectile point typology for Virginia and his survey of southwestern Virginia. He was also a long-time editor of the Archaeological Society of Virginia Quarterly Bulletin, and worked on many other sites across the state. This paper reviews his archaeological career, and focuses on important sites, including the Trigg site and the Carter Robinson Mound site, which he identified in his southwestern Virginia survey. In addition, it highlights more recent work on these sites, and assess Holland's theory of southwestern Virginia as a cultural crossroads in light of these more recent studies.

- [212] *Discussant*

Meyers, Allan

- [330] *Pre-Revolutionary Henequen Landscapes of Northwestern Yucatan*

The countryside of northwestern Yucatan was transformed during the late nineteenth century in response to the international demand for henequen, a native agave yielding fiber for the cordage industry. Drawing on the bonded labor of Maya-descent and immigrant populations, landowning elites developed an infrastructure of haciendas, railways, and ports that steadily expanded until the Mexican Revolution irrevocably changed the terms under which the henequen export economy operated. The reordering of rural settlements during this Henequen Episode (1860-1915) has strongly influenced the human geography of modern Yucatan, and scholarly interest in the material basis of haciendas and related sites is accelerating. Recent research highlights multiscale explorations into a variety of historical landscapes that, while enabling the propagation of an agricultural commodity, served as forums for human-

environment interaction, cultural heterogeneity, and class conflict. Case examples shed light on the material conditions that shaped the experiences of rural laborers in the run-up to revolution. Moreover, these studies underscore the prospects and challenges of spatial frameworks for investigating the social dynamics of the henequen boom in Yucatan.

Meza-Peña, Abigail (Universidad Nacional Autónoma de México, IIA), Christopher Moreheart (Arizona State University), Destiny Crider (Luther College), Socorro Baez molgado (Human Evolution Research Center/Phoebe A. Hearts M) and Sabrina Sholts (Stockholm University)

[143] Understanding Violence: Ritual, Conflict, and Sacrifice in the Basin of Mexico

This paper presents results from recent archaeological excavations of a site of mass human sacrifice in the northern Basin of Mexico. During a time of demographic change and political transformation, a small spot where a series of freshwater springs fed a brackish lagoon became the site of ritual violence. Excavations in 2007 and in 2012 uncovered the decapitated crania of over 180 individuals—more than the estimated populations of villages during this time. Lines and mounds of human skulls, most with articulated cervical vertebrae, constitute the assemblage of human remains. Finger bones, some recovered from eye sockets and cranial cavities, are the only other major represented sub-cranial remains. These characteristics suggest sacrificial offerings but also illustrate the detailed ways in which violence was integrated ritual practice. Furthermore, although taphonomic and depositional processes have affected the site, our analysis suggests that all the victims were male adults, possibly from different social classes and biological populations. Patterns in these data elucidate past rituals, conflicts, and specific historical events. They also force us to question our biases and assumptions about male violence, offering a unique opportunity to carefully interrogate our understandings of past gender relations.

M'Hamdi, Mondher [22] see Anderson, Patricia

Michael, Amy [70] see Burbank, Joshua

Michael, Daniel (UCDenver) and Julien Riel-Salvatore

[209] Assessing Late Pleistocene Hunter-gatherer Mobility in SE Asia through Lithic Technology

Terminal Pleistocene hunter-gatherers of tropical SE Asia employed mixed-subsistence economies that articulated with philopatric mobility to counter resource scarcity in those environments. The peculiar constraints this may have imposed on their mobility suggests that their land-use strategies may have significantly differed from those of contemporary population in Western Eurasia. Stone tool technologies across the region are unspecialized, a reflection of both locally available workable stone and the abundance of organic tool-making materials. This limits what can be inferred about forager mobility on techno-typological grounds. Here, we use an alternative approach focusing on whole assemblages to see whether SE Asian forager land-use strategies fall along a curated-expedient axis documented in other parts of the world at that time. Data from 42 assemblages conform to the expected negative relationship between retouch frequency and artifact density, indicating that, in spite of tropical SE Asia's ecological distinctiveness, Pleistocene foragers in that region alternated between residential and logistical land-use strategies. Additionally, these data provide a baseline against which to assess the mobility strategies of the Liang Bua hominins, which display a distinctive form of organization that is at odds with that documented throughout the region, with implications for the taxonomy of *Homo floresiensis*.

Michael, Amy (Michigan State University)

[303] Exploring the Relationship between Sampling Loci and Developmental Age in Isotopic Studies of Human Teeth: A Pilot Study from Kamenica, Albania

Strontrium isotope signatures in human teeth are widely employed to explore human migration through time and across space. This study utilizes technical principles outlined in previous studies, but further explores the methodological practice of strontium isotope research as it relates to sampling location on the enamel surface. Due to discrepancies in results from a preliminary study carried out by one of the authors, we hypothesize here that different isotopic signatures may be exhibited over the extent of the enamel surface on a single tooth, as a function of age. If our hypothesis is supported, this study begins to address possible limitations to strontium research, specifically the subject of multiple movements (Price et al. 2002) and appropriate sampling protocol. First, second, and third molars from two Albanian Iron Age (ca. 3000 BC) individuals were sectioned into thirds and enamel from each section was submitted for strontium isotope analysis at MIT's Laboratory of Earth, Atmospheric and Planetary Sciences. The

sections sampled correspond with known developmental ages (Reid and Dean 2006), a powerful source of data for bioarchaeologists concerned with sociocultural aspects of prehistoric migration. We present results of the analysis and discuss implications for further research in central and northern Albania.

[303] Chair

Michel, Robin [125] see Clay, Vickie

Michelaki, Kostalena [143] see Kelly, Sophia

Micheletti, George [252] see Powis, Terry

Mickel, Allison (Stanford University)

[257] *Traces of Trowels: Assembling Oral Histories of Excavations in the Middle East*

Much has been written about the problem of grey literature-- or worse, excavations that have never been published. But even when excavations are published, the perspectives presented are extremely partial. They generally do not include accounts, analysis, or interpretations from hired workers. Often, these workers have worked on many excavations, and have special expertise regarding local archaeological materials that goes unrecorded because of the conditions of documentation in archaeology. I have been conducting ethnographic research at two sites-- Petra in Jordan and Catalhoyuk in Turkey-- in order to assemble oral histories of the longterm excavations at these two places. I have been identifying the men and women hired to work at these sites, and recording their memories of their work and the projects-- along with the stories still circulating in the wider community. Through this research, I will compare the oral histories of these excavations with the conventionally recorded archival data about them, and will make some generalizations about the impact archaeologists have on the communities they work with. How are archaeological projects remembered, and why are they remembered this way? These questions are significant for understanding archaeological as a research endeavor, a social sphere, and an economic practice.

Mickwee, Christopher L. [165] see Meredith, Steven

Middleton, William, Arthur Joyce (University of Colorado, Boulder), Michelle Goman (Sonoma State University), David Messinger (Rochester Institute of Technology) and Kelly Canham (Rochester Institute of Technology)

[124] *Satellite Paleoecology in Oaxaca, Mexico: Assessing Potential Productivity of the Prehispanic Landscape*

Hyperspectral Satellite Imagery (HSI) from the Hyperion Imaging Spectrometer aboard the Earth Observing One satellite has proven to be a powerful tool for the rapid analysis and assessment of large areas. The richness of hyperspectral data (~240 spectral channels) allows fine-grained distinctions between different classes of materials and material states that are indistinguishable to the naked eye. Applications include the analysis of landscape diversity, the identification of specific plant communities and land uses in contemporary landscapes, assessment of urban sprawl and its impact on cultural resources, and so on. In this example, we measure the difference in vegetation between dry- and wet-season land cover in Oaxaca, Mexico in order to assess the potential productivity of the landscape in prehispanic times. The Normalized Difference Water Index (NDWI) measures water in plant tissue. Comparison between scenes captured in the wet- and dry-season respectively allows us to assess both the extent of land which can be utilized for rainfall agriculture and the extent of land which can be cultivated year-round. Measures of prehispanic agricultural productivity can then be applied and the potential agricultural yield of the landscape calculated. These measures can be undertaken rapidly, over large areas and over multiple seasons.

Middleton, Abigail (University of Missouri)

[250] *Water Management and Agricultural Risk Mitigation in Southwest Coastal Ecuador*

This paper discusses recent survey of previously unstudied areas of the El Azucar and Zapotal River valleys in southwest Ecuador. It focuses on the ways in which agricultural communities from the pre-Columbian Late Formative period to the present used water management in agricultural production in high-risk and unstable environments of the littoral region. Previous studies have shown that water management is linked to periods of agricultural expansion and contraction. The paper explores the use of

water management features, known as albarradas, as one strategy in a possible suite of agricultural risk management approaches beginning in the Late Formative-Engoroy period and continuing through the present. Documented agricultural booms and busts and these survey results draw attention to: the lack of paleoenvironmental research in which to ground the study of Late Formative adaptation, the development of agricultural communities in the Late Formative, and adaptations to high risk littoral regions. These new data and possible explanations are presented.

Mihailovic, Dusan [278] see Boric, Dusan

Mihok, Lorena (University of South Florida) and E. Christian Wells (University of South Florida)

[190] *The Royalization of Northern Honduras, 1502-1788: Trajectories of the Pech, Miskitu, and Tolupan*

The processes that Spain and England deployed to engender the loyalty of indigenous groups in southern Mesoamerica to their burgeoning empires resulted in significantly different sociopolitical and economic trajectories for today's populations. Drawing from archaeological and historical research over the past decade, including our own investigations of Pech and English/Miskitu settlements on Roatan Island, we analyze macro- and microdemographic trends in northern Honduras from 1502 to 1788. We argue that the different processes of royalization early in the colonial histories of indigenous groups have significant consequences for descendant populations, including issues pertaining to political access and economic development, among others.

Milbrath, Susan (Florida Museum of Natural History), Debra Walker and Ron Bishop

[123] *Workshops for Postclassic Effigy Censers in the Chetumal Bay area*

Stylistic analysis and neutron activation analysis indicates that effigy censers from Santa Rita, Champoton, and Mayapan are separate traditions. Censers from Chetumal Bay and coastal Campeche are clearly different workshops from Mayapan (Chen Mul Modeled type). Censers from Cerros are stylistically similar to the Kol Modeled type at Santa Rita, a resemblance confirmed by neutron activation studies. Indeed, censer fragments from Santa Rita, Cerros and Colha constitute a single compositional group that is distinct from other Maya pottery. Both stylistic traits and clay sources confirm a localized workshop, probably centered at Santa Rita, the largest Postclassic site in the area.

Milideo, Lauren (Penn State University Department of Geosciences) and Russell Graham (Penn State University Department of Geosciences)

[208] *Wolf Dens as Pseudo-Sites: Identifying the Influence of Wolves on Bone Assemblages*

The scattered bones of carnivore dens, including those of wolves, may superficially mimic archaeological sites, particularly if only a portion of the bone scatter is excavated; it is therefore useful to establish modern taphonomic models to which possible zooarchaeological assemblages may be compared. An analysis of a bone assemblage, consisting almost exclusively of caribou bone, from a modern wolf den in Nunavut, Canada, is used as an example. Analyses of the types of elements present, bone weathering patterns, and the taphonomic markings on the bones, reflecting carnivore processing, were included; we also present spatial analyses of the bone scatter itself. Bones were mapped in place before collection, similar to elements plotted in an archaeological excavation. By examining taphonomic data in conjunction with spatial patterning, we gain new insight into the nature of these sites, and how they differ from archaeological contexts. Toothmarks and fractures are common, and diverse weathering stages are present, indicating extended or repeated occupation; the bones' distribution over a large area is also distinctive. We identify taphonomic and spatial indicators of this assemblage's origin as a wolf den, and suggest potential means of distinguishing such assemblages from those of archaeological origin.

Miljour, Heather (Statistical Research, Inc.)

[210] *Archaic Period Subsistence and Resource Use in a lower-Bajada Environment*

Recent excavations for the Luke Solar Project in the western Phoenix Basin revealed one of the largest Archaic sites known to date, situated on a lower-bajada environment. The Middle and Late Archaic Periods were a time of transition in southern Arizona, as foragers became farmers, ceramics were adopted, and other aspects of life changed. Over the last few decades, new data on the Late Archaic/Early Agricultural period has increased our knowledge of this time period, particularly in riparian areas, but the Middle Archaic is still poorly understood. Middle Archaic sites are scarce and are often small, consisting largely of flaked and ground stone artifacts, faunal collections tend to be scanty if

present, and floral remains only infrequently recovered. The Middle and Late Archaic occupations uncovered as part of the Luke Solar project include thousands of features, a large faunal collection, numerous identifiable plant remains, and a high frequency of ground stone tools. The Luke Solar project provides an excellent opportunity to examine the ways in which Archaic groups interacted with their environment, the available resources, and the subsistence practices of Middle and Late Archaic groups in a lower-bajada environment.

Millaire, Jean-Francois [113] see Szpak, Paul

Miller, Kye [18] see Hedquist, Saul

Miller, Virginia (University of Illinois at Chicago)

[25] *The Representation of Hair in the Art of Chichén Itzá*

For Mesoamerican peoples, human hair was considered to be a receptacle for power, and its treatment a marker of gender, status, and social role. Usually depicted as neatly cut or tightly bound and often covered by an elaborate headdress, in Maya imagery loose or tangled hair signals loss of control, whether through emotional release, intoxication, or death. The reliefs and murals of Chichén Itzá, crowded with multiple human figures, provide a particularly rich environment for the study of costume, adornment, body decoration, and hair. A wide variety of hairstyles is represented here, including carefully-groomed long and short styles typical of the Terminal Classic, "mohawks", pony-tails, and occasionally completely disheveled hair. Unique to the site are figures sporting very long blond hair, studded with jade beads. This paper will examine the varied treatments of hair at Chichén Itzá within the context of Late and Terminal Classic conventions, with particular attention to captives and others whose hair is displayed with minimal or no head covering, in order to establish how hairstyles expressed identity and status.

Miller, Melanie (University of California, Berkeley), Sabrina Agarwal (University of California, Berkeley) and Carl Langebaek Rueda (Universidad de los Andes, Colombia)

[103] *Tracing Dietary Histories through Stable Isotope Analysis: A Case Study from the Muisca of Colombia, 1200-1550 A.D.*

The ancient Muisca culture of the Colombian Andes provide a unique opportunity to study human health and diet during an important period of agricultural subsistence and early period of Spanish contact. Stable isotope analysis of human teeth and bone were analyzed from the Muisca archaeological sample from Tibanica, in the Sabana de Bogotá, Colombia (1200 A.D. – 1550 A.D.). Both collagen andapatite were analyzed from both tissues for carbon, nitrogen, and oxygen stable isotopes to provide a robust analysis of the dietary components of both childhood and adult diet. Dietary continuity or change from different periods of childhood to adulthood may be linked to complex social relationships that vary over the lifetime and may be linked to age, sex/gender, and social status. In a complex culture such as the Muisca, food may offer important insights into changing social roles.

Miller, D. Shane (University of Arizona) and Stephen Carmody (University of Tennessee)

[132] *The Ideal Free Distribution and the Early Holocene Expansion in the Lower Mid-South*

The Clovis culture likely represents an early, widespread colonization episode at the end of the Pleistocene. However, parts of North America were not intensively occupied until well after the disappearance of the Clovis culture. Here, we use a sample of published site distribution and frequency studies in conjunction with the Ideal Free Distribution from Behavioral Ecology to argue that parts of the Cumberland Plateau and Appalachian Summit did not have a sustained human presence until the latter parts of the Younger Dryas and the Early Holocene. This pattern is consistent with a global trend of delayed colonization of highland regions.

[132] *Chair*

Miller, Sarah, Jeff Moates (Florida Public Archaeology Network) and Michelle Williams (Florida Public Archaeology Network)

[152] *Co-Creation and the Cemetery Resource Protection Training (CRPT) Program across Florida*
The Cemetery Resource Protection Training (CRPT) program offered by the Florida Public Archaeology Network (FPAN) began in 2011 as a reaction to the rapid deterioration of historic cemeteries in Florida.

During the first year the Northeast Regional Center of FPAN collaborated with community partners to conduct CRPT workshops in each of its seven counties. CRPT has now expanded to over 20 cities across the state. Workshop participants learn to view cemeteries as outdoor museums in their community through morning and afternoon sessions. The morning session focuses on: cemeteries as archaeological sites, laws that protect cemeteries as well as the people who care for cemeteries, the importance of survey and recording, and examples of cemetery projects within the community. The second session puts theory to practice with hands-on landscape assessment, headstone cleaning, and recording in a local cemetery. This paper will assess CRPT as a co-creative public archaeology program and discuss its relevance to the participating communities.

Miller, Kevin and Kenneth Lawrence (SWCA Environmental Consultants)

[165] *To Drill or Not to Drill: Investigations at the Turkey Terrace Site (41FR70), Frio County, Texas*

The Turkey Terrace site (41FR70) is a prehistoric open campsite and procurement area situated along the Todos Santos Creek in Frio County, southwestern Texas. Positioned on an alluvial terrace, between the creek and gravel uplands, Turkey Terrace is composed of broadly dispersed surficial artifacts and substantial subsurface cultural deposits associated with Middle–Transitional Archaic to Late Prehistoric occupations. The site's large size and potential importance posed challenges for an associated pipeline project, where directional drilling to avoid sites was the modus operandi. Significance testing served as an effective tool to both narrow the area requiring avoidance drilling and provide important information on the site and prehistory of the area. Unique findings from the testing included stratified cultural deposits within a remnant creek channel and thermal features composed of clay balls. This paper discusses the results of these investigations and the analyses performed, and, in particular, reviews the collaboration between archaeologists and clients in finding a project solution that was beneficial to all.

Miller, Naomi (Univ of Pennsylvania Museum-ISAW)

[250] *The Ethnobiology of the Warka Vase (Mesopotamia)*

Ethnobiological study of antiquity is usually constrained by the limitations of the archaeological remains of plants and animals. Sometimes, ongoing tradition, images, and texts add a symbolic dimension. Such a study has been done of the Warka Vase, an iconic artifact of Mesopotamia. The lowest of three registers appears to represent the basis of Mesopotamian life: water, plants, and animals. Identification of the water and animals is relatively straightforward. In the absence of serious botanical study, the plants depicted are usually thought to be grain and flax. Analysis of the plant imagery in concert with that of archaic signs, botanical characteristics, and our understanding of Mesopotamian agriculture and tradition shows that the 'grain' is date palm and confirms the other plant as flax.

Miller, Katherine (Arizona State University)

[291] *Creating Community at Copan: The Intersection of Kinship and Migration at the Maya Frontier*

The role of kinship in social organization can be explored within the nexus of a social group, the residential unit, through a careful analysis of archaeologically contextualized human remains thus highlighting the internal structure of ancient societies. The neighborhoods that surround the core of Copan, a major sociopolitical center nestled at the southeastern frontier of the Maya region and western edge of culturally diverse central Honduras, serve as an ideal case to explore the construction of community within an ancient city. This paper considers two competing theoretical models of ancient Maya social organization (House vs. Lineage) and considers multiple possibilities of fictive and biological kinship, short or long-term co-residence, and long-distance kin affiliation in a densely populated dynamic urban environment. The Copan human skeletal collection, the largest in Mesoamerica, provides an ideal context for exploring the lives of Late Classic (AD 600-820) Copanecos. New biogeochemical and biodistance data, drawn from those who directly participated in the creation and maintenance of social organization and were subsequently interred at Copan, provide insight into the complex relationships of Copan's inhabitants to each other, to their neighbors, and beyond.

Miller, Myles (GMI) and Roger Anyon (Pima County Cultural Resources and Historic Preser)

[333] *Burning, Ritual, and Communal Architecture Transformation as Markers of Social Change*

Burning domestic and communal structures as a means of ritual retirement and transformation from structures to ancestral landscape markers is documented throughout the prehispanic Southwest. In this paper, we examine two temporally distinct episodes of communal architecture burnings in southern New Mexico: great kivas in Mimbres Mogollon pithouse villages during the mid AD 900s and communal

rooms in Jornada pueblos during the AD 1300s. Both involved dramatic and public ritual events that marked social change. In the case of Mimbres great kivas the succeeding social transformations occurred in situ; the population continued to live at the same place on the landscape and burned kivas became important ritual spaces within the village. For Jornada pueblos, in contrast, the succeeding social transformations occurred elsewhere and communal rooms became important places in a much larger cultural landscape. We evaluate these transformational episodes with respect to the complex continuum of societal disintegration and integration.

Miller, G. Logan (Ohio State University)

[340] *Variation in the Organization of Ritually Motivated Production at Ohio Hopewell Earthworks*

In this presentation, I examine the organization of production at monumental earthworks through the lens of ritual economy. Specifically, I examine the production of socially-valued goods at two Ohio Hopewell earthworks (Fort Ancient and Stubbs) by studying the function of stone bladelets through microwear analysis. Previous research demonstrated that bladelets were important elements in the production of socially-valued goods by inhabitants of Fort Ancient. However, Fort Ancient is often cited as an anomaly among Hopewell earthworks. I will compare and contrast microwear and other contextual evidence from Fort Ancient and Stubbs in order to understand variation in the organization of production. Ultimately, I will present evidence that, despite the lack of a centralized political hierarchy, Hopewell craft production was a complex, multi-faceted process largely organized by the social/ceremonial gatherings at these earthworks.

Miller-Sisson, Misha (University of California San Diego) and Beniamino Volta (University of California San Diego)

[319] *Changes in Sub-royal Elite Culture at the Maya Site of Uxul: Before and After the Incursion of the Kaan Polity*

Archaeological models for ancient Maya political organization oscillate between highly centralized regional “superstates” and weakly integrated segmentary polities. Epigraphic evidence suggests that, during the Late Classic period (A.D. 600 – 900), the Kaan dynasty of Calakmul controlled one of the largest and most powerful regional states of the central Maya lowlands. The site of Uxul, Campeche, Mexico, has been proposed as a secondary center within this regional hierarchy. This talk presents preliminary research on the effects of the integration of Uxul within the Kaan state. Specifically, we examine evidence for the presence and social function of sub-royal elite groups at the site. Extensive mapping by members of the Uxul Project has defined a site core with a royal palace and large public architecture. We have also identified a number of possible elite household groups of varying degrees of size and complexity outside of the central area of the site. Excavations in some of these groups, combined with comparative settlement pattern analysis, allow us to make some preliminary observations on the changing nature and political role of sub-royal elites at Uxul throughout the site’s history.

Millhauser, John [124] see Morehart, Christopher

Millhauser, John (North Carolina State University) and Christopher Morehart (Arizona State University)

[205] *Hiding in Plain Sight: The Significance of Small Sites in the Northern Basin of Mexico*

Conducting fieldwork away from large settlements enhances our reconstructions of the past and our theory building. Simultaneously, locating small sites that are well-preserved, collecting data from a representative sample, and confronting the mindset of “if you’ve seen one you’ve seen them all” are persistent challenges. In this paper, we present ongoing research from the northern Basin of Mexico’s lake zone that documents small sites’ historical significance during times of demographic growth and political economic change. Our examples target different kinds of small sites—settlements, work areas, and places of worship located beyond the boundaries of cities, towns, and villages. These cases demonstrate that the smallest and seemingly least significant sites were key places of social reproduction and transformation. In this region, as with others, many of these places are rapidly being destroyed by population growth and infrastructural development, reinforcing the urgency to invest serious research in them. Their documentation and intensive study enriches our understandings of multiple dimensions of past settlements, landscapes, economies, and sociopolitical systems, offering a unique vantage from which to contribute to existing models of central Mexico’s past.

Millhouse, Philip [176] see Meierhoff, James

Millones, Mario (Universidad Católica Santo Toribio de Mogrovejo - Chiclayo-Perú)

[25] Facial Expression among The Moche

Phases III and IV of the Moche culture in the Northern coast of Peru developed ceramic vessels with realistic portrait heads that were quite distinct among all other head representation in the Andean world. Despite the generic denomination of "portrait" these vessels offer a great variety of anthropomorphic motives. I am interested in those representations of human faces that would allow one to establish facial expressions using the Facial Action Coding System and to explore the relationship between emotions and power in time and spatial contexts during the period of Moche expansion.

Mills, Blair (Texas State University) and Christina Conlee (Texas State University)

[146] Patterns of Structure: The Fiber Artifacts of La Tiza

La Tiza is an ancient Andean site located close to the modern town of Nasca along the southern coast of Peru. Hundreds of fiber artifact specimens (including yarns, cords, knots, braids, and woven textiles) have been recovered from contexts from the Archaic through to the Late Intermediate Period and possibly Late Horizon. The majority of the textiles have Middle Horizon (A.D. 650 – 1000) and Late Intermediate Period (A.D. 1000 – 1476) associations, and come from both domestic and mortuary contexts. This study analyzed the fiber content (mostly cotton and wool, but human hair and other vegetal fibers were observed), structure, and decoration from a sample of those fiber artifact specimens. This data was compared to similar studies of Andean fiber craft and the identified patterns utilized in a discussion of technology, identity and cultural affiliation. To the ancient Andean people, the characteristics of fiber artifacts, even those that seem more utilitarian, were likely of greater importance in the communication of identity and affiliation than those of us from the industrialized world are accustomed to.

Mills, Barbara (University of Arizona)

[243] Cuisines as Networks of Situated Practice in Scalar Perspective

The “communities of practice” concept has been effectively used to understand the transmission of technological practices during production. In this paper I do two things. First, I argue that another fruitful way of looking at communities of practice is through consumption. For ceramics, these patterns of consumption revolve around cuisines as situated practices: the choices that people made in how and what food was prepared, the containers they were served in, and to whom. Second, I look at how these container choices by communities of consumption accumulated at large temporal and spatial scales to produce distinctive regional networks of practices. I draw on research by the Southwest Social Networks Project on late prehispanic period ceramics from the western Southwest to show how networks were produced through the accumulation of choices within communities of consumption. Such a relational perspective requires that we consider networks that are built on shared ideologies and identities in and through consumption, especially those taking place in the most visible and power laden settings. Decorated ceramics, especially polychromes, were one medium through which different communities were constructed. The growth and dissipation of these networks reveals social relations that spanned generations and regions during this dynamic period.

[184] Discussant

Mills, Barbara [202] see Bellorado, Benjamin

Milne, Brooke (Anthropology and Centre for Earth Observation Science, University of Manitoba), Robert Park (Department of Anthropology, University of Waterloo), Douglas Stenton (Department of Culture and Heritage, Government of) and Mostafa Fayek (Department of Geological Sciences, University of M)

[115] Novice Flint Knapping, Seasonal Mobility, and Palaeo-Eskimo Lithic Raw Material Acquisition in the Interior of Southern Baffin Island, Nunavut, Canada

The identification of novice skill in the archaeological record has been used successfully to infer the presence of children when examining certain technological mediums. However, among lithic toolmakers, replicative experiments demonstrate that to successfully knap stone one needs sufficient upper body strength and hand-eye coordination, which arguably develop later in adolescence meaning that the identification of novice skill among lithics may not directly reflect the presence of children per se. On southern Baffin Island, several early Palaeo-Eskimo sites located in the deep interior exhibit evidence of novice skill suggesting that physical endurance may have been another criterion needed to become an

apprentice in this region. Novice reduction episodes are consumptive of raw material and on southern Baffin Island, chert is abundant in the interior yet restricted on the coast; therefore, it makes sense that novices would travel long distances to the interior to learn to break rocks. In 2013, we identified two toolstone source areas in the interior that further exhibit evidence of novice skill. In this paper, we describe these sites and speculate on the pivotal role they played in enculturating Palaeo-Eskimo novice flintknappers through long-distance seasonal travels between southern Baffin Island's inland and coastal areas.

Minc, Leah**[329] *Trace-Element Analyses of Near Eastern Ceramics: Overview and Introduction***

In spite of the critical insights which chemical analyses can provide for studies of inter-regional exchange, relatively few characterization studies have been carried out on Near Eastern ceramics, and these represent a limited number of ceramic wares, sites, and chronological periods. To address this sparsity, the OSU Archaeometry Lab initiated a series of collaborative studies aimed at rapidly building-up a comparative data base of ceramic pastes for the Near East. Our goals were to dramatically expand the spatial scope of ceramic trace-element data for the region to include major sites and culture areas, and to begin using these data to directly address models of regional economic organization and inter-regional interaction. With the support of NSF and participating museums, we have now completed trace-element analyses of nearly 1700 ceramic samples, from key sites stretching across Syria, Iraq, and Iran. These analyses provide physical evidence allowing researchers to monitor whether ceramic vessels and containers were moving between the lowlands of greater Mesopotamia and the surrounding highlands, and to reexamine the significance of the shared ceramic styles marking the "Uruk Expansion". This paper presents an overview of significant past ceramic characterization studies and introduces the collaborative projects presented in this session.

[329] Chair

Minc, Leah [329] see Alizadeh, Abbas

Minerbi, Joanne [298] see Horneman, Rennie

Mink, Philip (University of Kentucky) and David Pollack (Kentucky Archaeological Survey)**[268] *Down the River without a Shovel: Investigating the Usefulness of Archaeogeophysical Survey along the Colorado River through the Grand Canyon***

The terraces and deltas along the Colorado River through the Grand Canyon National Park contain hundreds of archaeological sites. Because access to most of these sites is restricted to rafts, through some of the most challenging whitewater in the world, it is one of the most demanding locations for conducting fieldwork in the continental United States. This paper presents the results of a cooperative project between the National Park Service and University of Kentucky, designed to evaluate the usefulness of geophysical survey in this rugged terrain. In addition to access, other challenges had to be overcome, including limiting disturbance to the archaeological sites and vegetation, protecting and maintaining the geophysical equipment in a wilderness environment, and the logistical coordination of a 226-mile one-way trip down the river. In the end, with some modifications to our typical field methodologies, geophysical techniques proved to be an effective tool for managing archaeological resources along the River. Park Service cultural resource managers now have a new set of tools to help them manage these heritage resources.

[268] Chair

Minnis, Paul [66] see Nelson, Ben

Miracle, Rebekah (Ancient Egypt Research Associates) and Freya Sadarangani (Ancient Egypt Research Associates)**[322] *Something Old, Something New: Integrating Legacy Data and Preparing for the Open Access Future***

Long-term archaeological research projects generate vast amounts of heterogeneous data recorded over the years by teams with differing and evolving recording standards and methodologies. This legacy data can be difficult to integrate with newer excavation datasets, incomprehensible to outside researchers, and incompatible with modern technologies, such as GIS and relational databases. At Ancient Egypt Research Associates, we have twenty-five years of data from our own excavations at three large Old

Kingdom sites in Giza, Egypt - the settlement of Heit el-Ghurab, Khentkawes Town, and the Menkaure Valley Temple - as well as the published excavation data from archaeologists George Reisner's and Selim Hassan's previous work in the area. We have undertaken a "Data Curation Project" to reassess, standardize and fully digitize all of our excavation data so that it will be internally consistent, compatible with modern recording techniques and technologies, integrated into our GIS, and, ultimately, online, open access, and available to the public. This is a long process but has already resulted in a more complete dataset that will enable both current team members and outside researchers to better utilize and contextualize the entirety of the work done on our sites.

Mires, Ann Marie**[283] Standing the Test of Time: Forensic Archaeology on Trial**

Forensic Anthropologists assist in the recovery of skeletalized remains from crime scenes, profile human remains, assess the circumstances of death, and evaluate traumatic injury. The analyst documents cases without knowing whether they will be prosecuted in the legal system. The work must stand in perpetuity, until the case proceeds to trial. The analyst is bound to the duties and responsibilities of an expert witness. In 2000, four graves containing six individuals were exhumed in Massachusetts. As the Forensic Anthropologist at the OCME, I directed the excavations and analysis of the material. Standard archaeological procedures were implemented to locate and excavate the graves, which had been revealed by an informant. At the time of the excavations, the alleged perpetrator of the crimes, Whitey Bulger, had fled. It was not until his eventual capture in 2012, that the prosecution proceeded. In June of 2013, the U.S. Attorney's office prepared for trial on thirty-two counts including murder, racketeering, and extortion. The exhumations constituted six of the nineteen murders, the bulk of the forensic evidence presented at trial. The archaeological documentation was incumbent with creating the forensic record and was done properly thus allowing the forensic record to stand in perpetuity.

Miss, Christian [315] see Kopperl, Robert

Missal, Kele [217] see Heffter, Eric

Miszaniec, Jason (Memorial University of Newfoundland), M.A.P Renouf (Memorial University of Newfoundland), Frédéric Dussault (Memorial University of Newfoundland), Trevor Bell (Memorial University of Newfoundland) and Christopher B. Wolff (State University of New York at Plattsburgh)

[325] Comparison of Fuelwood Use at Two Dorset Palaeoeskimo Sites in Newfoundland

This paper presents the results from an ongoing analysis of Dorset Palaeoeskimo use of fuelwood from two different forested ecoregions in Newfoundland. The aim is to understand the relationship between tree species available in a region and those selected for fuelwood. The Dorset were largely an arctic people who depended heavily on seal fat for fuel and lived in an environment where wood availability was mainly restricted to driftwood and shrubs. This study will contribute to an understanding of Dorset use of wood as a fuel source in their occupation of a boreal forest environment. The methodology involved the genus identification of 2000 charcoal fragments from the Middle Dorset (2000-1500 BP) sites of Phillip's Garden (EeBi-01) and Stock Cove (CkAl-3). Phillip's Garden on the Northern Peninsula is situated in a subarctic climate and is occupied by a forest largely composed of softwoods, whereas Stock Cove on the Isthmus of Avalon is characterized by a more temperate climate and a mixed forest of both softwoods and hardwoods. A comparison of fuelwood use at these two sites will reveal preferences where multiple species were readily available and thus contribute to an understanding of Dorset practices associated with wood use.

Mitchell, Spencer (Humboldt State University)**[140] Experimental Observations and Archaeological Implications: The Ancient Maya Codex Manufacturing Process**

Experimental archaeology has an important role to play in our understanding of the formation processes in the archaeological record. For the scope of this research, experimental archaeology enables targeted examination of codex manufacturing by the ancient Maya. Although the majority of surviving written material is found on ceramics, monuments, and altars, it is believed that the ancient Maya primarily documented their information on codices made from fig-tree bark paper. However, due to adverse environmental conditions in the Maya Lowlands and the devastation caused by Bishop Diego de Landa very little evidence of the codices has survived. This poster details ongoing experimental research focusing on the tools, raw material, and painting techniques utilized by ancient Maya scribes. I replicated

pages twenty-four to twenty-seven of the Dresden Codex. The data in this experiment has revealed that codex production is a long and difficult process, which can leave the individual with lasting physical ailments.

Mitchell, Mark [333] see Ward, Christine

Mitchem, Jeffrey (Arkansas Archeological Survey)

[276] *Archaeological Evidence for the Hernando de Soto Expedition West of the Mississippi River*

After traveling around the Southeast for two years, the Hernando de Soto expedition crossed the Mississippi River in June of 1541. At this point, the expedition was in what is now Arkansas, and traveled in the state for nearly a year until Soto's death in May of 1542. The remaining members of the expedition eventually made their way to Mexico. Archaeological evidence of the expedition is rare west of the Mississippi, largely because they had lost or given away most of the trade goods and other identifiable Spanish material. The best information to date comes from the Parkin site, thought to be the village of Casqui described in the narratives. Finds of halberds and Clarksdale bells provide additional hints of the route, but determining the expedition's pathway after leaving Casqui is frustratingly difficult.

[276] *Chair*

Mixer, David W. [137] see Fulton, Kara

Mixer, David (Washington University in St. Louis)

[137] *Community Politics Following the Maya Collapse: Preliminary Results from Actuncan, Belize*

In contrast to the longstanding focus on the 9th century political and demographic collapse of the southern Maya Lowlands, little attention has focused on the strategies of remnant communities that survived in place in the immediate aftermath of this collapse. In the absence of failed divine kings, groups that remained were forced to negotiate new forms of political authority. These negotiations happened first at the local level, where individual communities freed of the constraints of divine kingship developed varied solutions to fill the power void and legitimize the authority of new leaders. One such community was located at the site of Actuncan in the lower Mopan River Valley of western Belize. The collapse of nearby Xunantunich marks the end of divine kings in the region and follows the general depopulation of the valley. In contrast, the population of Actuncan's site core remains steady throughout the Terminal Classic period (A.D. 780 to 1000). The re-initiation of political life at the site is marked by the construction of a large public platform placed in the middle of the site's Classic period core. Here, I report on investigations into the civic and ritual architecture associated with this revival.

Miyar, Kathryn (Southeast Archeological Center, National Park Service)

[291] *The Reconstruction of Kin Relations and Cultural Identity at Bull Creek (9ME1)*

This study investigates kin relations within the Mississippi Period cemetery of Bull Creek (9ME1). The Bull Creek site is located in Georgia and contains examples of unique southeastern cultural practices including intentional cranial modification and effigy burial objects. The application of bioarchaeological techniques to kinship reconstruction has distinct potential to expound upon concepts of relatedness. However, metric and non-metric data collection from skeletal remains is commonly limited by poor preservation and obscured by the lifestyle and ontogeny of the individual (e.g., dental attrition from masticatory and non-masticatory use). Alternatively, certain biological markers, such as cultural modification to the crania and dentition, can provide information to reconstruct past kinship and social identity when used in conjunction with mortuary and ethnographic data. This research employs a cross-disciplinary approach to assess kinship, cultural affiliation, and social identity frameworks at Bull Creek. Different methodologies and lines of evidence are synthesized to assess relations in this previously unidentifiable cultural group, including- geometric morphometric shape analysis of crania, ethnohistoric data, demographics, and spatial patterning of variables such as funerary objects, cranial shape, and burial orientation. This research employs techniques that move beyond identification of genetic affiliation to evaluate socially constructed kinship and identity.

Mizoguchi, Koji (Kyushu University, Japan)

[214] *How can We Be "Responsible" Archaeologically?*

This paper examines how we can be 'responsible' in the current archaeological discursive space. How the notion of responsibility is used is examined, and it is revealed that the use increasingly focuses on 'social responsibility', which is defined to do things to enhance the well-being of human individuals or communities. It is pointed out that the stakeholders of archaeological data/information include the 'dead' who left behind material differences which we study, and they cannot have their say over the way their well-being is enhanced/destroyed. Some of us argue that this 'voice of the dead' can be represented by those who do not differentiate themselves from their ancestors in their life-world. However, the other stakeholders live their own life-worlds, and they also have their ways of categorizing and perceiving things. This paper concludes by arguing the following: 1) we can be responsible to one another archaeologically by agreeing that we have to make an effort to create a condition in which we can dispute each other's rights as smooth as possible; and 2) we have to create a condition in which we can do so on equal terms.

Moates, Jeff [152] see Miller, Sarah

Mock, Cary and Elizabeth Rushton (University of Nottingham)

[158] *Historical Climate of Belize*

Historical data provide a longer perspective of climate variability well before the temporal coverage of modern instrumental records. These records possess sub-daily temporal resolution, providing a means of independent verification and calibration for other high-resolution paleoclimatic proxy data and assessing human impacts. This study utilizes the best high-quality sub-daily precipitation data from Belize, dating back to the 1820s and being located in a sensitive area concerning the trade winds, winter cold-air outbreaks, and teleconnections such as the El Nino-Southern Oscillation. Data were extracted from numerous United States and UK archives, including meteorological registers, ship logbooks, newspapers, and colonial records. All data were critically evaluated concerning quality. Corrections included dealing with different fixed observation times, various instrumental exposures, and assessing qualitative weather information. Several climate indices, indicative of dryness and precipitation, were formulated to closely reflect societal responses of the mahogany trade. Results indicate generally increased rainfall during the 19th century at decadal time frames during busier activity of the mahogany trade, but extreme years of wetness and drought likely played prominent societal impacts as well. The role of hurricanes and El Nino on extreme years is limited to a few events, such as in 1864 and 1877–1878, respectively.

Moe, Jeanne (Project Archaeology-BLM)

[96] *Archaeology and the Common Core State Standards: All Hands on Deck*

The Common Core State Standards, scheduled for implementation in the 2014-2015 academic year, provide an unprecedented opportunity to introduce archaeology education in classrooms nationwide. The Common Core calls for inquiry-based instruction, integration of knowledge, cultural understanding and practical cultural literacy, high-level reading in science and social studies, and performance-based assessments. The hallmarks of the Common Core fit well with archaeology education and archaeologists can provide teachers with some of the tools they need to implement the new national standards. Well-designed archaeology education curricula can supply teachers with classroom-ready ways to teach many of the new requirements in science and social studies literacy. This paper will explore the alignment of existing archaeology education materials with the Common Core, the essential role of professional archaeologists in delivering these materials to teachers throughout the nation, and our next steps for better serving teachers, students, and the general public with the results of archaeological research.

Moe, Jeanne [96] see King, Robert

Moffat, Ian (Department of Archaeology, Flinders University), Lawrence Conyers (Department of Anthropology, University of Denver), Mary-Jean Sutton (University of Queensland), William Busch (Mapoon Land and Sea) and Chester Walker (Archaeo-Geophysical Associates)

[157] *Geophysical and Geomatic Investigations of the Mapoon Mission Cemeteries, North Queensland, Australia*

Two cemeteries associated with the former Mapoon Aboriginal Mission, founded in 1891 and located on western Cape York in North Queensland, were the subject of geophysical and geomatic investigations. These investigations aimed to locate individual graves, identify the presence of coffins or other burial accoutrements and to define the extent of these cemeteries. Ground penetrating radar investigations

located more than 100 unmarked graves across both cemeteries. Magnetometry was unable to resolve graves, but did identify a large amount of subsurface metal, including the remains of a house formerly located within the area of investigation of the larger cemetery. Photogrammetric investigations undertaken allowed for the development of a high-resolution digital elevation model, which enabled topographic correction of the GPR slice maps. These results are important to Mapoon people to look after the remains of their 'old people' and show respect for their ancestry by fencing the larger cemetery, demarcating identified graves and the future construction of a memorial and garden in this important cultural place.

Mohanty, Sudarsana**[146] Engendered Mortuary Rituals: A Study of Gender Identity in Ychma Society**

The Ychma site of Panquilma in the Lurin Valley of central coastal Peru dates from the 13th to 15th centuries A.D. The site provides an interesting case study for the development of ideologies, including mortuary rituals, due to the close proximity and relationship this Ychma community maintained with the important Andean religious center of Pachacamac. Significantly, the burials recovered were found in the domestic sector indicating a blurring of lines within the organization of the Ychma community, while the contextual information also does not support an interpretation of ancestor worship. By focusing on the form of the graves and their association with domestic structures, it is the goal of this paper to analyze the development of gender identities in the Ychma community as they were manifested in mortuary rituals. More broadly, this analysis engages in a dialogue about the social and political role of men, women and children within Peruvian communities at this time.

Mohlenhoff, Kathryn (University of Utah) and Virginia Butler (Portland State University)**[173] Identifying Marine Fish Vertebrae in Archaeological Sites: A Guide Based on Remains from the Northwest Coast of North America**

Archaeologists have relied on artifact typologies since the discipline emerged. Established typologies help expedite the analytic process by formalizing rules of assignment and facilitating assemblage comparisons. Zooarchaeological identification, however, does not typically use typologies. As a result, most faunal identifications are based on a set of unspecified rules, which can lead to inter-observer variation in taxonomic assignment. This problem is especially pronounced with regard to marine fish taxa; identification criteria are rarely described in site reports, making comparison to other fish assemblages challenging. In addition, each faunal analyst or lab has to develop their own rules, impeding research progress. To help address these concerns, we developed criteria for identifying marine fish vertebrae based on ongoing work on the Olympic Peninsula, Washington state. Our criteria serve as an aid in distinguishing vertebrae between families of marine fish, as well as within families and genera when appropriate. Our study includes criteria for vertebrae identification within a variety of common marine taxa, including large orders such as Scorpaeniformes (scorpionfishes) and Pleuronectiformes (flatfish). These rules help address the dearth of information on how identifications can be made and will help future analysts by providing formal rules for testing and applying to other fish assemblages.

Molano, Shaina (PIARA) and Rebecca Bria (Vanderbilt University, PIARA)**[105] Exploring Variation in Cranial Modification at Hualcayán, Ancash highlands, Peru**

Sustained excavations between 2011 and 2013 at the archaeological complex of Hualcayán in highland Ancash, Peru have provided a great number of skeletal materials with cranial modification from several tomb types, dating between the Early Intermediate Period and Middle Horizon (1-600 CE). As a cultural practice that preserves in the skeletal record, cranial modification is a form of permanent body alteration that provides a powerful tool for understanding group identity, social structure, and status in a given society. We recovered 53 complete crania and 43 partial crania with modifications from three tomb types at Hualcayán: free standing square chullpa structures, machay structures below boulders, and semi-subterranean tombs. Preliminary analysis of these modified crania show different types of cranial modification including annular, fronto-occipital, frontal, and bi-lobate modification in varying degrees. The distribution of these modified crania across tomb types allows us to question why certain modifications are associated with particular burial types, locations, and periods. Further analysis of these crania will allow us to learn more about the local customs, lineage groups, and social identity of the ancient population of Hualcayán.

Molinar, Marissa Selena (University of Florida)**[90] Drawing the Hunt: Female Agency in the Age of Hunting in the Coso Range**

The Middle Archaic period in California is characterized by population growth and movement, resource intensification, technological innovation and a flourishing of artistic traditions. It is also characterized by an increase in large-game hunting, a practice that would seem to contradict general assumptions of subsistence in such a scenario. One model explaining these developments posits that intensification of big-game hunting was not linked to common provisioning, but, rather, it may have been an arena for individual male achievement resulting in cultural elaboration, including the proliferation of bighorn sheep petroglyphs. It has been asserted that women would have participated and benefited from this system, yet the types of female participation have not been investigated. My aim in this paper is to assess this model and to broaden its scope by identifying evidence of female participation, linked particularly to the simultaneous proliferation of patterned-body anthropomorphic petroglyphs in the area. The model's explanatory potential and the extensive body of ethnographic and historical data from the region are uniquely situated for considerations of female agency and practice, a subject of research that is nearly absent in the scholarship of the Coso Range and California Middle Archaic.

Mollenhauer, Jillian (Metropolitan State University of Denver)**[204] Olmec Sculpture and the Aesthetics of Rock Art**

The development of freestanding stone sculpture by the Olmec culture of Mesoamerica's Gulf lowlands has long been identified by scholars as one of the defining hallmarks of emerging civilization during the Preclassic period. In this same period outside of the Gulf lowlands, freestanding sculpture appeared and was in some case eclipsed by various forms of rock art. However, the influence of rock art as an artistic practice, which may intersect or overlap with freestanding sculpture, has been almost entirely absent from discussions of Preclassic art in general and Olmec sculpture in particular. Rather, these works are more often integrated into iconographic discussions that ignore or minimize the unique contributions of rock art to the development of Preclassic visual culture. This paper will argue that although Olmec societies were largely forced to develop freestanding sculpture as a response to the geography of the Gulf lowlands, many of these works display elements that may be relatable to the aesthetics and functions of rock art. By reconsidering the current conceptual divide between rock art and sculpture, scholars may attain new insights into the Olmec artistic tradition and the ideological construction of Olmec sites and landscapes.

[204] Chair**Moloney, Mike (University of Calgary)****[107] Modelling Shipboard Societies: An Examination of the Applicability of socio-Spatial Modelling to Shipwrecks**

The study of shipboard societies relies heavily on the integration of data from a variety of sources (eg. historic records, archaeology, literature, etc.). Each piece of the puzzle is used to inform and re-inform the others in a dialectic, which produces a strong image of life aboard ship. In much the same way computer-based models begin with a set of variables and are slowly calibrated through testing and reinterpretation to produce a working model. The use of computer-based modelling, in archaeology, is often criticized for its seemingly generalist approach. An unfair critique as models require comparative data that can take years to assemble archaeologically, and therefore only appear to generalize. The modelling of shipboard societies can benefit from hundreds of years of documentation that can help build a strong model before it is ever applied to archaeological sites. This paper examines the benefits of combining computer-based spatial modelling with existing strategies for understanding shipboard culture in an effort to exploit the benefits of computer modelling in the investigation of shipwrecks.

Molton, Jada (Jada Molton)**[175] Lithic Artifact Distributions and Social Organization in Housepit 54, Bridge River Site, British Columbia**

The past occupants of the Bridge River pithouse village (EeRI4) located in south-central British Columbia left a remarkable record of stratified occupation floors. Housepit 54, which has been the focus of the latest excavations starting in 2012, contains at least 15 superimposed anthropogenic floors, dating ca.1100- 1500 B.P. and during the Fur Trade period. This poster presents an analysis of variation in lithic artifacts to determine whether space on several floors was organized by multifamily domestic activity zones or activity-specific areas. The study explores socio-economic and political changes over time by comparing artifact distributions on multiple floors. This study will lead to an enhanced understanding of residential social organization and the use of space within pithouses in the interior Pacific Northwest.

Monaghan, George, Timothy Schilling (Midwest Regional Center, National Park Service), Anthony Krus (SUERC Radiocarbon Dating Laboratory, University of), Jeremy Wilson (Department of Anthropology, Indiana University-Pur) and Timothy Baumann (McClung Museum of Natural History & Culture, Unive)

[266] Late Prehistoric Paleodemographic Trends in the Midcontinent North America Reconstructed through Multiple Proxies from Angel Mounds

Angel Mounds, one of the largest Mississippian towns in the lower Ohio Valley, was established prior to AD 1100, grew in prominence, and was abandoned by AD 1450. Over sixty radiocarbon ages derived from earthworks, palisades, structures, and other features between 1952 and 2013 provide a very detailed chronology of the town's construction and development. Using this record, Bayesian chronological models tracing changes in the numbers of structures and episodes of palisade and mound construction were developed using OXCAL. The results of these models indicate that Angel Mounds underwent two main developmental phases. The first, ~AD 1100-1300, included significant mound construction and use but few structures and no palisades were built. During the second, AD 1300-1450, the majority of structures and at least three palisades were built. Mounds constructed earlier continued to be used and expanded upon after AD 1300. Based the chronological models, sizes of structures, construction energetics for palisades and earthworks, and the archaeological record, local and regional demography were traced to provide a record of changing population trends within Angel Mounds and the surrounding region. These results are also compared to other estimates of population at European contact.

Moncel, Marie-helene

[26] Emergence of Levallois Core Technology in Southern Europe

Our aim is to investigate the oldest evidence of Levallois core technology in Southern Europe to estimate the age, to describe its technological diversity, relationships with raw materials, location of sites, nature of activities and association with other core technologies and types of tools. Some sites will be chosen to illustrate the discourse in France, Italy and Spain. Their characteristics will be compared with data from Northern Europe and Central Europe sites in order to establish its specificity in this part of Europe in term of technological behavior and age of emergence.

Recognition of establishment phases into Late Acheulean assemblages derives from the way these industries are interpreted by adopting either a stricter or a broader concept. Discussion of the origin will be highlighted by a discussion on the definition and the diverse hypotheses: origin of Levallois technology in Europe and the Near East as an *in situ* evolution from handaxe technology, existence of continuous or discontinuous contacts among human groups distributed across the Mediterranean during MIS 9 due to higher mobility, other land-use or demographical increase involving exchanges of technological skills and complex social interactions, introduction of prepared-core technologies in Europe from Africa by a dispersal event .

Mongeló, Guilherme [129] see Pugliese, Francisco Antonio

Monnier, Gilliane (University of Minnesota)

[26] Is There a "Real" Levallois?

An interesting paradox has emerged within recent years. On the one hand, researchers carrying out flintknapping experiments have worked hard to demonstrate that Levallois technology is a superior strategy that reduces waste and produces thinner and more standardized flakes with more cutting edge. The capacity for shaping these cores is argued to require special, advanced cognitive and cultural abilities. Significantly, the basis for these experiments is always an idealized, 'classic' model of Levallois technology ("preferential"). On the other hand, researchers working directly with Upper Pleistocene lithic assemblages in Europe and utilizing a predominantly chaîne opératoire approach to describe technology, are documenting increasing varieties of Levallois technology. This raises two questions: 1) How common is classic Levallois technology (of the type modeled in the experiments) in the archaeological record? 2) Do the many Levallois variants fit the experiments' conclusions regarding economy, standardization, and shape? This paper addresses these questions and explores their implications for our understanding of human cognitive and cultural development during the later Pleistocene.

Monroe, J. Cameron (University of California, Santa Cruz)

[205] Landscapes of Power and Ambivalence in Precolonial Dahomey, West Africa

Archaeologies of social complexity and the state in West Africa have long focused on major urban centers associated with a handful of expansive kingdoms dating to the last millennium. In recent decades, archaeologists have turned to the countryside to provide an alternative view on the nature of urbanism and power relations across regions. This intellectual turn, however, has been bedeviled by the methodological problem of identifying smaller sites, the result of poor site visibility across the region. Recently completed regional analysis initiated on the Abomey Plateau of the Republic of Benin adopted a feature-based approach to regional survey to circumvent this issue. Based on these data, I argue in this paper that rather than being politically insignificant, the “small sites” identified across the countryside were active determinants in driving state political policy in the precolonial Kingdom of Dahomey.

Monteiro, Patrícia (NAP - Universidade do Algarve), Lydia Zapata (University of the Basque Country, Euskal Herriko U) and Nuno Bicho (NAP - Universidade do Algarve)

[116] *Gathering and Wood Exploitation in Cabeço da Amoreira (Muge shellmounds): New Methods and Data from Charcoal Analyses*

Woodland exploitation and gathering activities are important matters of economic and subsistence organization of past human societies. Cabeço da Amoreira, a Muge Mesolithic site, is located in an appropriate area for exploitation of both estuarine and woodland resources. Wood charcoal analyses have been carried out in Cabeço da Amoreira. Botanical samples taken from different areas of excavation have been processed and over 2800 charcoal fragments have been observed. This paper will present results of this study including the identification of species as well as the range of taphonomic processes occurring during the gathering, processing, and burning of wood. This is essential to understanding the woodland management and resource handling practices within the site by Mesolithic societies of Cabeço da Amoreira.

Monteiro, Patricia [116] see Goncalves, Celia

Monteleone, Kelly (Maxwell Museum, University of New Mexico) and E. James Dixon (Maxwell Museum and Department of Anthropology, University)

[131] *G/S Modeling for Underwater Paleoindian Age Archaeology Sites in SE Alaska*

The coastline of SE Alaska was submerged by post-Pleistocene sea level rise by at least 16,000 cal yrs BP and rose above modern sea level by approximately 10,600 cal yrs BP. The submerged continental shelf was modeled using bathymetry and other data to identify areas exhibiting high potential for the occurrence of archaeological sites (NSF OPP -#0703980 and 1108367). An archaeological settlement model employed ESRI ArcGIS and GRASS to identify survey areas. The iterative model incorporated both inductive and deductive methods. It uses archaeological location data including slope; aspect; distance from stream, lakes, coastlines, and known archaeological sites; and, coastal sinuosity.

[131] *Chair*

Monteleone, Kelly [160] see Williams, Mark

Montgomery, Janet [67] see Caine, Alyson

Montgomery, Lindsay

[141] *The Problems and Potential of Nomadic Archaeology in the American Southwest*

The iconic image of the plains nomad has long been a part of American popular culture and academic research. Although the historical presence of plains nomads is well documented in the Southwest, the material traces of these groups have yet to be engaged with systematically. This paucity of archaeological interest can be attributed in part to the rich tradition of Puebloan research in the Southwest and the perceived absence and simplicity of nomadic material culture. Over the past several years, however, archaeological research in New Mexico has revealed the abundance and diversity of nomadic material culture. In this paper, I will use archaeological data from three nomadic sites in northern New Mexico to discuss the potential benefits and problems of using rock art, lithics, and ceramics to date and culturally affiliate mobile sites. Through a discussion of recent research I hope to complement the well-documented historical presence of plains people in New Mexico while highlighting the complexity of nomadic culture and interaction over time.

Moodie, Steven

[302] Identity, Authority and Social Memory: Excavations at the Ixchel Ballcourt, 2011-2012

This paper presents the Social Archaeology Research Program's (SARP) excavations of a Middle-Late Classic (AD 650-750) ballcourt at the ancient Maya center of Ixchel, located in the North Vaca Plateau of the Cayo District, Belize. These excavations revealed that the ballcourt was deliberately positioned to use a simple, Terminal Preclassic-Early Classic (AD 100-300) cache to mark the central axis of its playing alley, highlighting that the ballcourt was the latest construction at a multi-generational locus for ritual action. The socio-political role of monumental architecture and caching practices can be explained by recognizing their interdependent and dynamic relationship with ritual performance. This paper explores how the ballcourt and ballgame were used to mediate interactions between the mortal and spiritual realms of ancient Maya ideology, the power relations between rulers and the ruled, and competitions for political dominance between ancient Maya elites.

Moody, John (The University of Western Ontario), Lisa Hodgetts (The University of Western Ontario) and Linda Howie (The University of Western Ontario)**[261] Understanding the Social Context of Inuit Ceramic Production in the Canadian Arctic through Petrographic Analysis**

Prior to European contact many Inuit groups produced pottery, largely in the form of cooking pots and oil-burning lamps. Much of the research on Inuit ceramics has focused on how their material characteristics reflect potters' technical strategies in an environment unconducive to ceramic manufacture. Recent theoretical approaches to the study of ceramic technology recognize that choices made by potters during the manufacturing process reflect not only functional considerations but also the knowledge and social context of potters. Ceramic petrography provides information on both provenance and human technical knowledge, and is also particularly suited to comparative characterization studies of coarse earthenwares, like Inuit ceramics, that contain a range of geological and biological compositional components. However, petrography has seen only limited application in arctic archaeological contexts. Here, we present the results of a systematic analysis of Inuit ceramic technology across the Canadian Arctic, which provides insight into the processes of the initial Inuit migration into the Canadian Arctic from Alaska, and subsequent social and historical developments in Inuit culture.

Mooney, James, Todd Kristensen (Matrix Research Ltd. and Department of Anthropology) and Keary Walde (Heritage North Consulting Services, Fort St. John,)**[323] Making Your Cash Go a Long Way: Five Chinese Coins in the Southern Yukon and Northwestern British Columbia**

Historical records and archaeological finds indicate the Yukon experienced widespread and complex culture contact ranging from pre-contact trade between coastal and interior First Nations to an influx of diverse ethnic groups during historic-period gold rushes. Recent discoveries of Chinese coins minted in the early fifteenth, late seventeenth, and early eighteenth centuries have rekindled interest in their protohistoric and early historic modes of transport from China to the interior of the Yukon and northwestern British Columbia. Russian and British trading may have provided the link between China and coastal Tlingit peoples who carried or traded the coins into the interior. Historic Chinese placer miners in the late 1800s and early 1900s may have also carried these coins with them as lucky charms, amulets, or gaming pieces. While small components of site assemblages, the coins represent significant and expansive patterns of culture contact and movement in the North.

Mooney, Susan Moorhead**[326] Heritage and Culture Essential Skills (HACES) at Whitehorse Correctional Centre (WCC), Yukon Territory, Canada**

Heritage and Culture Essential Skills (HACES) is a community-based program at Yukon College designed to build capacity in order to manage, interpret, and celebrate First Nations heritage resources in the Yukon. Over the past five years, this program's unique approach has encouraged participants' personal development and facilitated improved capacity to manage local heritage resources in seven different Yukon communities. During the fall 2013 semester, HACES was offered to students at the Whitehorse Correctional Centre for the first time since the program's inception. The program delivery presented many challenges, but it also provided an opportunity to integrate community partnerships with hands-on learning for inmates prior to release. Students developed essential skills in the areas of reading, writing, document use, numeracy, and oral communication, while exploring culture and heritage resource management and completing a group project.

Moore, James, Nancy Akins (Office of Archaeological Studies, Museum of New Mexico), Dean Wilson (Office of Archaeological Studies, Museum of New Mexico), Pamela McBride (Office of Archaeological Studies, Museum of New Mexico) and Karen Wening (Office of Archaeological Studies, Museum of New Mexico)

[18] Artifacts and Assemblages from Reach 12A of the Navajo-Gallup Water Supply Project

The analyses of ceramic, chipped stone, faunal bone, floral remains, and ground stone artifacts from three sites along Reach 12A of the Navajo-Gallup Water Supply Project north of Gallup, New Mexico have been completed and provide a basis for examining those sites in more detail. Two of the sites are within a Pueblo II Chacoan community, and their artifact assemblages are considered within that context to assess whether they resemble those from other Chacoan communities, or are distinct in some ways. The third site dates to the Basketmaker III period, and materials from that site are compared to those from the Pueblo II sites to examine the effect of the Chacoan sphere of influence on this area.

Moore, Jerry (CSU Dominguez Hills)

[246] In the Desert between the Seas: Environmental, Social, and Ritual Factors in Hunting and Gathering Settlement Systems in Baja California.

Michael Jochim's seminal 1976 book, Hunter-Gatherer Subsistence and Settlement: A Predictive Model, influenced several decades of archaeological studies of settlement strategies among foraging societies, including my archaeological surveys in northern Baja California. This paper summarizes results of archaeological investigations in a cross-peninsular research area from the Pacific coast across the Sierra San Pedro Martir to the Gulf of California. Although these three areas have received varying levels of research, specific settlement patterns support a model of transhumant mobility as a response to seasonal and geographic variations in food resources, water supplies, and social resources. Although additional research is necessary, available data suggest a pattern of transhumant mobility was in place before 5000 BC and remained a fundamental strategy in this portion of the Baja California peninsula until Spanish contact.

[120] Discussant

Moore, Christopher (University of Indianapolis) and Christopher Schmidt (University of Indianapolis)

[194] Dwelling on Abundance in the Ohio Valley Archaic

Archaic period studies in Eastern North America typically address resource availability and abundance in environmental terms. Patches or ecotones are considered resource rich if they exhibit a high diversity of available resources or relatively high yields of particularly productive resources. Explanations of Archaic settlement patterns often juxtapose these 'rich' zones with areas characterized by fewer or less diverse (i.e., scarcer) resources, arguing that hunter-gatherers were either pushed out of these zones or pulled toward the resource rich zones by changing climatic conditions. In this paper we examine hunter-gatherer sites in and around the lower Ohio River valley and argue that the material and biocultural records of Archaic peoples in this region indicate healthy populations and little to no evidence of scarcity in either subsistence resources or material goods. Rather, hunter-gatherers appear to be well stocked with abundant foodstuffs, raw materials, and tools. Contrasting the assumption of scarcity common in many Archaic period studies, this paper adopts a dwelling perspective and examines the degree to which Archaic hunter-gatherers in the lower Ohio valley experienced a 'giving environment' and how this interpretation of the Archaic lifeworld contributes to more nuanced understandings of site use, health, and artifact distribution patterns.

Moore, Katherine (University of Pennsylvania)

[250] Coevolution of Animals and Plants in Early Andean Agriculture

Domesticated plant taxa in the Andes include a suite of plants from tropical lowlands and hardy tubers and pseudocereals from cooler zones. Domesticated llamas and alpacas arose from wild camelids in cold montane grasslands. How did these elements come together into an economic powerhouse during the Late Preceramic? Work at Panaulauca (Junin, Peru) at the high-altitude margin of this process, suggests aspects of intensification upon plants and animals that led to the domestication of local species. Using zooarchaeological data, I examine the role of plant selection and harvesting on grazing ecology, water availability, and nutrient cycling of the early domestic herds. These inferences are based on herd composition, body size changes, tooth wear rates, and stable isotope ratios from bone collagen. These zooarchaeological measures, in turn, relate to Deborah Pearsall's paleoethnobotanical evidence from the

same deposits, including the diversity of wild plant taxa and foraging locations, the use of dung and sod fuel, the selection for larger tuber size, and the introduction of tropical crops in later periods.

Moore, Michael (Tennessee Division of Archaeology), Kevin Smith (Middle Tennessee State University), Aaron Deter-Wolf (Tennessee Division of Archaeology) and Emily Beahm (University of Georgia)

[251] *Crystal Artifacts and Production in the Middle Cumberland Region of Tennessee*

Artifacts made from fluorite and calcite crystals represent an extremely small percentage of items recovered by antiquarian and modern excavations within the Middle Cumberland region of Tennessee. The six specimens documented to date include four earplugs, one bird effigy pendant, and one bead from four different Mississippian period sites. Mineral vein deposits across the study area contain fluorite and calcite. There is no evidence these crystals were available from surface exposures, but the karst topography of the Central Basin and surrounding Highland Rim physiographic provinces results in numerous caves and sinkholes potentially mined for suitable crystals. Source studies are needed to assess whether these local crystals were used to make the Middle Cumberland artifacts. The recent recovery of crystal earplugs and raw calcite crystals while processing soil samples from 2005-2011 MTSU excavations at the Castalian Springs mound center represents the first evidence for crystal production as an activity within the Middle Cumberland region. Evidence of crystal production has been identified at mound centers in the adjacent lower Ohio River Valley, including Kincaid and Angel. As laboratory work is on-going, it is premature to characterize the Castalian Springs crystal production until all soil samples have been processed and artifacts tabulated.

Moots, Hannah (Southern Methodist University), Christopher Roos (Southern Methodist University), Julie Field (Ohio State University) and John Dudgeon (Idaho State University)

[242] *Spatially Explicit Fire and Erosion Histories from Tributaries to the Sigatoka River, Viti Levu, Fiji: Preliminary Evidence from the 2013 Field Season*

The transformation of terrestrial ecosystems on Pacific Islands after settlement has intrigued scholars for decades. Although sediment cores from lakes, ponds, peats, and lagoons have yielded long, continuous, and well-preserved pollen records of past vegetation communities, the locations suitable for continuous pollen records do not always allow for testing spatial variability in human-environmental impacts. Such spatially explicit evidence is necessary to test human behavioral ecology models about the transition from low-level food production and foraging in coastal settings to intensive, inland agriculture. We are assembling multi-proxy records of fire and erosion histories from low order tributaries to the Sigatoka River that allow us to connect the dynamic histories of agricultural clearance and maintenance with archaeologically known occupation histories in different parts of the valley. We present preliminary evidence from a systematic alluvial coring program and laboratory analysis designed to evaluate the spatial consequences of social and economic transformations in the millennia following the Lapita occupation of southwestern Viti Levu.

Moragne, Steve [172] see Nadeau, Jaclyn

Moragne, Steven

[218] *Extremely Small Things Forgotten: Microartifact Analysis at the Pethick Site*

Microartifacts are a seldom sampled but very useful class of data for the interpretation of spatial patterning at archaeological sites. Due to their small size they often exist beneath human notice and are affected by both cultural and natural formation processes differently than larger artifacts. When used in conjunction with traditional data they can lead to new and more robust interpretations. This paper presents microartifact data from the Pethick Site, a multi-component Native American site near Albany, NY. It analyzes microartifact data from both features and the non-feature space surrounding them. Microartifact distributional patterns will be discussed individually and in concert with each other, with the features, and with the macroartifact assemblage. Combined, the multiple classes of data provide a more complete reconstruction and interpretation of the spatial patterning of artifacts at the site.

[218] *Chair*

Morales, Pedro [63] see Casar, Isabel

Morales, Reinaldo (University of Central Arkansas)

[156] *The Oldest Rock Art in Brazil?*

Debate over the earliest peopling of the Americas tends to resurface periodically as new lines of evidence appear. Recently, paintings at the site of Serrote da Bastiana (Serra da Capivara National Park, Brazil) have emerged as possible evidence of South American rock art as ancient as the famous cave art of Europe, more than 30,000 BP. Very different estimates for the age of this "Serra da Capivara style" rock art have been published, some estimates in disagreement by an order of magnitude. Using multiple lines of evidence and traditional art-historical methodology, this paper reconciles those differences with significant results. The analysis of paintings from 130 local sites indicates there are many "Serra da Capivara" styles. One of these sites, Baixão da Perna I, includes the oldest securely dated rock paintings in the Americas (at the cusp of the Holocene; c. 10,000 BP). Another Serra da Capivara "style" is represented at Serrote da Bastiana (at the cusp of the Formative; c. 3700 BP, millennia later than expected for this "style"). Effective style analysis -- with reasonable expectations of "style" -- can reconcile seemingly contradictory chronometric data and better inform our understanding of culture and its fickle connection to art.

Morales-Aguilar, Carlos (Université Paris 1 - Panthéon Sorbonne), Alejandro Patiño (University of Calgary, Canada), Philippe Nondédéo (ArchAm UMR8096/CNRS) and Richard D. Hansen (Idaho State University)

[227] *Cultural Change and Continuity in the Maya Lowlands: Understanding the Transition from the Late Preclassic to Early Classic at Mirador Basin*

By the end of the Preclassic period a series of social, economic, and political transformations took place in the Mirador Basin. In particular, the populations of the region experienced processes of population decrease and migration, as well as interruption and renegotiations of cultural tradition and social practices accompanied by political change. These trends occur at a time when El Mirador polity was on decline and socio-economic re-adjustements were taking place in other places of the Maya lowlands. After this "crisis", dubbed the "Preclassic Collapse", several Maya centers such as Naachtun, Río Azul, Tikal, Dzibanché and Calakmul, among others emerged. Changes in sociopolitical order of the Mirador Basin communities can be documented in the archaeological (architecture and pottery) and the limnological record. This presentation will discuss patterns of socio-cultural adjustment in the Mirador Basin during the end of the Late Preclassic, particularly processes of change and continuity and discontinuity based on recent archaeological investigations in the area. We argue that cultural and social changes which occurred in the transition period at Mirador Basin were very important and decisive in institutionalizing the new forms of political organization that appear during the Classic period in the Maya lowlands.

Morales-Arce, Ana (Archaeology) and Ana Cristina Aguilar (University of Costa Rica)

[93] *Bioarchaeological Approaches to the Site "La Cascabel" in Bahía Culebra, Costa Rica (800 - 1550 A.D.)*

The archaeological site "La Cascabel" belongs to the bigger archaeological area called Great Nicoya. This area comprised the regions of Guanacaste and Nicoya in the northwestern portion of the modern Latin American countries of Costa Rica and part of the Pacific region of Nicaragua. "La Cascabel" last excavation and posterior analysis between 2007 and 2011 revealed bioarchaeological characteristics like occupational stress with differences between men and woman in relation to economic activities. There was also auditory exostosis in some of the male individuals that indicates their fishing and diving as a part of subsistence strategy. On the other hand, three different moments of occupation were determined and their mortuary practices revealed inhumations. One important question around this site is about their ethnicity and the origin of the individuals that inhabited the area, for this reason we suggest that ancient DNA studies may be essential to understand their conformation.

Moran, Kimberlee (Forensic Outreach)

[283] *Implementing the Weldon Spring Protocols in a Full-Scale Post-Blast Field Exercise*

The Weldon Spring Protocols provide a methodical approach to tackling large-scale outdoor scenes such as those involving crashes and explosions. While based on archaeological field surveying techniques, the Protocols incorporate law enforcement documentation and chain of custody requirements. In October 2012, a team from the Center for Forensic Science Research and Education in collaboration with the Montgomery County, PA Bomb Squad conducted a full-scale field exercise that involved blowing up a transit bus carrying several "victims" and their personal affects. This presentation will provide an overview of the exercise, how the Weldon Springs Protocols were employed, and the results of the search and recovery effort.

[283] Chair

Morehart, Christopher [70] see Parker, Megan

Morehart, Christopher (Northwestern University) and John Millhauser (North Carolina State University)

[124] *Evaluating Representational Perspectives of Landscape and Adjusting the Historical Gaze of the Basin of Mexico*

In the past ten years, the science of remote sensing has exploded in archaeology. Reduced cost and increased accessibility through applications such as Google Earth has made even the least spatially savvy scholar seemingly a spatial guru. These data are updated at a rapid pace, shaping and, indeed, revolutionizing our understanding of how historical processes affect the temporal and spatial scales through which landscape change occurs. What effect does this insight have, however, for the ways in which we trace this transformational process back in time? How can archaeologists not only disentangle the rhythms of landscape but actually document this palimpsest? Focusing on the long-term history of the Basin of Mexico, we integrate different forms of data—aerial photographs; satellite images; historic texts, maps and photographs; oral histories; and archaeological data—to tackle this problem. Our analysis reveals a complex choreography as people, places, and things intersected, collided, replaced, or co-existed across time and space.

[331] Discussant

Moreheart, Christopher [143] see Meza-Peña, Abigail

Morell-Hart, Shanti (Stanford University)

[170] *Tricks for Integrating Data from Multiple Types of Botanical Residues*

When integrating paleoethnobotanical data, what are useful quantitative approaches appropriate to situations with highly variable data quantities, contexts, and sampling strategies? Moreover, in using various botanical proxies, a single aspect is potentially measurable in multiple ways. How can we interpret our findings without over-representing certain data or selling our results short?

Archaeobotanical interpretation is particularly complicated by formation processes, clade identification issues, and representation by multiple proxies, even when standardized sampling occurs. The four sites of my study are located Northwestern Honduras, a region with poor preservation due to seasonal cycles of desiccation and inundation as well as generally acidic sediments. For this reason, I pursued several types of botanical residues to provide a more holistic picture of past ethnobotanical practices. In some cases these data proved to be complementary, while in others, corroborative. Drawing on the work of paleoethnobotanists, archaeologists, and statisticians, I describe my approaches to several major issues. I include tactics for integrating multiple and overlapping diagnostic elements, multiple and overlapping clade categories, multiple and overlapping cultural practices, and multiple and overlapping formation processes. For each, I describe the issue, my sampling strategies, my quantitative approach, and a few results from my study.

Moreno, Meredith (SWCA), Lauren Maas (SWCA) and Michael Crow (SWCA)

[169] *Plantation Archaeology in Texas: Excavations at the John Sweeny Jr. Plantation*

The John Sweeny Jr. Plantation represents a mid-sized, mixed-use plantation indicative of the sugar cane and cotton plantations of Antebellum Brazoria County, Texas. The site has been continually occupied since the 1837 construction of the house; however, the family perpetually sold off portions of the 2680-acre estate after the Civil War. Only 762 acres of the original plantation are located within the area available for study. Excavations at the plantation focused on areas within the immediate vicinity of the house in order to identify intact features that can be directly related to previously identified areas of high artifact density and discrete activity areas (i.e. cisterns, privies, kitchen/refuse middens). This paper presents the results of these investigations and an interpretation of the organization of domestic, service, or any industrial structures that were once present within the site area, comparisons between planter, overseer, and slave populations, and the variations between antebellum and postbellum deposits at the site. Additionally, the archaeological materials and features from the John Sweeny Jr. plantation site are compared with those from notable and well-studied plantations within the area.

[169] Chair

Moret-Ferguson, Celia [326] see Sharma Ogle, Mini

Morgan, Christopher (University of Nevada, Reno)**[23] Punctuated Occupational Trajectories at Altitude in Western Wyoming**

When discovered in 2006, High Rise Village piqued substantial interest due to its elevation, the abundance of house features at the site, and its apparent similarities to the alpine villages of Nevada and eastern California. Recent research has revealed, however, quite different behavioral patterns. It has a longer and deeper period of use, was likely focused more on resource extraction in the immediate site area, and was characterized by much more sporadic, short term occupations than its Great Basin counterparts. This pattern consequently represents a previously-unrecognized subalpine component of a regional Late Holocene settlement pattern characterized by seasonal transhumance, residential feature construction, and increasing diet breadth that ultimately reflects the substantial diversity of hunter-gatherer adaptations to altitude. This pattern also appears to have manifested in several areas across mountain-intermountain western North America during the late Holocene.

[23] Chair**Morgan, Colleen****[258] Archaeological Blogging: Theory, Methods, and Future Directions**

In the space of only a few years archaeological blogging has grown from a quiet conversation between friends to a sometimes fractious cacophony of organizations, companies, field schools, institutions and individuals, operating on several platforms, with varied media on an international stage. Alongside this growth is the increased requirement from funding agencies such as the NSF and Marie Curie for outreach activities related to research. What is the value of this kind of digital outreach to stakeholders and how does it compare to other types of publications and academic service? What does archaeological blogging contribute to the larger discourse in the field?

In this paper I provide a holistic view of blogging, with special attention to social networks and authority in digital media. I follow the trajectory of digital outreach in community archaeology, and offer both a current overview of the growing archaeological blogging community and productive future directions for the medium. As the previous organizer of the 2011 SAA session regarding Blogging Archaeology, I provide context and perspective regarding the state of digital media for public outreach in archaeology.

Morgan-Smith, Maggie (University of North Carolina at Chapel Hill)**[195] Creating Ties, Incurring Debts: Exploring the Role of Life Events through Archival Documents and Oral History from Rancho Kiuic, Yucatan, Mexico**

Using archival and oral history data, this paper considers the role of events such as baptisms and burials as both debt maintenance and placemaking activities at Rancho Kiuic; an 18th-20th century Yucatec Maya landed estate, abandoned by its laboring population in the mid 20th century. The funding of life events by landowners has long been understood as essential to maintaining systems of debt on historical landed estates in the Puuc. In this paper, I suggest that the celebration of such events, evident in archival documents and oral history, also served to create ties to the Rancho for the laboring population that exist into the present. Although former residents and their descendants recall a history of oppressive labor conditions and marked inequality between themselves and the Maya-speaking landowning family, the population still actively connects with their old community through the use of its cemetery. The Rancho thus provides an alternative landed estate model for exploring the complexities of relationships to place and landowner in indebted contexts.

Moriarty, Ellen and Matthew Moriarty**[312] Assessing the Daily Economy of an Emergent Maya Polity: Ceramic and Obsidian Data from the Motul de San José Area, Guatemala**

Detailed artifact analyses highlight a complex economy in the Late Classic Motul de San José area of lowland Guatemala. In this paper, we draw on ceramic (petrography and modal analysis) and obsidian (chemical sourcing, conservation indices, and core distribution) data to explore changes in local economic systems following the Tepeu 2 Late Classic emergence of Motul de San José as the area political capital. Data from five sites representing all levels of the local settlement hierarchy indicate both changes and continuities to ceramic and obsidian production and distribution systems. In particular, area-wide shifts are noted in both the ceramic and obsidian data from subordinate sites between Tepeu 1 and Tepeu 2 times. These shifts are tied to the changes in the local political structure. The presence of distinct obsidian and ceramic assemblages at the political capital, however, suggests that the economy of

the Late Classic Motul polity was heterarchically structured, with potentially disarticulated distribution systems servicing, on the one hand, the emergent Motul elites and, on the other, the residents of smaller subordinate settlements.

Moriarty, Matthew [312] see Moriarty, Ellen

Morris, Stacy [317] see Hart, Isaac

Morrison, Kathleen (University of Chicago)

[35] *Discussant*

Morrison, Alex E. [242] see Rieth, Timothy

Morrison, Mick (Flinders University)

[271] *Shell Mounds and Niche Production Strategies*

Shell mound sites constructed by Aboriginal peoples are a common feature of Australia's tropical coastal landscapes. Recent research indicates that these sites represent new economic strategies linked to social, demographic, environmental, and economic changes in some parts of northern Australia during the last 4 kyr. Previous research highlights the economic significance of r-selected shellfish species—often represented in extremely large proportions in mound sites—because of their ability to rapidly form a large biomass within preferred habitats. Here, I argue that shell mounds near Weipa represent a new production strategy targeting ecological niches, in this case intertidal mudflat ecosystems. This strategy was highly dynamic, varying in intensity on a sub-decadal basis in response to seasonal and spatial variability in shellfish biomass within local estuaries, and as such, was dependent upon quite detailed knowledge of the character of local ecosystems. These strategies were also reliant upon social networks and the ability to mobilize larger gatherings of people to coincide with localized resource gluts, while spatial and temporal variations in the distribution of resources became a geopolitical factor within local political economies. These socially constituted economic strategies are potentially emblematic of broader economies in the region during the late Holocene.

[331] *Discussant*

Morrow, Juliet (Arkansas Archeological Survey)

[30] *Evidence for Spirituality during and after the Clovis Diaspora*

For this study, the term "spirituality" refers to a dimension of human experience wherein an individual imagines the self within a broader context of being. Spirituality implies separation between the body and the soul, as well as between the mundane and the sacred. This presentation is a survey of the available evidence for spirituality expressed by Late Ice Age hunter-gatherers during and after the Clovis Diaspora, from circa 14,000 to 10,000 years ago. Key sites discussed include Anzick (Montana), Buhl (Idaho), Sloan (Arkansas), Caradoc and Crowfield (Ontario), Charlie Lake Cave (British Columbia), and Wilson-Leonard and Arch Lake (Texas), among others.

Morrow, Juliet [211] see Ciccone, Jason

Morton, Shawn (University of Calgary)

[107] *Chair*

Moses, Victoria (University of Arizona)

[332] *Interpreting Ritual Practice through Zooarchaeology at Sant'Omobono, Rome*

The religious significance of the Area Sacra di Sant'Omobono in Rome, Italy is evident in the continuous use of the site for sacred purposes from the 6th century BCE construction of the Archaic temple through the use of the modern church that stands at the site. Despite its long history of excavation, the faunal remains at S. Omobono have been extremely understudied. To interpret the religious beliefs and ritual practices of the early phases of use, this research focuses on faunal remains and other associated artifacts, such as votive vessels. Fauna is ideal for understanding religion and ritual as it not only leave ample archaeological evidence of the ritual practice but aids in understanding the important relationship

between human, animal, and supernatural. The systematic analysis of fauna recovered in previous excavations of the archaic temple as well as from current excavations of The Sant'Omobono Project indicate that animals played a significant role in communion between human and supernatural forces. While current excavations suggest a reinterpretation of previously identified sacrificial animals as animal remains likely used for construction fill, the taxa and age demographics present, in conjunction with other artifacts, indicate the ritualistic nature of these remains.

Moss, Jeremy [119] see Pavao-Zuckerman, Barnet

Moss, Madonna (University of Oregon), Antonia Rodrigues (Simon Fraser University), Camilla Speller (University of York) and Dongya Yang (Simon Fraser University)

[160] *The Archaeology of Pacific Herring in Alaska*

We aim to develop a more complete understanding of the ancient Alaska Native use of Pacific herring (*Clupea pallasi*) to better assess the historical abundance, biogeography and genetic diversity of herring in the past. The ultimate goal is to improve herring fisheries management to benefit a wide range of stakeholders in the Arctic, Subarctic and beyond. Ninety herring bone samples from 17 archaeological sites in Alaska spanning 9000 radiocarbon years have been tested. Ancient DNA recovery has been high, and study of SNPs (single nucleotide polymorphisms) appears to be the most effective way to assess genetic population structure from ancient remains. Preliminary evaluation as to how the Alaska samples relate to others in British Columbia, Washington State, and the northwestern Pacific will be presented. The results should have implications for fisheries policy and practices, Alaska Native subsistence rights, and herring conservation.

Motsinger, Thomas [18] see Thompson, Kevin

Motsinger, Thomas

[98] *Discussant*

Mountjoy, Joeseph [140] see Leriche, Christina

Mountjoy, Joseph (Universidad de Guadalajara, México)

[189] *It's Complicated: 1,250 Years of Shaft and Chamber Tombs in Northwestern Jalisco*

Eighteen years of archaeological investigations in the northwestern part of Jalisco have resulted in the excavation of some 33 un-looted and 11 partially-looted shaft and chamber tombs that span the period of at least 820 B.C. to A.D. 430. During this 1,250 year span there is notable variation in the form of the tombs, the kind and quantity of offerings deposited in the tombs, as well as the number of deceased included and the condition of their remains at the time of burial. Suggestions are offered regarding the significance of this variation.

Mouralis, Damase (Université de Rouen - CNRS (France)), Ebru Akköprü (Van University (Turkey)), Laurence Astruc (ArScAn (CNRS, France)), Korhan Erturaç (Sakarya University (Turkey)) and Catherine Kuzucuoglu (L.G.P. (CNRS, France))

[249] *An Integrated Study of the Eastern Anatolian Obsidians (Sources and Diffusion): The Geobs Program*

The GeObs project proposes an integrated and multi-disciplinary approach to study the exploitation of the Eastern Anatolian obsidian by ancient groups for the manufacture of tools and prestige objects, and its spatial diffusion through exchange networks among communities across the ancient Near-East (including Anatolia and Caucasus). Because of the imprecision and/or the lack of data, it is, until now, impossible to properly understand obsidian diffusion from its origin to its discard; i.e. from the geological sources to the archaeological sites. The aim of the project is to establish a detailed database and geographical information system of the obsidian sources in eastern Anatolia. We thus propose an integrated and pluridisciplinary approach for obsidian sourcing based on:

- Intensive field research in order to precisely identify the morphological and volcanic settings of the studied obsidian sources.
- Multi-methods characterization of obsidian associating chemical (using LA-ICP-MS, XRF methods) as well as physical properties (magnetic properties, petrography, mineralogy). All the results will be

interpreted in link with the results of the field investigation.

- Using the methods of spatial analysis we will try to understand the diffusion of the obsidian during prehistoric times, from its geological origin to its deposition in archaeological sites.

Moyer, Teresa (National Park Service)**[152] Building Capacity for Co-Created Digital Moviemaking through Youth Programs**

The Urban Archaeology Corps is a work experience program conducted through a partnership between the National Park Service and a community-based partner, Groundwork Anacostia River DC. It draws on archaeology as a tool of civic engagement to offer youth from diverse backgrounds an opportunity to learn about national parks and their untold – or little known – stories. Each UAC participant creates a short digital film to “speak back” to the NPS and reflect on something particularly meaningful to them, be it a facet of the park’s history, a park stewardship concern, or a wakeup call to the communities surrounding parks. Training in and use of digital media is thus an essential component of the co-creation process. This paper is a case study in building capacity in youth programs for co-created digital products that help the NPS, its partners, and their communities to share in the stewardship of archeological resources and public lands.

Moyes, Holley (University of California, Merced)**[277] The Dark Side of Las Cuevas: A Ritual Journey**

Archaeologists have paid little attention to architecture in ancient Maya cave sites, though many, if not most caves exhibit some degree of modification. Nowhere is this better exemplified than at the site of Las Cuevas. On the surface Las Cuevas appears to be a typical Late Classic, medium-sized, administrative/ceremonial center. But, this site has something that most others do not—a large cave system that runs beneath the main plaza. The massive entrance to the cave sits in a sinkhole directly below the eastern pyramid of Plaza A. Formal architectural modifications including platforms with plastered surfaces, stairs, and terraces surround a natural spring in the Entrance Chamber. The cave's tunnels begin at the rear of the chamber, twist and turn, and eventually circle back into the entrance culminating at a high window that overlooks the spring. Throughout the tunnel system blockages and walls restrict access to deeper areas. In this paper I suggest that architectural modifications to the tunnel system were designed to create a performative space that guided participants through an Underworld journey.

[70] Discussant**[277] Chair**

Moyes, Holley [277] see Arksey, Marieka

Mraz, Veronica (University of Tulsa)**[265] Across the Landscape: An Examination of Environmental and Cultural Changes through Analysis of Late Prehistoric Lithic Assemblages from north-central Oklahoma**

The area of north-central Oklahoma is an under studied part of the Southern Plains, especially during the Plains Woodland and Village periods. A model proposed for the mobility and settlement practices of the prehistoric groups of the area was evaluated through analyses of lithic assemblages from four sites. The sites were selected from adjacent, but contrastive biomes thought to have been occupied by groups that followed a seasonal round in which grassland and woodland resources were exploited through an embedded procurement strategy during peaks in resource availability. These included the Daniels and Von Elm sites from the Bluestem Prairie and Big Hawk Shelter and Copperhead Cave from the Cross Timbers. The lithic analysis focused primarily on the identification of chert varieties and locations, the amount of cortex present, and the size/weight of lithic elements. These attributes were presented as proxies in evaluating the mobility and procurement practices of people in the study area. The results from the analysis suggest that Late Prehistoric groups in north-central Oklahoma were living in temporary, seasonal sites relying on an imbedded rather than logistical procurement strategy. This was a time-transgressive pattern present during both Plains Woodland and Village periods.

Mt. Joy, Kristen (Texas Army National Guard)**[196] X-Ray Specs and Gadgets: The Problem of Integrating New Technology into traditional Cultural Resource Management Programming and Planning**

Cultural Resource programs in public agencies face a constantly changing funding and policy

environment. Most programs primarily focus on regulatory compliance, which often limits exploring the myriad of ways archaeology gets done. Advances in the applications of geophysical and geospatial methods and techniques often outpace the ability for agencies to incorporate them into their planning and programming. A larger obstacle comes when misunderstanding of the normal trial and error in scientific advances leads to agencies limiting approaches to traditional cultural resource management. The end result is agencies may be missing out on valuable tools to identify and provide information on historic resources that may allow application of more efficient and effective management strategies. In addition to their uses for guiding and focusing investigations before shovels touch the ground, non-invasive techniques are desirable to many communities that prefer to avoid disturbance to sensitive sites or burials. This paper looks at how agencies can adapt modern technology into their programs and demonstrate to non-professionals their power and value as management tools.

Mueller, Melissa (Texas A&M University, Center for the Study of the First Americans)**[173] Taphonomic Interpretations of Burned Bones from the Susitna River Basin, Alaska**

This presentation provides a report on the zooarchaeological and taphonomic analysis conducted on faunal material from the archaeological sites HEA-455 and HEA-499, located in the upper Susitna River basin, central Alaska Range. Faunal remains include approximately 11,323 faunal specimens; however, only 16 were minimally identifiable to element and taxon. Specimens were each less than 7 mm in size due to heavy fragmentation. The high degree of fragmentation limited attempts to identify these faunal remains, yet a taphonomic analysis on the degree of burning seen in these faunal remains indicates possible human activities and behaviors related to subsistence and site maintenance. Based on interpretations from experimental studies in the literature on the effects of burning bones in fires, the bone fragments from these two archaeological sites appear to be burned directly from human site activities. The results presented here provide insight into prehistoric subsistence and site activities in the mountainous Alaska Range, as well as a better understanding of taphonomic processes in play in this environment.

Mueller, Natalie**[207] Developing Domestication Criteria for Crops with Knotty Morphologies: *Polygonum* in the Eastern Woodlands**

By developing morphological criteria for recognizing domesticated plants, archaeologists are able to find direct, datable evidence of past agricultural practices. Annual seed crops often exhibit a straightforward domestication syndrome in response to human selection that includes larger seeds, reduced germination inhibitors (seed and fruit coats), synchronized fruiting, decrease in mechanisms for seed dispersal, and a more erect growth habit. Despite these well-established indicators, some crops continue to elude our efforts to develop criteria for domestication. I present preliminary results from my attempts to establish morphological criteria for domestication for one such crop, knotweed (*Polygonum* sp.) that was cultivated for at least 2000 years in Eastern North America. In order to establish domestication criteria for this extinct crop with complicated seed morphology, I am employing morphometrics and texture analysis coupled with experimental cultivation and observations of modern plants. This study also has the potential to enrich our understanding of the dynamics of domestication through agricultural practice in general.

Mueller, Raymond, Jason Cesta (Geology, University of Cincinnati, Ohio), Matthew Severs (Geology, Richard Stockton College of New Jersey), Arthur Joyce (Anthropology, University of Colorado, Boulder) and Michelle Goman (Geography, Sonoma State University, California)**[341] Further Research on Floodplain Evolution Associated with the Site of Rio Viejo, Lower Rio Verde, Oaxaca, Mexico**

The Río Verde is one of the largest rivers on Mexico's west coast with its upper drainage containing the important archaeological site, Monte Albán. The lower portion of the drainage contains the important Río Viejo site along with others. Previous geoarchaeological research showed that the river shifted course and altered the environment over the last few millennia due to an influx of sediment from the highlands. The Río Verde has shifted from the west to its present location but did not appear to have ever shifted to the east. A recent rise in the water table caused by an irrigation project revealed, on Google Earth imagery, many buried meanders east of the river. Sourcing the origin of sediments from these abandoned meanders provides insights into the geomorphic evolution of the region and possible effects on regional archaeology. Sand samples were collected from both the abandoned meanders and from modern depositional environments. Observation and measurement of sand mineralogy provides answers to the origin of the meanders. Sediment mineralogy suggests that these meanders represent either former courses of local streams or an amalgamation of coastal plain fluvial systems. The sediments do

not appear to be associated with the Río Verde.

[341] Chair

Muller, Jennifer (Ithaca College)

[126] *Born into Poverty: The Short Lives of the Destitute, Diseased, and Starving Infants of the Erie County Poorhouse*

In the summer of 2012, a salvage excavation at the South Campus of the University at Buffalo resulted in the recovery of the human remains of over 380 individuals, fifty-four of who are infants. These children are associated with the Erie County Poorhouse Cemetery (1851-1909). Initially developed to address the growing issues of poverty, the poorhouse failed to meet its goals. While poorhouses varied, policies regarding work therapy, abuse of inmates, placement in orphanages and separation of the familial unit may have served to further already discriminatory practices against the "other," including the impoverished, mentally and physically disabled, and those with immigrant-status. In recent decades, the lives and deaths of children have received significant attention in the anthropological literature. As it relates to the health of past populations, much of this research has focused on the recognition that children are among the most biologically sensitive to cultural change. Born into poverty, the vulnerability of poorhouse infants may be evidenced in their early deaths. Using structural violence as a framework, this research integrates data from the archaeological, historical, and skeletal records to determine age-at-death patterning among the poorhouse infants and to address the ultimate causes of their morbidity and mortality.

Müller, Romy [241] see Brown, Terry

Mullins, Patrick (University of Pittsburgh)

[104] *LIP Fortifications in the Moche Valley of Peru: New Perspectives*

The Late Intermediate Period (A.D. 800-1470) in the Moche Valley of Peru witnessed the political consolidation and expansion of the powerful Chimú Empire centered nearby at Chan Chan. Roughly coinciding with the Chimú florescence on the coast, a variety of specialized defensive sites and fortified settlements were constructed and occupied in the middle and upper reaches of the Moche Valley and some of its tributaries. These fortified sites have been used in previous scholarship to describe the Chimú conquest and consolidation of the Moche Valley as well as the structure of its frontier with the highlands. In the 2010 and 2011 field seasons, the author mapped and conducted surface collections at a middle valley Chimú fortification called Fortaleza de Quirihuac. Using a synthesis of this original data, preliminary survey done in 2013, and previous scholarship, the author aims to present a reassessment of Chimú expansion and consolidation in the Moche Valley as well as the varied nature of imperial interactions with valley and highland communities.

Mullins, Meghan (Miami University) and Mary Jane Berman (Miami University)

[269] *Intersite Rim Sherd Analysis of Three Lucayan Sites, Bahamas*

Two Lucayan rim sherd assemblages from the central Bahamas and one assemblage from the northern Bahamas will be compared. First we establish the nature of inter-site variability and vessel function to establish site activities. We also look at regional and temporal stylistic and functional differences between the sites and compare these to contemporaneous sites in Cuba and Hispaniola. The Lucayan rim sherd data will be combined with previously studied body sherd data to address the following questions: to what degree was Palmetto Ware (Lucayan-produced ceramics) independent from surrounding traditions, how does this reflect different colonization histories, and does it reveal unique communities of practice?

Mullins, Paul [338] *Discussant*

Mulrooney, Mara (Bishop Museum) and Mark D. McCoy (University of Otago)

[242] *Ho'omaka hou (To Begin Again): Re-Dating Early Hawaiian Settlement Sites of Southern Hawai'i Island*

Beginning in the 1950s, archaeologists working in the Hawaiian Islands initiated major research projects directed at identifying the initial settlement of the archipelago. Southern Hawai'i Island was central in this effort because sites there provided the archipelago's first material culture-based chronology, which was based on changing frequencies of fishhook types anchored in time by radiocarbon dates. But, these initial efforts have been sidelined in more recent discussions about early Hawai'i due to serious problems with

chronometric hygiene that have invalidated previously reported dates. In this paper, we present the results of the re-dating of key early sites in southern Hawai'i Island excavated by Bishop Museum archaeologists that include layers initially bracketed to within the colonization period of the Hawaiian Islands. Acquiring these new dates on carefully selected samples, along with a re-examination of the material culture collected, gives us the opportunity 'to begin again' and investigate not just when people arrived, but what life was like for Hawai'i's founding communities.

Mulville, Jacqui [84] see Wolfhagen, Jesse

Muniz, Ad (San Diego Archaeological Center), Margie Burton (San Diego Archaeological Center) and Cindy Stankowski (San Diego Archaeological Center)

[68] #Archaeology#Makingitrelevant

Since opening our doors in 1998, the San Diego Archaeological Center has become a nationally recognized leader in the curation of archaeological collections. Our goal is to sustain an archaeological center where artifacts will not only be cared for, but where scientific research can be facilitated and the public can enjoy learning about the prehistory and history of the San Diego region through educational programs and museum quality exhibits. Today, through benefits provided through social media, archaeology is the ideal tool for teaching global awareness, civic and environmental literacy and adaptability, as well as cross-disciplinary thinking and social and cross-cultural skills.

Munoz, Olivia (Université de Paris 1 (France))

[67] *The Collective Burials in the Oman Peninsula during the Early Bronze Age (3rd Millennium B.C.): The Social Implications of Increasing Complexity in Funerary Practices*

This paper aims to highlight recurring patterns in the 'management' of 3rd millennium BC collective graves from the Oman Peninsula. Data from the recent excavations of several collective tombs and analysis of skeletal material recovered will be compared to sites and material found elsewhere on the Oman Peninsula. The evidence of mortuary rituals identified in these collective tombs reflect an increasing complexity of burial practices throughout the 3rd millennium, especially during the second half of the 3rd millennium BC. Evidence will include the manipulation and removal of human remains to adjacent pits, cremation, and to a lesser extent, defleshing. These practices may stem from the need for more space in the tombs where a growing number of individuals were placed, but they also contribute to melt individuals into the community of the ancestors and strengthen social cohesion among the living. Furthermore, the widespread prevalence of common solutions adopted for the maintenance of the collective graves throughout the Oman Peninsula show that the ideology underlying these practices was probably shared by groups with different economic orientations, attesting of a strong cultural homogeneity.

Munoz, Cynthia M. [103] see Jones, Ashley

Munoz, Victoria (Shumla Archaeological Research and Education Center) and Jeremy Freeman (Shumla Archaeological Research and Education Cente)

[199] *A New Dimension in the Study of the Lower Pecos Canyonlands Rock Art*

Shumla Archaeological Research and Education Center has been engaged in an intensive rock art documentation project in the Lower Pecos Canyonlands of Texas since 2009. It is a daunting task to not only preserve the imagery and its context for future generations, but to capture data in a way that is useful for detecting patterns in the archaeological record. To meet this challenge, Shumla's research team collects extensive attribute data on each pictographic figure, documenting and entering information into our searchable rock art database. This database is capable of running complex queries to identify patterns in the rock art assemblage. We map the precise location of each figure using a Total Data Station and GPS, integrating this information with our figure attribute data. Using ArcGIS we will begin examining spatial relationships among figures and identify patterns in motif association and their distribution across the landscape. GIS and spatial analysis opens the door to exploring possible associations between individual rock art elements and the "dirt" archaeology. This information provides greater insight into the meaning and function of the art and the lifeways of the people who produced it.

Munoz, Lizette (University of Pittsburgh), Karen Durand (Haciendas of Nasca Archaeological Project (PAHN)) and Brendan Weaver (Vanderbilt University)

[256] *"Eat this Bread, Drink this Cup": Preliminary Discourse on Foodways at the Jesuit Wine Estates of Nasca, Peru*

Using archaeological datasets that relate directly to foodways is an extremely useful prism to assess the impact of religious taboos, the expansion of global markets, and the emergence of new ethnic identities in multi-cultural settings. The preliminary results of the 2012-2013 excavation season of the Haciendas of Nasca Archaeological Project offers the prospect of branching our understanding of colonial foodways beyond the Native Andean/European dichotomy – an opportunity to understand, through material correlates of domestic production, consumption, and discard, how power was brokered on coastal haciendas, where the majority of the labor was enslaved and of African descent. Enslaved Afro-Andeans may have adopted foodways which share common traits with other groups in the Andean region: creole, mestizo, and native Andean, but were themselves distinct due to the special power dynamics present on an estate where slavery was the dominant productive paradigm. Using data from ethnohistorical sources and the preliminary results of our ceramic, paleoethnobotanical, and zooarchaeological analyses we examine the way administrators provisioned enslaved laborers with daily sustenance, as well as the potential ways that enslaved individuals and families may have supplemented their diets, perhaps through the hunting and husbandry of small animals and the planting of personal gardens.

Munoz, Samuel (University of Wisconsin-Madison), Sissel Schroeder (Department of Anthropology, University of Wisconsin), David Fike (Department of Earth & Planetary Sciences, Washington) and John Williams (Department of Geography, University of Wisconsin-M)

[260] *A Paleoenvironmental Record of Prehistoric and Historic Land Use from the Cahokia Region*
Cahokia emerged as a major agricultural and political center in the central Mississippi River valley at 1050 CE, but the entire region was almost completely abandoned by 1350 CE. Environmental changes, namely resource depletion, flooding, and/or drought, have previously been invoked as important factors in Cahokia's emergence and decline, although few paleoenvironmental records exist from this region. Here, we present a multi-proxy paleoenvironmental record (pollen, δ₁₃Corg) from Horseshoe Lake, an oxbow lake adjacent to Cahokia. The Horseshoe Lake record tracks the abrupt removal of floodplain and upland forests and the expansion of indigenous seed crop production beginning in 450 CE, followed by the gradual intensification of maize agriculture through to the abandonment of Cahokia at 1350 CE. Reestablishment of forests followed regional abandonment by Mississippian peoples, with Euro-American settlement generating another episode of deforestation and agricultural activity beginning in the 17th century. Widespread deforestation of the region centuries before Cahokia's emergence shaped resource availability for Woodland and Mississippian groups, but we find no palynological evidence of abrupt resource depletion during the Mississippian period. We also find no evidence of drought associated with Cahokia's abandonment, but do find evidence of a large flood at 1200 CE that surely affected Mississippian communities.

Muñoz, A. Sebastián [206] see Belardi, Juan

Muñoz Cosme, Gaspar (Universidad Politécnica de Valencia), Cristina Vidal Lorenzo (Universidad de Valencia) and Andrea Peiró Vitoria (Universidad Politécnica de Valencia)

[154] *Laser Scanning as an Analytical Tool Applied to 3D Digital Imagery in Maya Archaeology: La Blanca and Chilonche (Guatemala)*

Laser scanning is a powerful tool for archaeological and architectural data collection that is opening new horizons in the analysis and interpretation of archaeological excavations, especially in the field of metrically accurate 3D digital imagery. Scanning and the digital models it creates not only contribute to answer questions asked of the archaeological record but also facilitate cultural heritage documentation and preservation. In this sense, La Blanca project, which has been conducting archaeological research and promoting cultural heritage in La Blanca and other neighbouring archaeological Maya sites of the Mopan valley region, as Chilonche since 2004, has employed laser scanning technology with the purpose of obtaining a more meticulous and careful record of Maya architecture for archaeological interpretations. The models obtained in La Blanca and Chilonche are also useful instruments for planning future excavations and can be used in exhibitions and multimedia.

Muñoz Villarreal, Andrea (ENAH)

[283] *The Application of Forensic Archeology in Mexico: Methodological Proposal for Excavating, Recording and Recovering Cadavers and Evidence Related Within Mass Graves Associated to the Drug Cartels*

This research aims to develop a methodology to properly excavate, register, exhume and recover circumstantial evidence, material and biological, interrelated within mass graves that are directly or indirectly associated with the increase of disappearances and murders carried out by the drug cartels and organized crime syndicates in Mexico. The study attempts to emphasize the importance of regional studies and the continuous consideration of the delicate social issues that every region retains. Through

archaeology and its application in the forensic field, it seeks to optimize and facilitate police investigations, but above all, to understand the criminal behavior imprinted in the evidence we find and the message this specific type of context delivers.

Munro, Kimberly (Louisiana State University) and David Chicoine (Louisiana State University)**[150] Beyond Chavín: The Balkanization of Early Horizon Societies in Coastal Ancash, Peru**

This paper explores regional developments after the demise of the Chavín phenomenon in coastal Ancash, north-central Peru, during the second half of the first millennium B.C. At that time, complex societies along the coast of Peru experienced profound reorganizations including the emergence of a series of communities integrated through multi-scalar social, economic, and political networks. We focus on the Nepeña Valley of coastal Ancash, a region traditionally associated with the hegemony of Chavín. Here, recent research has brought significant data to assess the sociopolitical climate after the loss of Chavín religio-political influence. We are particularly interested in exploring the diversity of human strategies in response to the reorganization of inter-regional interactions. Within the past decade, work at the sites of Huambacho, Caylán, Samanco, Kushipampa and the surrounding Moro pocket have pointed to two distinct political traditions occupying the upper and lower valley, respectively. These differing traditions are illustrated by distinct settlement patterns, and spatial distributions of sites, as well as differing architectural techniques and ceramic styles. We explore how these two cultural spheres negotiated the processes of balkanization following the demise of Chavín, and compare their strategies to other regions in Peru.

Munro, Natalie (University of Connecticut), Michael Kennerty (Independent Researcher), Jacqueline Meier (University of Connecticut) and Siavash Samei (University of Connecticut)**[236] Human Hunting and Landscape use in the Jordanian Eastern Highlands during the Early Epipaleolithic**

We investigate the effects of the Last Glacial Maximum (~25-18,500 cal. BP) on Early Epipaleolithic human adaptations in the eastern Levant (Jordan) through the study of faunal remains from four Early Epipaleolithic sites excavated as part of the Western Highlands Early Epipaleolithic Project. Landscape use is monitored by examining site occupation intensity using measures of dietary breadth, prey mortality and carcass exploitation. Our data reveal a mobile human adaptation focused on the hunting of high-ranked adult game, and intensive carcass use. Comparisons with Epipaleolithic sites across the southern Levant reflect significant variation related to local environmental and geographic conditions.

Munro, Natalie [236] see Samei, Siavash

Munro-Stasiuk, Mandy, T. Kam Manahan (Kent State University), Christopher Balzotti (Brigham Young University), Richard Terry (Brigham Young University) and Nisao Ogata (Universidad Veracruzana)**[305] Chasing Chocolate: Recent Investigation of Collapse Sinkholes (Rejolladas) as Loci of Cacao Production in the Northern Maya Lowlands**

Rejolladas are collapse sinkholes with bases above the local water table that are densely distributed over portions of the Northern Lowlands of the Yucatan Peninsula. Typically they sustain moist microclimates in comparison to the surrounding terrain, as well as thicker soils allowing them to be used for more intensive agriculture. The paper presents a model of use and importance of the rejolladas based on archaeology, geomorphology, soils, botanical evidence, water table position, and geographic location in the Northern Lowlands. Specifically examples will be discussed from the sites of Uci-Cansahcab, Xuenkal, and near the modern city of Valladolid. Together these data strongly suggest that some of the sinkholes were utilized intensively by the ancient Maya for the production of cacao (*Theobroma cacao*) in an environment otherwise unsuitable for cultivation. In particular, deeper, steeper rejolladas were more likely to have been used for cacao production.

Munson, Cheryl Ann (Indiana University), Cheryl Ann Munson (Department of Anthropology, Indiana University-Blo) and April K. Sievert (Glenn A. Black Laboratory of Archaeology, Indiana)**[74] James Kellar, Indiana's Mid-Century Modern Archaeologist**

James Kellar (1922-2003) discovered anthropology while serving in the Navy during World War II. Educated at Indiana University, he turned to archaeology after Glenn Black's field school at the Mississippian Angel site. His early research focused on county-wide surveys and Woodland stone mounds of the Ohio Valley. His most notable work was directed to Hopewell sites, Mandeville (Georgia)

and Mann (Indiana), and an overview of the one million plus artifacts that Black had excavated at Angel. Wearing many hats – teacher, administrator, preservationist, museum visionary, scholar – Kellar saw his greatest professional challenge to be saving the Mann site from industrial development.

Munson, Cheryl Ann [74] see Munson, Cheryl Ann

Munson, Jessica (Simon Fraser University), Martha Macri (University of California, Davis) and Mark Collard (Simon Fraser University)

[193] *Classic Maya Bloodletting Rituals in Cultural Evolutionary Perspective*

Recent cultural evolutionary approaches to religion offer novel ways to investigate the existence and proliferation of apparently maladaptive ritual behaviors. However, there are few archaeological studies that examine past religious behavior from this perspective. Classic Maya bloodletting rituals are a widely-discussed example of costly religious behavior, yet little is known about the distribution of these practices, the range of contexts in which they were performed, or the mechanisms and consequences of their spread. In this study, we use generalized linear modeling and social network analysis to characterize temporal, spatial, and contextual variation of bloodletting rituals recorded on Classic Maya hieroglyphic monuments. We show that epigraphic references to bloodletting were not evenly distributed in space and time. We also show that homophily accounts for the spatial distribution of these rituals across the southern Maya region, which implies that inter-polity connections strongly influenced the transmission of bloodletting rituals within Classic Maya society. Collectively, our findings suggest that bloodletting rituals were not uniformly practiced by Maya nobles, but were likely performed in connection with dynastic accession rituals that signaled royal commitments among polities with shared sociopolitical relations. More broadly, this study demonstrates the power of cultural evolutionary theory for investigating past religious behavior.

Murakami, Tatsuya [112] see Kabata, Shigeru

Murch, Loren (University of California, Berkeley) and Rob Q. Cuthrell (University of California, Berkeley)

[170] *Effects of Archaeological Laboratory Extraction and Curation Procedures on Starch Granule Integrity and Morphology*

Archaeological starch research has included considerable experimental work on peri-depositional taphonomic effects of food preparation methods on starch granule integrity and morphology. However, the effects of laboratory extraction procedures on starch granules have received less attention. There are several aspects of common laboratory procedures for which controlled experiments documenting the effects on starch integrity have yet to be conducted or reported. While procedures that negatively impact starch integrity should be modified to minimize negative impacts, those that do not affect starch integrity might be employed in new ways to enhance starch recovery. In this paper, we present the results of experiments quantitatively documenting the effects of particular starch granule extraction and curation procedures on granule integrity and morphology, including sonication, long-term storage in solutions, and others. In cases where results of experiments suggest starch extraction methods may be improved through modification of established protocols, we assess whether modification of procedures actually results in more effective extractions of starch granules from artifacts.

Murdoch, Matthieu [65] see Ur, Jason

Murguia Hernandez, Ana Iris (Universidad Juarez del Estado de Durango)

[200] *Time and the History of Occupation in San Bernardo, Durango, Mexico*

The archeology of the present state of Durango has been shaped by the work of several formal research projects, which have helped constitute the identity of this region. However, basic knowledge of the sequence of occupation from prehispanic times to the present is subject for debate. In this paper I discuss time and settlement in the area, presenting recent results from radiocarbon dates and new interpretations of the occupations by ancient dwellers of the northwest region of Durango, never studied before.

Murillo-Herrera, Mauricio (Universidad de Costa Rica)

[197] *Understanding the Emergence of Community Specialization in San Ramón, Costa Rica*

Previous research in San Ramón, Costa Rica, indicates that pre-Columbian monumental architecture in

this region was not related to high population density, but to ceremonial and feasting activities, in addition to a higher frequency of exchange activities with the Guanacaste region. This paper further explores this issue by closing in on one community with monumental architecture in San Ramón: the Barranca site. This year Barranca was formally and functionally characterized by an intensive full-coverage survey with test pits spaced at an interval of 10 meters. Clay-burnt floors, wattle and daub walls, hearths, internal pathways, house foundation rings, and food remains are some of the features located. Artifactual evidence includes local and foreign objects, and both ceremonial and utilitarian pieces. The analysis and integration of all this information makes it possible to assess the kinds of activities that were most common in different sectors of Barranca, which is key for understanding the role Barranca played in the regional social dynamics of pre-Columbian San Ramón.

Muros, Vanessa [104] see Warmlander, Sebastian

Murphy, Nell [77] see Graham, Martha

Murphy, John

[214] *Resilience in a Wider Sense: How Archaeology Might Benefit from and Contribute to New Approaches to 'Resilient' Systems*

The term 'resilience' was introduced formally in ecological studies to describe a pattern of alternate regimes through which a natural system might move (the 'adaptive cycle'). This was extended to socioecological systems, and archaeology, uniquely positioned to study long-term SES dynamics (especially, societal collapse and reorganization) adopted the term readily. Recently the term 'resilience' has become widely used in a broad range of other contexts, where it now generally refers to the capacity of a system to respond to challenges; this encompasses anticipation, avoidance, and recovery, possibly including novel advantageous changes to the original structure. Applications in national defense, disaster recovery, and business have pushed these ideas forward, so that now there is an emerging dialogue among these fields and a nascent framework for describing and quantifying ways that complex systems may be 'resilient' or vulnerable. This paper considers examples of these new approaches, and asks if they can usefully be applied in archaeological studies and whether archaeology can in return make contributions to these new definitions of resilience.

MURRAY, William

[248] *Marking the Water: Iconography and Environment in Northeast Mexican Rock Art*

Water is essential for human survival, but since it has no inherent shape or form, its iconic representation in any media requires graphic conventions which allow its translation via learned cultural codes. It is also evident that much rock art worldwide is closely linked or even directly related spatially to water sources. In desert environments, water is even more critical to survival and the probability that it might be represented in prehistoric rock art motifs is consequently higher. The question is: how might this relationship be marked iconographically? Are there water symbols in rock art? And if so, how can they be identified? Rock art sites in the southeastern fringe of the Chihuahuan desert in the Mexican states of Nuevo León and Coahuila provide an ample repertory of images for approaching these questions in varied environmental contexts. In particular, the sites in Icamole canyon, Nuevo León, Mexico will be analyzed in order to identify specific iconographic associations within this intermontane water course in the Sierra Madre Occidental. These associations may have a broader application on a regional and continental scale.

Murrell, Jesse and Cassandra Keyes (Tierra Right of Way Services, Ltd.)

[7] *Archaic Land Use of the Taos Plateau and Rio Grande del Norte, New Mexico*

Archaic sites of the Oshara Tradition are common on the Taos Plateau of northern New Mexico. Recent field survey has expanded our knowledge of Archaic sites on the plateau. These sites along with previously recorded Archaic sites in the newly established Rio Grande del Norte National Monument are the subject of study. Raw material selection and lithic technology, in general, as well as site location and reoccupation are examined to explore aspects of Archaic land use including mobility, resource procurement, and continuity of strategies throughout the Early, Middle, and Late Archaic periods.

Murrell, Monica

[294] *From Great Kivas to Great Houses: Early Village Formation and Integrative Architecture in the*

Southern Chuska Valley

Aggregated communities appear throughout the Chuska Valley during the Basketmaker III period, with many of these early village sites continually reoccupied into the Pueblo II–III times. Isolated great kivas were often established in association within these communities representing early, large-scale, integrative architecture in the valley. Great houses containing great kivas and walled courtyards associated with the Chacoan system were later constructed in proximity to established Basketmaker III villages. These great houses were overwhelmingly constructed during the Pueblo II period, with only a few examples occupied during Pueblo I times. Although architectural traits distinguish the aggregated communities from great houses, they appear to be established as cooperative units with numerous examples of interaction and exchange apparent in both the Chuska Valley and Chaco Canyon proper.

[294] Chair

Murtha, Timothy [52] see French, Kirk

Murtha, Timothy (Penn State), Chris Balzotti (Brigham Young University), Kirk French (Penn State University), David Webster (Penn State University) and Richard Terry (Brigham Young University)

[295] *The Agrarian Landscape of Tikal: A View from Above*

Traditionally, archaeological approaches to remote sensing emphasize the identification of prehistoric and historic features sites, architecture or activity areas. Recent efforts in landscape archaeology have expanded the role of remote sensing. This paper describes our efforts to investigate, characterize and classify the agrarian landscape surrounding the largest Classic Maya site, Tikal, Guatemala. We introduce and compare data and techniques we have used in our study. We also introduce our field based approaches used to test and improve our techniques.

The key purpose of our paper is to demonstrate how we are integrating these data in a coupled modeling environment, investigating how changing patterns of land use, agrarian decision making and climate influenced availability and access to natural resources, i.e., soil and water. Importantly, our paper addresses previously unresolved issues about the sustaining area of Tikal, first raised nearly 50 years ago and offers a revised perspective about how the Maya made a living on the agrarian landscape of Tikal throughout the Classic Period.

Muschal, Marlis (University of Iowa)

[265] *Sedentism and Expedient Technology: Dismal River Aspect, Kansas*

This study seeks to test the proposed link between sedentism and expedient lithic technology. Using collections from two Dismal River Aspect sites in western Kansas, this study will explore the extent to which these lithic assemblages exhibit expedient technological strategies. Explicit expectations regarding tool manufacture, reuse, and discard will enable a suite of testable hypotheses to emerge whereby the connection between sedentism and expedient technology can be clarified.

Musser-Lopez, Ruth (San Bernardino County Archaeological Heritage Association)

[328] "Western Aggregate Row Mound" Type Site

Sufficient evidence exists to identify provisionally an historic site type heretofore not recognized. Virtually identical characteristics are associated with "Western Aggregate Row Mounds" at three separate locations in the western United States including one, quite controversial, the "Mystic Maze." Often confused with giant prehistoric earthen artwork or geoglyphs, Western Aggregate Row Mounds made in "relief" with mechanical scrapers are distinguished from "intaglio" style earthen art associated with prehistoric trails commonly found along the Lower Colorado River. The footprints of Western Aggregate Row Mounds represents historic preparation of aggregate materials for collection with intended use in nearby railroad ballast and bridge caissons.

Mutin, Benjamin (Harvard University)

[329] *Uruk presence at Tepe Yahya*

The site of Tepe Yahya is located in the southeastern Iranian province of Kerman. The excavated deposits and objects, including tablets, seals and sealing impressions, and ceramics, that are assigned to Yahya Period IVC provide much evidence that connects this period to the so-called Uruk/Proto-Elamite sphere. The site is practically the easternmost marker of this sphere and provides unique data for an

investigation of distant exchange relations, not limited to the interaction with the West, throughout the Iranian Plateau and Mesopotamia in the period around 3000 BC. Several types of ceramics from Tepe Yahya that are traditionally affiliated with the Uruk/Proto-Elamite world were submitted for neutron activation analysis, which was conducted at Oregon State University. This paper reviews the material culture at Tepe Yahya in the Uruk/Proto-Elamite period and discusses the implications derived from the preliminary results of the analysis.

Nadeau, Jaclyn (University at Albany), Jessica Watson (University at Albany), Steve Moragne (University at Albany, New York State Museum), Sean Rafferty (University at Albany) and Christina Rieth (New York State Museum)

[172] *Archaeology in the Schoharie Valley: The Pethick Archaeological Field School (2004-2013)*

The Pethick archaeological site is located in Central Bridge, Schoharie County, New York. It is the result of a collaborative research project between the New York State Museum and the University at Albany and is still undergoing excavation. It is virtually undisturbed with numerous features from several well stratified components (Rieth et al. 2007; Rafferty et al. 2013). This study presents current research agendas and addresses ongoing analysis by graduate students and the principal investigators. Preliminary results on data from several artifact types, including ceramics, lithic debitage, and microartifacts are introduced. The preliminary results of x-ray fluorescence examinations and activity area analysis is also discussed.

Nadel, Dani, Reuma Arav (Faculty of Civil and Environmental Engineering, th), Guy Bar-Oz (The Zinman Institute of Archaeology, The Universit), Uzi Avner (Arava Institute and the Dead Sea and Arava Science) and Sagi Filin (Faculty of Civil and Environmental Engineering, th)

[65] *High-Resolution 'Desert Kites' Documentation and Analysis: The Use of LiDAR Scanner in a Visibly Complex Environment*

The Near East "Desert kites" are large-scale built features composed of funnel-like arms leading to a cliff or into a small deep structure, or into enclosure-like walls several hundred meters across. As the structures are usually low (1-3 courses high), built of local stones, and set in harsh arid environments, their construction details are commonly visibly limited and difficult to document. Thus, until recently the majority of the kites were only mapped via Google Earth data, with no 3D information about their structure and topographic settings. Isolated cases were mapped and photographed using old traditional archaeological techniques. For better characterization and study, we introduced a LiDAR scanner to record and analyze the Negev kites. We documented the architecture and immediate topography (centimeter level of resolution and accuracy) of eight structures in their natural 'low-visibility' settings, facilitating a wide array of analysis avenues, impossible by previously used techniques. Here we present the analytical results based on derived 3D models constructed for each kite: characterization and correlation of arms' length, entrapped area, inclination, and head structure. We also address volume of stone construction to evaluate past efforts. Case-studies of intra-site and inter-site analyses are presented.

Nadel, Dani [65] see Filin, Sagi

Nado, Kristin [291] see Seidel, Andrew

Nagaoka, Lisa [42] see Dombrosky, Jonathan

Nagaoka, Lisa (University of North Texas), Feifei Pan (University of North Texas) and Steve Wolverton (University of North Texas)

[42] *Modeling Hydrology and Plant Growth in Dryland Agriculture*

Dry farming was an important practice during prehistory and continues to be vital for small-scale farmers in many areas of the world today. Archaeologists have modeled factors affecting crop productivity to get at population size and growth, as well as societal collapse. It is acknowledged in studies of modern and prehistoric contexts that water is the most important limiting factor for plant production. Archaeological research on the relationship between water and plant growth has focused mainly on precipitation and surface water. However, contemporary agricultural hydrologists model water movement horizontally across space and vertically within a profile, which are also important factors for understanding long-term patterns in crop production. We are developing a model that incorporates hydrological processes across all three spatial dimensions to provide a more accurate portrayal of water availability, which is then

related to plant growth so that we can determine the conditions for crop failure. The research is being conducted in the Mesa Verde region of the American Southwest.

Nair, Stella (University of California, Los Angeles)**[120] Extraordinary Spaces: Thupa' Inka and the Architecture of Royal Theater**

For the Inca, architectural gestures were used to choreograph movement on both the large and small scale. Because of this, architectural remains provide critical evidence into the rituals and processions that once took place on Inca installations. This paper examines this material evidence in order to expose the complex spatial practices that defined rituals at a royal estate. These architectural gestures unmask the diverse players who participated in events and the distinct landscape features that were connected to the public stage. In addition, the evidence reveals the ways in which processional space changed when activities shifted from the public to the private.

[120] Chair

Najjar, Mohammad [127] see Jones, Ian

Nakakubo, Tatsuo (Osaka University)**[226] Change in Patterns of Cultural Interaction in the Early State Formation in Japan**

This paper discusses temporal change in patterns of interactions with China and the Korean peninsula from the third to fifth centuries A.D. Before the fifth century, the dominant pattern of foreign interaction was of the "goods importation type," i.e. to import material culture of advanced technology. In the fifth century, a new pattern of foreign interaction, named "technology adoption type," became dominant. Korean specialist craftsmen, invited to settle in Japan, introduced new technologies. This shift strengthened the power of the central polity considerably. Before the fifth century, imported Chinese bronze mirrors were a symbol of authority. As it became difficult to import Chinese bronze objects in the fourth century due to the unstable political situations in East Asia, the central polity of Yamato sought for new material symbols of their authority. Such material symbols included stoneware fired in kilns at temperature above 1000 degrees and new types of iron tools, both made in Japan by Korean specialists. The central polity widely distributed these new material cultures to local regions, which contributed to the maintenance of the central power.

Nanavati, William (Washington State University), Kevin Lane (University of Cambridge), David Beresford-Jones (University of Cambridge) and Charles French (University of Cambridge)**[264] Agricultural Strategies and Long-Term Soil Fertility in the Southern Peruvian Andes**

This study, part of the PIACI archaeological project, focuses on bulk soil fertility analyses of targeted samples from excavated profiles of a terrace system at the SAN1 Chocorvos-Inka-Colonial settlement site, near modern-day San Francisco de Sangayaico, along the Olaya highland tributary of the Ica River, in the Southern Peruvian Andes. Andean agriculturalists face a variety of challenges including seasonal water availability, steep slopes, variable soil depth and quality, and wide diurnal temperature fluctuations. The use of agricultural terracing in the Andes is evident wherever agriculturalists have turned to intensification in order to mitigate the effects of erosion related to slope cultivation. Such erosion leads to the loss of the mineral and organic- material rich A-horizon, and, in cases where erosion occurs faster than pedogenesis, exposes lower, non- arable soils leached of organic material. Given the regional and local-site chronology (AD 1000-1615), the terrace systems of SAN1 provides an ideal location to test how short-term adaptation of agricultural techniques (e.g., construction format, seasonal burning, fertilizer use, etc.) have affected long-term soil fertility. Also, by looking at the effects of terraced-land management strategies on soil fertility, over the Longue Duree, conclusions can lead to a more resilient approach to modern highland farming.

Napoli, Janna [270] see Owoc, Mary Ann

Napora, Katharine (University of Georgia)**[300] Among the Outsiders? Past, Present and (Uncertain) Future of the Coastal Cillíní of Western Ireland**

The cillín—a burial ground for unbaptized infants, suicides, and others considered unsuitable for interment in consecrated ground—is a commonplace and often completely inconspicuous feature of the Irish littoral archaeological landscape, yet it is this very lack of notability that may herald the

disappearance of the sites in the face of today's ever-increasing coastal change. Though much referenced in place-names and recently recognized as holy ground by the Catholic Church, comprehension of the role of the seaside cillín in its original context is lacking, as is a much-needed archaeological focus on a comprehensive plan for the continued existence of these at-risk sites. This poster will investigate the unique connection to the overseas Otherworld of those cilliní located along the island's western shoreline as well as their significance in contemporary Ireland and will examine possible methods of preservation, balancing the desire for understanding of prehistoric and historic treatment of "the other" with the need for long-term site protection and the status of cilliní as sensitive and sanctified sites.

Naranjo, Tito [194] see Potter, James

Nareau, Lauren

[223] Comparative Attribute Analysis of Stone Tools from Tabun Cave

The goal of this study was to determine if Amudian blades from Tabun Cave, collected by Dorothy Garrod, are typologically and technologically comparable to Amudian blades collected by A. J. Jelinek. The blades in this study were analyzed using the same attribute analysis from a previous study performed on Jelinek's blades in order to control for diacritical comparisons between the two assemblages. Attribute analysis was used in order to situate the blades into a chaîne opératoire in order to attain a conceptual and analytical perspective of the reduction sequence from the point of view of the agents who produced them. The comparisons resulted in similar numbers, indicating that the blades collected by Jelinek are Amudian based on their metric resemblance to the blades collected by Garrod. These characteristics include: thick, naturally backed, lateralized/débordant blades with prepared platforms and simple dorsal scar patterns. Based on the success of these diacritical attribute analyses, it is suggested that these qualitative and quantitative measurements be used as a preferred set of attribute characteristics for identifying Amudian blades in future analyses.

Nash, David (University of Brighton, UK), Sheila Coulson (University of Oslo, Norway), Sigrid Staurset (University of Oslo, Norway), Stewart Ulliyott (University of Brighton, UK) and Mosarwa Babutsi (National Museum, Gaborone, Botswana)

[58] Provenancing of Silcrete Artifacts: New Insights into Middle Stone Age Human Behavior from Northwest Botswana

Recent research on lithic artifacts from the MSA layers of White Paintings Shelter (WPS; Tsodilo Hills, Botswana) has demonstrated that early humans chose to transport silcrete for tool-making to the site from Lake Ngami and the Boteti River, more than 220km distant. Here, we apply our geochemical provenancing approach to silcrete artifacts from the three remaining major excavated sites with MSA deposits in Botswana: Corner and Rhino Cave (Tsodilo Hills) and :#Gi (an open-air site near the Botswana/Namibia border). Results for Corner Cave are similar to WPS, with 23 of 26 sampled artifacts matching the chemical signature of outcrops at Lake Ngami and the Boteti. One sample was acquired from an outcrop on the Okavango River and two are from unknown locations. Results from Rhino Cave are different and indicate that silcrete used at the site was sourced almost exclusively from the Boteti; one sample of 18 matched the chemical signature of outcrops at Lake Ngami and two were from unknown locations. At the time of writing this abstract, results from :#Gi were incomplete. We discuss our findings with respect to arguments about human mobility during the MSA, and in relation to the likely use patterns at the three sites.

Nash, Carole (Geographic Science, James Madison University)

[80] Thinking like an Archaeologist: Undergraduate Experiential Learning in a Blue Ridge Compliance Setting

Archaeology has much to offer undergraduate education: its interdisciplinary approach; its focus on temporal and spatial cognition; and its emphasis on a broad skill-set oriented to the field sciences. Archaeologists who teach undergraduates commonly offer anecdotal evidence of the transformative power of the experiential pedagogies that are hallmarks of archaeological training, but our contributions to the scholarship of teaching and learning (SoTL) are limited. Falling under the rubric of active learning, experiential pedagogies encourage students to reflect on the learning process through 'doing.' Well-assessed and shown to encourage a higher level of understanding and integration for students and teachers alike, experiential learning results in the mastery of transferrable skills so sought after in undergraduate education. The application of foundational knowledge and technique in the field setting is presented here through a case study from a decade-long research program in Shenandoah National

Park, where undergraduate students engaged in archaeological field schools and short-term surveys continue to receive training. Responsible not only for the college credit but also professional-level work that meets the Secretary of Interior and SHPO standards, the students' assessments included contributions to CRM reports and conference papers.

Nash, Donna (UNCG)

[203] *House Burials or Burying Houses: Elite Wari Mortuary Practices at Cerro Baúl, Peru*

The Wari (600-1000 CE) practice of smashing pottery as a form of ritual is well documented, however such depositions occur in a number of different contexts that may indicate that pot smashing was a component of several different types of ceremonies. Prominent among them is the association of pot smashes with residential burials. The tradition of residential burial in the Andes dates back to the Preceramic period, however burials in caves and cemeteries were also present among Wari affiliated groups. In this paper I describe patterns of pot smashing that correspond with residential burials and house abandonment to examine mortuary ritual at the Wari provincial center of Cerro Baúl in the southern sierra of Peru. Current data suggests a link between funerary events and closure rites and I compare the case of Cerro Baúl with other Wari affiliated sites to address this important connection and explore both its sociopolitical implications and potential symbolic meaning.

[110] *Discussant*

Nash, Carole [152] see Barber, Michael

Nash, Robert (Montgomery Archaeological Consultants)

[324] *Cultural Transition Assessment in the Eastern Great Basin: An Analysis of Side-Notched Arrow Points*

The hypothesized Numic expansion into the eastern Great Basin remains a popular explanation for abandonment of Fremont lifeways. This study tests the notion of a population replacement in Utah Valley at about A.D. 1300 during the Promontory Phase through statistical analysis of side-notched arrow points. The expectation is that there should be measurable differences among arrow point types if a population replacement occurred. Results of the analysis not only support a population replacement ~A.D. 1300 but also suggest a population replacement occurred after the Promontory Period.

Nasu, Hiroo [158] see Aoyama, Kazuo

Nathan, Rebecca

[231] *Placing Seventeenth Century Lakota and Dakota villages in Northern Minnesota: A Close Examination of Guillaume Delisle's 1697 Map of the upper Mississippi*

In 1697 the French cartographer Guillaume Delisle produced a map of the upper Mississippi River system based upon the notes of the explorer Le Sueur. The locations of 22 contemporary Siouan villages are noted upon this map. This paper presents the results of an attempt to locate these villages using modern spatial references. The features on Delisle's seventeenth century map are cross referenced, broken down and reassembled based upon other historic maps of the Minnesota region. The results of this project suggest an accurate representation of Lakota and Dakota territories at the cusp of the fur trapping era. A further stage of the project attempts to correlate the results of historic research with the archaeological record.

Natoli, Amelia (Statistical Research), Cannon S. Daughtrey (University of Arizona), Rita Sulkosky (Statistical Research, Inc.), Z. Nahide Aydin (Statistical Research, Inc.) and Jesse A.M. Ballenger (University of Arizona)

[210] *The Ground Stone Landscape at Luke Air Force Base: A Four-Dimensional Approach*

From 2010 to 2013, Statistical Research, Inc. conducted excavations at Site AZ T:7:419 (ASM) for the Luke Solar-Power-Array Archaeological Data Recovery Project. Totaling about 3000 features spread across 44 acres, this is the largest Archaic site identified in the greater Phoenix Basin. The site is located on the lower-bajada of the White Tank Mountains near Phoenix, Arizona. Radiocarbon dates range from the Early Archaic to the Classic Period (ca. 7000 cal. B.C. – cal. A.D. 1200), with the most intensive occupation during the Middle to Late Archaic periods (ca. 3300–700 cal. B.C.). Over 2000 ground stone artifacts were recovered from the site, and nearly a third of those were found in an extramural context, believed to have been strategically cached or left in-place for future processing activities. Most of the extramural ground stone are represented by complete, formally shaped tools. In this study, we examine how the spatial and temporal distribution of various ground stone artifacts informs on the organization of

wild plant processing before and after the appearance of maize in the U.S. Southwest, whether caching behavior can be identified at the site, and the evidence for task-specific tool associations (tool kits).

Naudinot, Nicolas (University of Nice)

- [201] *Environment Changes and Socio-economic Transformations in Western Europe during the Second Half of the Late Glacial: Confrontation of the Azilian/Post-Azilian and Epigravettian Techno-Complexes*

During the LGM, Europe starts being split in two main large cultural entities: the Epigravettian complex and the Western Europe sequence. In this paper, we focus on the end of the Upper Palaeolithic and more precisely on the period between the Allerød and the beginning of the Holocene. This period is particularly marked by several climatic changes and is thus a perfect "laboratory" to study the interactions between societies and paleoenvironment. Our paper essentially focuses on lithics. This material allows to study the socio-economic system of a society by analyzing an assemblage in a global perspective looking at all the elements of the chaîne opératoire from the raw material procurement to the use and management of the tools, passing by the objectives and methods of production. We will explore the impacts of climate changes and especially the Younger Dryas event on the various environments of our research area (Atlantic and Mediterranean areas). Thanks to an active research in Western Europe these last years and a second wind in the study of the Epigravettian, it is possible to compare the responses of these two large entities to the different environmental changes from the Allerød warming to the beginning of the Holocene.

- [201] *Chair*

Nauman, Alissa [76] see Prescott, Catherine

Nauman, Alissa (Hamilton College) and Nathan Goodale (Hamilton College)

- [290] *Rethinking Conclusions from Large Housepits in the Interior Pacific Northwest*

In the interior Pacific Northwest, large housepits are often equated with complex social organization defined by affluent ownership or control over resource bases and their surpluses. As a result of excavating almost the entire floor of a housepit measuring 23 meters in diameter at the Slocan Narrows Pithouse Village, we suggest that this premise needs to be reexamined. The housepit dates to 2,750 cal BP, and apart from its size, the excavations yielded no material remains that are the hallmarks of an elite status house. However, it could be argued that the social mechanisms that held a large population together to build and use this house in an egalitarian manner were certainly complex. As we move into a 21st century of Pacific Northwest archaeology, several of the long held assumptions regarding house size as well as the notion of complex hunter-gatherers will need to be reexamined.

Nava, Sarah [142] see Knack, Jeni

Nava, Sarah and Jeni Knack (UCLA)

- [316] *The Isthmus of Santa Catalina Island: Archaeology Reexamined through Historic and Modern Maps*

For years, extensive archaeological research has been conducted on the Santa Catalina Island isthmus, with a number of important prehistoric and historic sites having been identified. Here, I present maps showing archaeological research that has been conducted over the years overlaid with maps of newly recorded archaeological sites on, and near, the isthmus. Using Trimble GPS survey and ArcGIS software, I compared different maps and layers, showing how sites have changed spatially and temporally through time as a result of various cultural and natural phenomena.

Nava Blank, Alberto [114] see Chatters, James

Navarro-Farr, Olivia [11] see Mazin, Anna

Navarro-Farr, Olivia (The College of Wooster), Griselda Perez Robles (Proyecto Arqueológico El Peru-Waka'), Stanley Guenter (Idaho State University), Erin Patterson (Tulane University) and Keith Eppich (Collin College)

- [312] *Royal Ritual and Public Memory at the City Shrine of Ancient El Peru-Waka': The Archaeology of Burial 61*

During the 2012 field season at El Peru-Waka', archaeologists discovered a royal Maya burial in the fronting platform of the city's main civic-ceremonial shrine. A small alabaster jar in the chamber featured hieroglyphic texts which name its owner as Lady Waterlily Hand. This is another way of referencing Waka's Royal Queen Lady K'abel who married K'inich Bahlam II. She also carried the title Kaloomte' or "supreme warrior" and is most famously featured on Waka's Stela 34 which dates to 692 AD and housed in the Cleveland Museum of Art. Preliminary analyses indicate the skeleton is middle-to-old aged. Poor preservation and ambiguous traits rendered definitive sexing of the individual impossible, though the robusticity of the remains is consistent with depictions of this warrior queen. Moreover, we argue the associated artifacts not only support a seventh-century date for the interment but also cultural affiliations with the kingdom of Calakmul, the place of Lady K'abel's origins. Previous research demonstrates the enduring ritual engagement by 8th and 9th century Wakeños of this building. Determining this was the final resting place of an important royal figure therefore strengthens our understanding of how Wakeños performed social memory.

Navel , Jeffrey [216] see Dennison, Meagan

Ndanga, Alfred Jean-Paul [40] see Kiahtipes, Christopher

Ndiema, Emmanuel [249] see Dillian, Carolyn

Nealis, Stuart (University of Kentucky) and Barry Kidder (University of Kentucky)

[264] *A Multi-stage Geoarchaeological Analysis of an Undocumented Mound in Greenup, County, Kentucky*

We present the results of some preliminary fieldwork conducted on a 6m tall mound located on Raccoon Creek, a tributary of the Little Sandy River in Greenup County, Kentucky. Gradiometric survey in the field surrounding the mound shows areas of potential feature locations for future fieldwork. Solid core and bucket auger samples were collected from four locations on and off the mound to determine construction sequence and potential cultural affiliation. Samples were subjected to particle size analysis, chemical characterization, magnetic susceptibility, and XRF testing. Results show that mound fill material was from surrounding hill slopes rather than the floodplain in which the mound stands, and that at least one buried A horizon is present. One piece of wood charcoal was collected from a core suspected to be near the edge of the original mound slope, returning a date of 600 BP. Another charcoal sample from the opposite side of the mound has been sent out for AMS dating and will be presented with the rest of our data in determining the construction sequence and timing of this large earthen mound. Ultimately, we believe using multiple geoarchaeological techniques can help source sediment origins and address the sociality of mound construction.

Feeley, Michael (Montana State University)

[71] *Changing Settlement Organization in the Late Pleistocene of the Southern Levant*

Archaeologists have long recognized variation in settlement organization among hunter-gatherer societies. Typically, this has involved differentiating between patterns of residential based mobility and logistical organization using variables such as site size or artifact density. While these variables result in an impressionistic understanding of prehistoric settlement organization, a standardized approach advocated by Riel-Salvatore and Barton has the potential to separate the different elements of settlement behavior. A key component of their research is the distinction between curated and expedient technologies. In this paper, their approach is applied to selected lithic assemblages from the Late Pleistocene (Upper Paleolithic, Epipaleolithic, and Natufian) of the southern Levant.

Traditional interpretations for these periods, spanning from 40,000-10,000 years ago, have emphasized residential based mobility for the Upper Paleolithic and Epipaleolithic with higher levels of logistical organization for the Natufian. An initial assessment of pattern indicates greater than expected internal variability in settlement organization within the different time ranges. The examination of late Pleistocene settlement trajectories provides greater understanding of different land-use strategies in the context of changing resource and environmental conditions.

[71] *Chair*

Neely, James (University of Texas at Austin) and Michael Aiupalasit (Southern Methodist University)

[91] *New Light on the Prehistoric Purrón Dam Complex: Small Corporate Group Collaboration in the Tehuacán Valley, Puebla, México*

Recent survey and test excavations at the Purrón Dam Complex (PDC) in the Barranca Lencho Diego in the Tehuacán Valley of Southern Puebla, México, demonstrate the value of resurveying previously studied areas. Additional habitation sites and water management features, a cave with pictographs, and a major canal were discovered, increasing the number of recorded sites from six to forty-four. Ceramic chronologies and the synthesis of twelve chronometric dates suggest that water management was initiated in the barranca by the Early Formative period at ca. 1100 B.C., and perhaps earlier, and that the Purrón Dam was completed and had its highest population levels by the Middle to Late Formative (ca. 650-150 B.C.), a time when settlements were small and decentralized. This challenges existing interpretations placing the PDC florescence during the Early Classic period (ca. 150 B.C. – A.D. 250), a time period with larger aggregated communities displaying clear signs of social ranking, and greater inter-regional interaction. The results have implications for understanding the causal links between political complexity and agricultural intensification, and support recent ethnographic and archaeological research discrediting the argument that increasing social complexity leads to the construction of large water management systems.

Neff, Hector [19] see Makowski, Krzysztof

Neff, Hector (California State University-Long Beach), John Jones (Archaeological Consulting Services, Ltd.) and Timothy Garfin (CSU-Northridge)**[250] *Prehistoric Industries of the Mangrove Zone of eastern Soconosco, Pacific Coastal Chiapas, Mexico***

Recent fieldwork in the mangrove zone of far-southern Chiapas, Mexico has included site identification via LiDAR, surface and subsurface testing, and sediment coring in off-site locations. Goals of the work are to understand how humans used the estuary zone at different times in the past and to generate a record of variation in the intensity of those activities. Pollen and charcoal from dated sediment cores provide a record of landscape changes that complements the evidence of archeological site density. Data generated so far indicate steady, uninterrupted growth during the Formative period together with a trend toward increasingly specialized production of salt, presumably for consumers at Izapa and other coastal plain and piedmont sites. This period of growth was truncated around AD 200, roughly coincident with the cessation of monument carving and a probable demographic collapse at Izapa. The zone was abandoned for 500 - 600 years, after which Terminal Classic Plumbate potters re-occupied many of the Formative period mounds.

Nehlich, Olaf [175] see Diaz, Alejandra

Neiman, Fraser (Monticello)**[232] *Archaeological Evidence for Increasing Inequality within a Slave Settlement at Monticello in the Late 18th Century***

This poster summarizes recent archaeological research into among-household variation at Site 8, a domestic site occupied by enslaved field laborers at Thomas Jefferson's Monticello plantation during the last quarter of the eighteenth century. Correspondence analysis of plow zone ceramic distributions reveals the existence of at least two residential groups and increase over time in the distance between them. Ceramics and architectural evidence indicate a more important role for storage and higher levels of conspicuous consumption among the northern group. Spatial patterns in artifact size indicate greater investments in yard maintenance for the north group as well.

Neitzel, Jill (University of Delaware), Ann Stodder (Museum of New Mexico) and Laurie Webster (University of Arizona)**[247] *Embodied Identities in the Prehistoric Southwest***

This paper summarizes the results of a collaborative research project on how the identities of prehistoric Southwesterners were encoded in various aspects of their appearance. Morphological features, clothing, jewelry, facial decorations, and hair styles conveyed information about a person's gender, status, other social roles, cultural affiliation, religious beliefs, heritage, and inter-group connections. The archaeological record documents tremendous variation for each of these appearance characteristics both within and between cultural groups. While we tend to analyze these identity markers individually, that is not how they would have been perceived in their living contexts. Rather, a prehistoric Southwesterner would have seen the various aspects of a person's appearance all together as a composite image. Thus, conclusions

about the person's various identities would have been drawn from multiple lines of evidence with the most visible and redundant messages having the greatest importance on that particular occasion. In this paper, we present composite images for several cultural groups and discuss the identity messages that these images conveyed.

Neivens, Mary [61] see Neivens De Estrada, Nina

Neivens De Estrada, Nina (Tulane University) and Mary Neivens (Holmul Archaeological Project)

[61] *The First Maya Ceramics, and the Mother-Daughter Team Who Glue Them Together*

In this paper we will share our experiences with Norman Hammond as a mentor and friend. Mary Neivens was a young scholar in Belize in the 1970s when she met Norman and began a lifelong friendship. Our journey continued in 2000 when Nina Neivens began studies on the Maya at Cuello. Norman has influenced our continued studies in Guatemala where we have researched the earliest Maya ceramics from Holmul and Tikal. This research has led to a re-evaluation of the interaction between early Maya villages and their connections to other Mesoamerican societies.

Nelson, Elizabeth (University of North Texas Health Science Center, Dept. Physiology and Anatomy) and Christine Halling (University of Indianapolis)

[12] *Evidence for Skeletal Fluorosis at the Ray Site: a Pathological Assessment and Description of Community Health*

In environments with naturally high or anthropogenically increased fluoride levels ($>1.5\text{mg/l}$), communities are at risk for toxic exposure to fluoride. Groups exposed to toxic levels of fluoride have higher incidence of maladies of the musculoskeletal, reproductive, and neurological systems. Individuals who experience continuous exposure will develop skeletal fluorosis, a condition characterized by hypersclerotic activity evidenced by the ossification of ligamentous and tendinous attachments, along with an increased incidence of fractures. Older adults are more commonly affected than younger individuals, and men more frequently than women. Archaeologically, skeletal fluorosis has been reported in Bahrain, Naples, and the UAE, but not in the Americas. In this study we evaluate the prevalence of symptoms consistent with skeletal fluorosis at the Ray Site, a Middle Woodland site in the Illinois River Valley with geologic conditions conducive to uptake of toxic levels of fluoride. Of the 117 individuals analyzed from the Ray Site, 12 display characteristics consistent with skeletal fluorosis. We describe sex differences in manifestation of skeletal fluorosis, possible implications for community health, and plans for future studies.

Nelson, Elizabeth [12] see Halling, Christine

Nelson, Ben (Arizona State University)

[66] *Connectivity of Social Change in Mimbres and Points South*

The work of the Mimbres Foundation showed that in comparison to earlier and later populations in the Mogollon region, the Classic Mimbres experienced anomalous population growth, aggregation, agricultural intensification, and artisanal production. Archaeologists interested in understanding these prehispanic changes in a wider framework have demonstrated connections and parallels to groups to the north and west, especially with Chaco Canyon and the Hohokam but also to a lesser extent Paquimé. Scholars have shown that these regional histories are related in some ways, based on both material connections and synchronicities of growth and reorganization. In this paper we extend these explorations to the south, particularly to the regions on either side of the Sierra Madre Occidental. What connects Classic Mimbres with Mesoamerica? Is Classic Mimbres part of a synchronous rise of polities in neighboring regions to the south, or does its development adhere more closely to US Southwestern temporal pattern? By reviewing evidence of connectivity with these southern regions we outline what is known and what remains to be learned if we are to understand the place of the Classic Mimbres development in a macroregional framework.

[21] *Discussant*

Nelson, Shaun (Utah National Guard)

[54] *Discussant*

Nelson, Margaret (Arizona State University) and Michelle Hegmon (Arizona State University)

[66] Mimbres Continuity and Change

Through his Mimbres Foundation research program, Steven LeBlanc mentored a generation of Southwest archaeologists, insisting that we think beyond popular perspectives. He challenged us to create new ideas and to evaluate those ideas with careful fieldwork and analysis. One of the big research questions of the 1970s in the Southwest was “what happened to the Mimbres people.” In this paper we reframe that question in terms of continuity and change in the Mimbres tradition through the 12th century. Challenging earlier explanations of abandonment and disappearance, we document the reorganization of people who created new traditions and reshaped their social landscape while remaining in the Mimbres region. This research builds on the strong contributions of LeBlanc without which these new understandings of the past would not be possible.

[101] Discussant**Nelson, Zachary (Cardno ENTRIX)****[88] Indian Battlefields Meet the Press**

Cowboys versus Indians are exciting topics for popular press. However, there are always additional viewpoints in each story and additional evidence. This paper examines Indian battlefields as they are presented in the press. Who is the real victor? (if any) How are complex life and death subjects administered in the media? This fact-finding paper centers on Rosebud and Little Bighorn but has broader application to other forms of violence.

Nelson, Peter (UC Berkeley) [135] Discussant**Neme, Gustavo, Adolfo Gil (CONICET-Museo de Historia Natural de San Rafael), Miguel Giardina (CONICET-Museo de Historia Natural de San Rafael) and Clara Otaola (CONICET-Museo de Historia Natural de San Rafael)****[23] The Use of High-Altitude Environments in the Southern Andes**

The southern Andes between 34° and 35° SL are one of the highest mountainous regions in the Americas. Their highly seasonal variability increase with the altitude, diminishing their biomass productivity and those places apt for human occupation. In this paper we present archaeological data about human adaptations developed to exploit and live in environments located above 3000 meters. The results show a strong focus on big game hunting, associated with the consumption of non-local vegetal resources. Subsistence and mobility are discussed in order to understand the importance of these high elevation sites in regional context.

Neme, Gustavo [206] see Wolverton, Steve

Neubauer, Fernanda (University of Wisconsin-Madison, CAPES Foundation) and Nam C. Kim (University of Wisconsin-Madison)**[129] Tupinambá Practices of Warfare, Revenge, and Cannibalism in 16th Century Brazil**

The Tupinambá were semi-sedentary agriculturalists inhabiting the Eastern Coast of Brazil. Sixteenth-century European explorer accounts offer rich details of Tupinambá life and warfare practices, suggesting the presence of a highly organized violence and warfare system embedded in their daily practices, animistic and cosmological beliefs, celebrations, exo-cannibalism, and in their ideals of honor, prestige, and revenge. Building on ethnohistoric information, this paper also discusses the potential to further our understanding of Tupinambá warfare practices through study of material culture signatures. Because Tupinambá archaeology is still in its infancy, we attempt to correlate the ethnohistoric information with the types of objects and features associated with violence that archaeologists could reasonably expect to recover, should the accounts be accurate and the materials preserved. We argue that by using such analogies as a starting point, future researchers will be able to better test their hypotheses against the archaeological record in efforts to augment knowledge about Tupinambá lifeways.

Neusius, Phillip [80] see Neusius, Sarah

Neusius, Sarah (Indiana University of PA), Beverly Chiarulli (Indiana University of Pennsylvania), Phillip Neusius (Indiana University of Pennsylvania) and Ben Ford (Indiana University of Pennsylvania)

[80] A Quarter Century of Training Undergraduate Archaeologists at IUP

Since 1989, when the Archaeology Track of our major was instituted, IUP archaeologists have been teaching our undergraduates about archaeology. While solidly grounding their study in four-field anthropology, our students emphasize hands-on experiences in the field and in the laboratory. Both an archaeological field school and an introduction to CRM archaeology are requirements for our Archaeology Track. Another requirement is a laboratory methods class, and many of our students have gained solid experience in the curation of artifacts through working for IUP Archaeological Services. We also encourage students to pursue internships and to participate in professional meetings while still undergraduates. The combination of academic study in anthropology and practical experiences has worked well both for graduates who go into the CRM industry as field technicians and for graduates who immediately pursue graduate work.

Neusius, Phillip (Indiana University of PA), Ben Ford (Indiana Univ. of PA), Sarah Neusius (Indiana Univ. of PA) and Beverly Chiarulli (Indiana Univ. of PA)

[304] Meeting the Needs of a Modern Archaeology Workforce

The IUP Anthropology Department's MA in Applied Archaeology Program and undergraduate archaeology track are focused on providing students with the skills necessary to become practicing archaeologists prepared to work as professionals in cultural resource management and related heritage fields. Both programs were designed with unique components to distinguish them from more general graduate and undergraduate anthropology degrees, yet still provide a broad enough background to insure their ability to deal with a variety of issues facing CRM today and in the future. Training is provided in both the basic skills necessary for doing archaeology and the latest technologies and methods within a developing discipline. Both programs also focus on developing writing and critical thinking skills through both writing intensive courses and seminars such as Cultural Resource Management, Laws and Ethics and Issues in Historic Preservation. Students are encouraged to work collaboratively with their peers, participate in both professional and amateur societies, and seek opportunities to work with private companies as well government agencies even before graduating. Our use of a professional advisory board helps with keeping curriculum up to date and providing a model of professionalism for our students.

Neves, Eduardo (University of São Paulo)

[243] Formal Stability and Technological Variation at the Polychrome Tradition of Western Amazonia

The Amazon Polychrome Tradition was defined in 1961. It comprises diversified vessel forms including anthropomorphic urns and plates decorated with polychrome painting on red, black, yellow and white, and modeling, incision and excision. The distribution of sites with polychrome ware, ca. 900 to 1600 AD, from the mouth of the Amazon to the foothills on the Andes, led to an early hypothesis that it reflected an expansion of people from the Andes eastwards to the lowlands. Recent research shows that polychrome sites or occupations are earlier in the east than in the west, in a spread that lasted a few centuries which was associated with conflict, as seen by the construction of defensive structures on sites with previous occupations. This paper brings contextual and ceramic data to show that, although made with a rigid formal code, the technology of polychrome vessels varied in paste in samples from sites distributed along a 500 km stretch in the Central Amazon basin. This pattern suggests that the rigid grammar of formal and decorative patterning of ostentatiously decorated pots was structured to define the identity of pottery makers in a context of expansion associated with warfare into previously occupied areas.

[100] Discussant

Neves, Eduardo Góes [129] see Pugliese, Francisco Antonio

Nevins, Jason [13] see Lail, Warren

Newlander, Khori [10] see Lin, Ying

Newlander, Khori (Department of Anthropology, Hamilton College)

[10] Comparing Compositional Data Acquired by pXRF and LA-ICP-MS for Cherts in Eastern Nevada

Current models of Paleoindian lithic technological organization, mobility, and exchange in the North American Great Basin rely heavily on the provenance and technological analysis of obsidian and fine-grained volcanic (FGVs, e.g., andesite) artifacts, yet chert dominates many sites in the region. Here I present a comparative analysis of compositional data obtained using portable x-ray fluorescence

spectrometry (pXRF) and laser ablation inductively-coupled plasma mass spectrometry (LA-ICP-MS) for several chert sources in eastern Nevada. Analysis of the compositional data acquired by these methods reveals comparable patterning that can be used to discriminate the chert sources. In turn, these data can be used to source chert artifacts in the region, ultimately building toward a model of Paleoindian lithic technological organization, mobility, and exchange that includes obsidian, FGVs, and cherts.

Newman, Elizabeth (Stony Brook University) and Karime Castillo Cárdenas (Independent Researcher)

[72] Cultural Continuity and Adaptation in Nineteenth-Century Ceramics in Atlixco, Mexico

Excavations in the worker's quarters, or calpanería, of the Hacienda San Miguel Acocotla yielded a large ceramic collection dating primarily to the nineteenth century. The range of ceramic forms and types used by workers at Acocotla suggests continuity of certain Prehispanic ceramic traditions as late as the last decades of the nineteenth century, as well as the adaptation of local production to European technologies and preferences. This paper will provide an overview of the entire assemblage and will highlight a locally produced ceramic whose paste strongly resembles the Classic type known as Anaranjado Delgado Burdo, but whose form is that of a typical European vessel. The ceramic assemblage from the Hacienda Acocotla offers an opportunity to explore the degree to which traditional indigenous lifeways were (and were not) impacted when workers became residents at the Hacienda Acocotla.

Newman, Sarah (Brown University)

[162] Game, Prize, and Player: Deer Hunting among the Classic Maya

Bloodshed was an essential element of rulership among the Classic Maya. Whether through scenes of self-inflicted sacrificial wounds, the ritual battles of the ballgame, or brutal recreations of captive-taking and outright warfare, the king as victor was a common motif. It comes as no surprise, then, that the violent sport of the hunt held special meaning for members of ancient Maya royal courts. Hunting, especially deer hunting, served to recreate mythic events and engage supernatural beings. Not just a metaphorical conquest, the hunt also played an important role as a very real training ground for the bloodier, riskier battles of actual warfare with caught, bound, and butchered deer often equated with human captives. Moreover, depictions of deer with women in both lascivious and maternal contexts reveal further underlying associations of the hunt with sexual dominance and the taming of the wild.

[162] Chair

Newman, Daniella [228] see Giessler, Kalena

Newton, Anthony [29] see Brewington, Seth

Neyland, Robert and Alexis Catsambis

[125] Management and Research of US Navy Sunken Military Craft by Naval History & Heritage Command

The US Navy is responsible for approximately 3,000 shipwrecks and 14,000 sunken aircraft. These are distributed worldwide and located in territorial, foreign, and international waters. Ranging in age from the ships of the Continental Navy to the present, the largest numbers are from the American Civil War and World War II. They are protected under US laws such as the Sunken Military Craft Act and National Historic Preservation Act, but also international principles of maritime law in regards to principles of sovereign immunity. Naval History and Heritage Command manages these wrecks for DoN in order to preserve and interpret the Navy's history. Considerations include archaeological research potential, recreational diving access, war graves, and environmental hazards, which can include ordnance and fuel oils. This paper discusses these broad issues as well as some specific archaeological investigations.

Ngandali, Yolona (University of Wisconsin La Crosse - McNair Scholars)

[326] Public Archaeology: Visualizing Wisconsin's Prehistory with Digital Media

Relevance and accessibility to the public are key issues in archaeology that need attention and applied practical applications. Sharing information via Internet through interactive website design can bridge the gap between archaeologists and people outside the profession. In this project technical data results are transformed into interactive elements to produce educational and public-friendly web content. Visual media can encourage the public to find a connection to the past that drives the way they think about the future. The web content is based on archaeological excavations and laboratory analyses conducted in the

Upper Mississippi Valley. Established evidence about the function of sites, the range of tool production activities, subsistence activities, and evidence of trade from other regions are incorporated into a comprehensive digital exploration of the daily life of Wisconsin's prehistoric farmers. The website will showcase the archaeological methods from excavation to analysis emphasizing the interactions of culture and environment with text, 360° images, maps, interactive diagrams, 3d visualization tools, and animated video. Interactive digital media promotes public interest, participation, and comprehension of archaeological concepts. Incorporating social media and feedback options will instigate communicative discussions and build a stronger dialogue between archaeologists and the community.

Nials , Fred [117] see Fulkerson, Tiffany

Nicholas, George P. [206] see Royle, Thomas

Nichols, Kristi Miller (UTSA-Center for Archaeological Research)

[169] *Excavations Associated with the Stabilization of the Church at Mission San Juan de Capistrano, San Antonio, Bexar County, Texas*

Archaeological investigations occurred at Mission San Juan de Capistrano in San Antonio, Texas in association with the stabilization and underpinning of the church's walls. Due to the potential for collapse, the church walls needed to be reinforced. To assist with the stabilization, CAR archaeologists excavated test units around the exterior of the church walls. Later, the removal of matrix around the base of the church was monitored and approximately 50% of the soil was screened for artifact collection. The artifact assemblages collected during the excavation and matrix removal consisted of Spanish Colonial and 19 Century material. High densities of glass, ceramics, and faunal remains were collected. In addition to the cultural material deposits encountered, burials were uncovered along the eastern wall of the church under the bell tower. All burials were removed and later re-interred at a location within the walls of the mission compound prior to the end of the project.

Nichols, Deborah (Dartmouth College), Wes Stoner (Missouri) and Destiny Crider (Luther College)

[275] *A Geospatial Approach to the Development of Postclassic Markets: Ceramic Production and Exchange*

Dan Healan's research has significantly advanced understanding Postclassic obsidian manufacturing and exchange in highland Mexico. In the late 1980s he assisted excavating an obsidian core-blade workshop at Otumba, an Aztec city-state capital and manufacturing and commercial center. Complementing studies of obsidian production and trade, we employ a newly developed geodatabase of ceramic chemical data to apply a spatial perspective on the development of market systems in the Basin of Mexico through time from the Epiclassic through Late Postclassic period.

Nichols, Deborah [311] see Quinn, Colin

Nicodemus, Amy (University of Michigan) and Ashley Lemke (University of Michigan)

[300] *From the Bronze to Iron Age: Diachronic Faunal Investigations at Pecica Şantul Mare, Romania*
Pecica Şantul Mare, a large tell in western Romania, has a complex archaeological sequence dating from the Early Bronze Age to the Iron Age. New investigations reveal Pecica to be a complex center of Bronze Age trade and craft production with striking social differentiation. In addition to the large assemblage of ceramic and metallurgical remains, animal bones are well preserved in fill layers, domestic contexts, and various features. This paper presents the results of faunal analysis across the Bronze and Iron Age occupation at Pecica and demonstrates that the use of animals for subsistence, secondary products, and trade changed remarkably through time, although the species remain largely consistent. In addition, a detailed analysis of cutmarks is used to demonstrate how food preparation and butchering behavior changed in the context of evolving technology.

Nicolaides Ramsey, Monica (University of Texas at Austin), Monica Nicolaides Ramsey (University of Texas at Austin) and Arlene Rosen (University of Texas at Austin)

[236] *Wedded to Wetlands: Exploring Late Pleistocene Plant-Use in the Eastern Levant*

The mosaic ecology of the Late Pleistocene Levant has been referred to by many authors investigating Epipaleolithic use of wild cereals as a prelude to cultivation, but until recently it has rarely been the focus

of studies investigating hunter-gatherer adaptations and diverse wild plant collection strategies. Partly, this was due to poor preservation of macro-botanical remains at Epipaleolithic sites with the exception of Ohalo II. Our analyses of phytoliths from sites in the eastern Levant, compared with phytoliths from Ohalo II, reveal evidence for how foragers used the highly diverse ecological zones in these regions. Abundant phytoliths from reeds and sedges indicate the critical importance of wetlands in hunter-gatherer subsistence strategies, especially during arid phases. Wild cereals and small-seeded grasses point to steppe and parkland exploitation, and woody plants indicate use of woodlands. From the LGM through the Early Holocene, wetland, steppe and woodland zones formed an integrated resilient system of plant-use, with wetlands providing an especially important focal point. The option of tethering subsistence foci to reliable wetland zones provided a dependable natural food-storage repository and may have allowed greater risk-taking strategies for other types of plant and animal exploitation beyond the wetland zones.

Nicolaides Ramsey, Monica [236] see Nicolaides Ramsey, Monica

Nie, Zhongzhi [297] see Zhang, Xu

Nielsen, Axel (CONICET Argentina)

[27] *The Destruction of South Andean Plazas at the Time of Inca Expansion*

The Late Intermediate Period (1200-1450 CE) was a time of population aggregation and supra-community political integration throughout the Southern Andes (SW Bolivia, N Chile, and NW Argentina). Many of the large residential conglomerates that formed during this period show clearly defined plazas, frequently associated with representations of ancestors (chullpas, towers, monoliths) which attest to the central role played by genealogy and collective memory in the reproduction of the social order of the time. Research conducted during the past three decades in several of these public spaces has revealed their violent destruction during the 15th century, a phenomenon that correlates with the introduction of Inca material culture and with significant changes in regional landscapes, including rapid site abandonment and community relocation, the establishment of imperial centers and landmarks organized according to different cosmological principles and vast projects of agricultural reclamation and mining. Combining data from different regions we outline some of the principles of this domination strategy developed by the Incas in the Southern Andes, a strategy that, by manipulating plazas and other public settings, transformed local memories and established new principles of political legitimacy.

[27] Chair

Nielsen, Michael [29] see Simpson, Ian

Nielsen, Jesper (University of Copenhagen) and Toke Reunert

[33] *The View from Chalcatzingo: Studying Mesoamerican Iconography in Natural Settings*

While researchers working with Palaeolithic cave art and rock art in Europe have long recognized the importance of specific location and context of the imagery, there is still a tendency in Mesoamerica to focus mainly on the motives and regard cave walls or cliffs merely as "pages" made available by nature. In this paper, we discuss the need to integrate the surrounding landscape, sightlines, and specific features of the cliff/wall in any kind of iconographic analysis and interpretation. In this paper we focus on two Middle Preclassic sites in central Mexico, Chalcatzingo and Oxtotitlan, both of which offers excellent examples of the meaningful interplay between natural features and various iconographic representations. Additional sites and monuments we consider are the Xoc cliff carving in Chiapas, the stela from the Nevada de Toluca and the newly discovered Condoy Cave in Oaxaca. To understand these and similar examples of elite Mesoamerican iconography situated outside an architectural context, an "arm chair" art historical approach will rarely suffice, and we thus encourage iconographers to do more "boots"-on fieldwork - much in line with the work of Jim Brady.

Niespolo, Elizabeth [11] see Harlow, Jeanette

Niespolo, Elizabeth (CSU Long Beach), Gregory Holk (CSU Long Beach), Neff Hector (CSU Long Beach) and Brigitte Kovacevich (Southern Methodist University)

[140] *Using Stable Isotopes to Link Maya Jade Artifacts and Geologic Sources in the Motagua Valley, Guatemala: A Refined Method to Determine Artifact Provenance*

The only known jadeite source region in Central America lies along the Motagua River in Guatemala.

Jadeite from north of the Motagua Fault Zone (MFZ) differs petrologically from that found south of the MFZ; thin section petrography reveals three populations of differing mineralogy south of the MFZ. However, petrologic multiplicity of jadeites within each source region makes the identification of artifact provenance difficult using current methods. Since northern and southern occurrences of jadeite formed in distinct petrogenetic environments, stable isotopes may improve the resolution of provenance determination over that possible with mineralogy alone. The present study uses stable isotopes (O and H), together with other petrologic and geochemical analyses, to address the problem of discriminating jade sources near the MFZ. The utility of this approach is evaluated with jade debitage from Cancuén, the southernmost Classic Maya site on the Pasión River, north of the MFZ. Since the Cancuén workshop may represent a link between the Motagua source areas and jade-artifact consumers who lived farther north, this work has promise for tracing the economy of jade in Classic Maya society.

Nieuwenhuyse, Olivier [201] see Akkermans, Peter

Nieves, Ana (Northeastern Illinois University) and Gori Tumi Echevarria (Universidad Nacional Mayor de San Marcos)

[90] *Beyond Iconography: The Application of Reflectance Transformation Imaging in the Study of Nasca Valley Rock Art Sites (Rio Grande de Nasca Drainage, Department of Ica, Peru)*

This paper presents the results of our recent work at Nasca Valley rock art sites. In an effort to work with clear and objective methods of rock art documentation, we adopted Reflectance Transformation Imaging, a computational photography technique that combines a group of photographs taken with different light angles in order to create a three-dimensional representation of the surface. RTI images are helpful in documenting characteristics of petroglyphs that are often lost in line drawings or may not be clearly visible in single digital photographs, such as the superimposition of motifs and the different manufacturing techniques used. Our investigations enabled us to identify petroglyph manufacturing techniques in individual boulders and determine distinct manufacturing episodes at these Nasca Valley sites. Our research also addresses rock art conservation issues since RTI enables us to closely study the damage on rock surfaces due to natural weathering processes.

[90] *Chair*

Nigra, Benjamin [105] see Jones, Terrah

Nigra, Benjamin (UCLA), Terrah Jones (UCLA) and Jacob Bongers (UCLA)

[146] *A Full Coverage Survey of the Middle Chincha Valley Corridor, Peru*

The Programa Arqueológico Chincha explores the development of social complexity in the lower Chincha Valley, Peru. The valley contains evidence of intensive human occupation, covering the Early Horizon Paracas traditions through the late Inka incorporation of the Chincha kingdom. Previous survey work in the lower-valley describes monumental adobe architecture, platform mound building, and centralized infrastructure in the form of roadways and irrigation canals across this chronological span. These reviews place heavy emphasis on the massive edifices of the alluvial plain near the coast, largely glossing over marginal areas and underreporting smaller sites. We conducted a full-coverage survey of the middle-valley neck – a crucial transition corridor of some 50 square km, linking the larger coastal plain with mid-valley chawpiyungas. We report our results here: an assemblage of nearly 80 sites including domestic, mortuary, and defensive elements, ranging from the Early Horizon to the Late Intermediate Period. We discuss the implications of our data for interpreting the settlement systems of the earlier Paracas and later Chincha occupations of the mid and lower valleys, and suggest that the mid-valley transition area between the alluvial plain and chawpiyungas served as a key conduit in both the EH and LIP.

[146] *Chair*

Niquette, Charles (Cultural Resource Analysts Inc) [98]

Discussant

Nishiaki, Yoshihiro [236] see Kadowaki, Seiji

Niwa, Etsuko (Aichi Prefectural University) and Saburo Sugiyama (Research Professor, School of Human Evolution and)

[63] *Feathered Serpent and Flowering Trees: Interpreting Images of Food and Reproduction Cycles in*

Teotihuacan

We re-analyze representations of plants and animals in Teotihuacan to better understand indigenous conceptualization of food. We first identify the wide variation of plants and animals represented in Teotihuacan imagery to a species level from a biological/ecological perspective. Representations of plants and animals can be divided into two categories: 1) plants and animals utilized as food, utility materials, or symbols in the Mexican Highlands including maize, frijol, squash, cactus, maguey, amaranth, chia, or rabbit, deer, dog, wolf, puma, serpent and diverse lagoon birds, and 2) exotic organism such as cacao, cotton, four petals flower, or jaguar, macaw, and sea-shells. Representations of category 1 plants often show their fruits or seeds, indicating that the inhabitants realistically visualized subsistence resources within the context of local reproduction cycles highlighting the dichotomy between dry-wet, fire- water, and death-(re)birth. There were also category 2 representations of plants and animals specifically unidentifiable as they appear in general or abstract forms. They might have been brought from tropical areas and would have been used as symbols in ritual contexts and/or proclamation purposes. Feathered Serpent and Flowing Trees mural may indicate the extent of Teotihuacan's rule, controlled by their supreme deity Feathered Serpent, well beyond the Mexican Highlands.

Nixon, Sam (University of East Anglia)

- [108] *An Architectural Complex of the 12th-13th Centuries AD from the Eastern Arc of the River Niger (Republic of Benin, West Africa)*

While building traditions in West Africa are most commonly associated with mud-architecture, examples of this tradition pre-dating the modern era are relatively rare due to its poor preservation and the rarity of its detection archaeologically. This paper provides an account of an excavated mud-architecture complex from the north of the Republic of Benin which has been dated to some 700-800 years ago, featuring individual rooms and various connected communal spaces. This well-preserved evidence is archaeologically unique due to the associated presence of pottery and laterite pavements throughout the complex, as well as other paved features. Pottery pavements have been documented relatively extensively within West African archaeology but rarely has evidence of significant structural remains been able to be detected in association with them. In addition, remains of a range of ceramic vessels destroyed in situ were recorded within the complex, including one buried within a pavement. That these remains come from one of the least archaeologically researched areas of West Africa provides an additional importance to their consideration within wider discussions of early West African architecture. The paper will also discuss the conditions dictating archaeological preservation of mud architecture in West Africa and the methods of its detection.

Nixon, Sarah (Indiana University South Bend) and James VanderVeen (Indiana University South Bend)

- [139] *Experimenting with Functionality: A Case Study of the Caribbean "Water" Bottle*

The true use of the pottery vessel form found across the Pre-Columbian Greater Antilles and known as the "potiza" remains a mystery. Its shape resembles that of a canteen or flattened bottle, and fragments have been found in and near fresh water springs. But was the complex vessel used only to collect water? Might its unique design also be an innovative response to the hot and humid environment? In an effort to better understand the purpose behind the potiza's shape, a number of replica vessels were created and then specific attributes were tested. Aspects like evaporation rate, content temperature, and vessel stress during transport were recorded in controlled experiments. The results suggest the potters who designed and constructed the peculiar pots had a specific function, as well as symbolic form, in mind.

Nixon-Darcus, Laurie (Simon Fraser University) and A.Catherine D'Andrea (Simon Fraser University)

- [4] *Grinding to Sustain Life: An Ethnoarchaeological Approach to Grinding Equipment Use in Northern Ethiopia*

Grinding stones, also known as saddle querns and handstones, or metates and manos, have been in use by humans in food processing since the African Middle Stone Age and have been recovered from archaeological sites on all continents. As a major tool used in subsistence activities for many cultures, grinding equipment has the potential to provide insights into social constructions, such as gender relations, craft specialization, labour practises, community engagement and cooperation. So, how can the ethnoarchaeological study of grinding contribute to our understanding of the technological, social and economic context of grinding in ancient and present communities? My paper will review the data collected and insights gained through interviews and participant observations which document the technological and social interrelationships in the life history of grinding stones in a traditional (non-mechanized) rural setting

in northern Ethiopia using Design Theory and the chaine opératoire approach and specifically focusing on the "use" of grinding equipment.

[4] Chair

Noack Myers, Kelsey [81] see DeMuth, R. Carl

Noack Myers, Kelsey (Indiana University Bloomington), R. Carl DeMuth (Indiana University Bloomington), Joshua Wells (Indiana University South Bend), Stephen Yerka (University of Tennessee) and Thad Bisset (University of Tennessee)

[81] *The Anthropology of Archaeological Data Collection and Management*

The design of an archaeological data repository's structure has important implications for the ways archaeological professionals interact with the data. The Digital Index of North American Archaeology (DINAA) brings into focus the different choices SHPOs and other repositories make regarding data collection and management. When working with digital data, structure (e.g. booleans, lookup tables, text strings, categories of enumeration, etc.) functions in combination with vocabularies to frame our understanding of the archaeological record. While each state standardizes data collection through site forms and databases, prioritization of specific data categories in the collection process and the ontological system used to form the data necessarily create imposed and differing mental constructs of how archaeological concepts relate to one another. This creates operative differences in site definitions and different affordances for a researcher running queries through these imposed taxonomies of practice. DINAA circumvents these limitations created by the structures of our data communication systems. Although DINAA does not manage sensitive data, including site locations, it is a valuable tool available to interpret data sets for research, resource management, and outreach.

Nocerino, Eric

[284] *Modeling Hunter-Gatherer Settlement Patterns with GIS: Prehistoric Chumash Settlement at Vandenberg Air Force Base, California*

The archaeological record along the central coast of California has revealed that prehistoric Chumash groups developed a variety of coastal and terrestrial economic adaptations that influenced their settlement practices. However, the role of these adaptations during various stages of cultural change is less clear. This paper discusses the use of Geographic Information Systems (GIS) as a regional analysis tool for interpreting prehistoric Chumash settlement patterns at Vandenberg Air Force Base (VABF), California. GIS will be used to create a general model of the paleoenvironment from the early Holocene to the Late Period at the VABF. Central Place Foraging Theory will then be applied to the model to develop predictions about ideal and secondary site locations and the possible economic risks associated with those localities. Known sites from the VABF radiocarbon database will then be mapped over the environmental model and analyzed within this theoretical context. It is hypothesized that through time, long and short-term changes in the spatial organization of hunter-gatherer settlements at VABF were not only the result of terrestrial and coastal economic adaptations, but also a result of significant changes in the social organization of the Chumash as population increased in the region.

Noell, Mary (Texas State University) and Christina Conlee (Texas State University)

[146] *Social Implication of Early Nasca Ceramics at La Tiza*

The Nasca people on the south coast of Peru in the Early Intermediate Period produced an unusual amount of polychrome fine ware pottery. Early Nasca (A.D. 1-450) ceramics are found at the site of La Tiza, a substantial town site located at the conjunction of the Aja and Tierras Blancas rivers. I compare the ratio of fine ware to plain ware from La Tiza to two sites with Early Nasca components, Cahuachi and Marcaya. By comparing these three sites, it is possible to elicit a better understanding of the context in which fine ware and plain ware were used and produced in Early Nasca society. Additionally, differences in the distribution of elite and non-elite vessels within and among these three sites can shed light onto the variation in social stratification in Early Nasca society.

Nolan, Kevin (AAL, Ball State University) and Brian Redmond (Cleveland Museum of Natural History)

[172] *Geochemical and Geophysical Survey and Intra-Settlement Activity Patterns: Pilot Study at a Series of Complex Sites in the Lake Erie Basin*

Ohio archaeology saw early application of soil phosphate analysis; however, after a series of equivocal applications in the early 1980s little or no use was made of this avenue of investigation as an independent source of information about local or regional activity patterning. Meanwhile geochemistry has proven extremely useful for prospecting and activity pattern analysis in a variety of contexts. Analytical techniques have improved since the 1980s, and phosphate is once again being employed in Ohio. We present the results of a pilot application of combined soil phosphate and magnetic susceptibility soil survey at three sites in the Lake Erie Basin. Our results illustrate the value of the method for disentangling the formation history of three multicomponent sites. Especially when used in a multi-pronged research design, soil analysis is a powerful supplement to traditional techniques and enables whole-site analysis without full excavation.

Nold, Kathryn (Indiana University), Geoffrey W. Conrad (Department of Anthropology, Indiana University), Claudia C. Johnson (Department of Geological Sciences, Indiana University), Cody C. Roush (Archaeometry Laboratory, University of Missouri RE) and Michael D. Glascock (Archaeometry Laboratory, University of Missouri RE)

[269] Compositional Analysis of Ceramic Shards from Southeastern Dominican Republic

La Cangrejera is a village-shore archaeological site that yielded radiocarbon dates, 1040 – 1490 AD, from mollusc shells. The site contained abundant Boca Chica ceramics and a small set of stylistically-distinct, painted-red ceramics that preceded the Boca Chica style by several hundred years. Our objective is to examine variation in the elemental composition of selected ceramics to determine if discrete typological motifs are characterized by unique compositional groups. We hypothesize if the distinct painted-red and Boca Chica motifs were constructed through unique approaches to the selection of raw materials for ceramic production, they will separate into distinct elemental compositional groups. Two hundred and fifty-four ceramic sherds were analyzed through neutron activation analysis at the Archaeometry Laboratory at the University of Missouri Research Reactor. The hypothesis that distinct typological styles are associated with discrete elemental compositions is not supported. Our results suggest selection of raw materials for ceramic production remained static as cultural motifs changed at La Cangrejera. Our study reveals continuity in the selection of raw materials across material culture boundaries and highlight the need for continued investigation of culture change in the Caribbean using diversified methodological approaches.

Noll, Christopher (Geo-Marine, Inc.)

[225] Approaches toward the Replicable Classification of Archaeological Sites Based on Archaeological Survey Data

Throughout the history of archaeology meaningful classification of artifacts has been vital to analytical processes. The classification of archaeological sites is equally important to studies that investigate regional patterning in occupation, subsistence, and technological organization. The classification of archaeological sites is also a key attribute of archaeological site records throughout the United States. Classification can be completed relatively reliably on rigorously studied sites but those classifications based on survey data alone can be much more subjective. Furthermore, some site types utilized on survey based site records are non-specific. Cultural resource management archaeologists are often faced with the task of classifying sites without a replicable technique. The reliable and replicable classification of sites from survey data can be accomplished with the use of quantitative-based field procedures. This paper identifies ways that sites can be classified using simple, cost effective, and efficient methods. Sites from the Pacific Northwest are used to demonstrate the approach.

Nomade, Sébastien [249] see Erturaç, Korhan

Nondédéo, Philippe [227] see Morales-Aguilar, Carlos

Nonestied, Mark [155] see Veit, Richard

Nordine, Kelsey [30] see Fritz, Gayle

Nordt, Lee [114] see Driese, Steven

Norgon, Kate (University of Wisconsin-La Crosse, PIARA) and Rebecca Bria (Vanderbilt

University, PIARA)

- [105] *Identifying Mortuary Ritual and Ancestor Veneration: A Spatial Analysis of the Tombs at Hualcayán, Peru*

Ancestor veneration is a concept shared by indigenous peoples throughout the Andes. Identifying patterns in the spatial distribution of tombs on the landscape provides insight into how deceased ancestors were viewed in Andean cultures. This study is an investigation of the ritual activity associated with ancestor veneration in the Peruvian Andes through a survey of eighty tombs at the site of Hualcayán, in the north-central highlands of Peru. This survey included information about the location as well as form, size, and artifacts associated with each tomb. The results show significant variation in both size and complexity among the tombs at this site as well as a pattern of clustering. The clustering of these tombs was influenced by a combination of geographical factors as well as cultural choices, perhaps reflecting and reaffirming kinship ties through physical associations of tombs on the landscape.

Norman, Lauren (University of Toronto)

- [160] *Study of a House: Spatial Patterning of a Western Thule Winter Dwelling*

Zooarchaeological remains have been studied at all scales of spatial analysis from across landscapes to within features; however, the intra-dwelling studies are in a clear minority, likely due to the paucity of remains normally found within houses and low-resolution collection strategies. Excavations of a Western Thule semi-subterranean dwelling at Cape Espenberg on the Seward Peninsula, Alaska, have yielded a well-preserved, high-resolution archaeofaunal assemblage. I map this data set using a GIS framework to explore the spatial patterns of multiple variables. These spatial patterns exist as part of the house floor due to past activity areas, taphonomic processes, and post-depositional developments. Understanding these processes of assemblage development is important for understanding past human lifeways for Western Thule people.

Norman, Scotti (Vanderbilt University)

- [256] *Conquest and Resistance in the Chicha-Soras: A Diachronic Study of Soras Opposition to Colonial Rule*

In times of great political upheaval, new foreign leaders manipulate preceding state infrastructures and social networks to conquer local people. However, the creation of state power is never so one-sided; outside authorities must continually adjust tactics of control according to conditions "on the ground." The resultant landscape of power occupies a "third space" in which contrasting cultures interweave to create an entirely new sociopolitical stage. In the Chicha-Soras Valley (Ayacucho and Apurimac, Peru), the Soras people experienced violent overthrow during Inka conquest, followed by Spanish seizure of both local and Inka spaces. During the early stages of both conquests, Soras people contested imperial presence, mounting a two-year siege against the Inka and later initiating the Taqui Oncoy resistance movement against the Spanish. Never completely subjugated, the Soras actively shaped colonialism, and their overt rebellions taxed both empires. Social power was thus negotiated in the Chicha-Soras Valley, a product of the clash between Soras opposition and imperial goals of annexation and conversion. While Spanish documents suggest smooth conquest, spatial and material evidence provides a contrasting picture, demonstrating that outside takeover was a tenuous, negotiated, and multivalent process.

- [256] *Chair*

Norman, Garth (ARCON, Inc.) and Jason Jones (University of Warwick, England, PhD candidate in E)

- [322] *Advanced 3D Imaging for Recovery of Weathered Stone Sculpture at Izapa, Mexico*

A recently developed image capture technique called "Reflectance Transformation Imaging" (RTI) has for the first time been applied successfully to map the texture of weathered low relief stone sculpture, providing a new tool for accurate data recovery and drawing restoration. RTI permits computerized inspection of the stone surface with a full range of variable lighting and texture enhancement applications that recovers unseen details thought to be weathered beyond recognition. RTI field tests of Izapa Stelae 4 and 5 confirm the accuracy of the original NWAF Izapa sculpture project photos and drawings (from 1960 to 1976) with some additional details for an accurate permanent record of Izapa sculptures which was the objective of NWAF's original Izapa Sculpture Project completed in 1982.

Norris, Stephen [45] see Becker, Kenneth

Novelo Rincon, Gustavo (INAH) and Philipp Galeev (Universidad Estatal de Rusia)

[195] Investigación y Restauración Arquitectónicas en el Codz Pop de Kabah, Yucatán

Los trabajos de conservación e investigación que se han venido realizando desde 2006 en el Codz Pop de Kabah tienen como objetivo no sólo detener el deterioro y devolverle parte de su apariencia original, sino también entender al edificio a partir del estudio de su arquitectura, la iconografía de sus ricamente ornamentadas fachadas, los materiales asociados, así como de su ubicación dentro del conjunto palaciego del asentamiento, en donde residió la familia gobernante durante el período Clásico Terminal (800-1000 d. C.) y que debió ser un espacio destinado también a la administración y el ejercicio del poder político. La información recuperada a lo largo de estos años junto con el reciente hallazgo de dos jambas esculpidas en el cuarto 1 del edificio, ambas con una fuerte carga iconográfica, nos han permitido ampliar nuestro conocimiento sobre las transformaciones del espacio construido y las posibles funciones que ahí se desarrollaron a través del tiempo, así como acerca de la estructura social y política de los grupos de élite que habitaron en Kabah.

Novo, Alexandre (IDS North America Ltd.) and Beverly Chiarulli (Indiana University of Pennsylvania)**[157] Archaeological Surveys Using Multiple Array Ground Penetrating Radar**

The IDS STREAM X is one of a new generation of GPR units that are available for archaeological investigations in the US. The advantage of a Multiple Array GPR is that the instrument collects more data than single antenna units in the same amount of time, providing much greater resolution of subsurface features. The multiple lines of data are acquired simultaneously as the array moves along the surface. Channels within the array are closely spaced allowing a dense grid of sample points to be created combining full-resolution data acquisition with a robust integration of navigation and centimeter-accurate positioning. Researchers from IDS North America and IUP have used the multichannel STREAM X system for several surveys in Western Pennsylvania during the past year. In one part of the campus, the STREAM was used to investigate a 19th century industrial area later buried by fill and construction of a campus parking lot. The instrument was also used in a search for the burial pit of dozens of circus animals buried in 1893 after an infamous train wreck. This poster presents the results of these surveys and describes this new option for non-destructive prospection of large archaeological sites in North America.

Novotny, Anna [21] see Hoggarth, Julie

Novotny, Anna (Arizona State University)**[64] Defining Community in the Upper Belize River Valley during the Late Classic Period: A Micro-regional Bioarchaeological Approach**

A methodological issue with the study of communities is the assumption that an archaeological “site” is analogous to a social community. Yaegar and Canuto (2000) define community as a constantly emerging social institution governed by suprathousehold interaction. If communities are created and sustained through interaction, they argue studies of community must fall between the levels of the household and region. Here, I apply the concept of a micro-region, larger than one site but smaller than the settlement region, to explore community among the ancient Maya of the Upper Belize River Valley during the Late Classic period (600-900 A.D.). A population increase occurred there during the Late Classic florescence of Xunantunich. It is unclear whether the influx of people was due to in-migration or not, although it has been proposed that Xunantunich leaders may have encouraged migration of farmers to support their city. I apply biodistance and isotope analyses from three mid-sized, geographically proximate sites – Chan, Chaa Creek, and Zubin – to address whether the increase in population was due to in-migration and how it affected community interaction. This analysis is novel in that it focuses on interactions within the non-elite community rather than between elites and non-elites.

Novotny, Claire (University of North Carolina - Chapel Hill)**[198] Marginalized Landscapes and the Social Practice of Archaeological Research: Ancient and Contemporary Perspectives from southern Belize**

This paper evaluates the social practice of archaeological research through an analysis of marginalized landscapes from the perspective of ancient Maya hinterland households and contemporary Maya villages. Situated in the Toledo district of southern Belize, the Aguacate Community Archaeology Project examines ancient Maya household socioeconomic integration with regional dynamics during the Classic period (AD 250-850). The cultural and geographic marginality of both ancient and modern southern Belize creates a distinctive landscape between perceived centers of power and influence. First, this paper uses archaeological materials from recent excavations at Kaqru' Ha', a small ancient Maya settlement in

modern Aguacate village, to shed light on regional social and economic integration. Second, this paper examines the engagement of the local Q'eqchi' Maya community with the archaeological landscape. A marginalized archaeological landscape is created by a state-managed tourism industry that emphasizes the monumental architecture of ancient Maya cities; Aguacate villagers grapple with issues of local history, identity, and heritage tourism surrounding the modest archaeological sites on their land. Considering archaeological landscapes from ancient and contemporary perspectives situates research within a social context that recognizes the entanglement between the archaeological imagination and community heritage.

Nowell, April (Univ of Victoria-Dept of Anth)**[115] *Growing Up in the Pleistocene: Neandertal Children and the Evolution of Play Behavior***

The life history pattern of modern humans is characterized by the insertion of childhood and adolescent stages into the typical primate pattern. This slowing of the maturational process provides humans with additional years to learn, transmit, practice and modify cultural behaviors. In both human and non-human primates a significant amount of their dependency periods are spent in play. Data suggest that Neandertals experienced shorter childhoods than modern humans. This is significant as there is extensive psychological and neurobiological evidence to suggest that it is during infancy, childhood and adolescence that milestones in social and cognitive learning are reached and play and play deprivation have a direct impact on this development. Faster maturation rates and thus shorter childhoods relative to modern humans lessen the impact of learning through play on the connectivity of the brain. Differences in the length of childhood and associated modes of learning may explain differences in the nature of the symbolic material culture associated with Neandertals and modern humans.

Nowell, April [223] see Ames, Christopher

Nuevo Delaunay, Amalia [69] see Méndez Melgar, César

Núñez Aparcana, Bryan (Universidad Nacional Mayor de San Marcos), Rebecca Bria (Vanderbilt University) and Elizabeth Cruzado (Universidad Nacional Mayor de San Marcos)**[105] *Celebrating Death: New Data on Recuay Mortuary Feasting Practices from Hualcayán (Ancash, Peru)***

This study presents the analysis of excavated ceramic materials from a patio space outside a small familial (MNI=9) non-elite two-chamber subterranean Recuay tomb at the archaeological site of Hualcayán in highland Ancash, Perú (AD 1-700). Formal characteristics of the ceramic assemblage and their distribution and superposition within the patio space indicate that these materials are the remains of recurring ritual feasts to honor the dead. The assemblage included musical instruments and a high percentage of decorated jars and bowls suggesting that music and ceremonial drinking, likely with chicha beer, were the most important ritual practices performed during these Recuay feasts. Detailed attribute analysis of the assemblage also indicates a high variability of painted techniques, ranging from the careful preparation of sophisticated negative designs with complex iconography to vessels with more free-flowing, uneven paint strokes. The latter technique is the most prevalent. While these designs may suggest a lack of sophistication or care, we argue that the prevalence of these coarse techniques reflects on the one hand an aesthetic intended by their makers, and second, that these vessels were expediently prepared by living family members in preparation for the burial of their recently deceased family members.

Nuñez Flores, Claudia [256] see Hernández Escontrías, Pilar

Núñez-Cortés, Yajaira (University at Albany-SUNY)**[113] “Fire God’s Animal”: Dogs from Mayapan**

Dogs served a unique role for the ancient Maya. Not only were dogs eaten, but they were used for hunting, medicine, and rituals. Dog bones have been recovered in a variety of contexts at Mayapan, including shrines, colonnaded halls, temples, craftperson and commoner dwellings, and elite houses. Prior research indicates that dog bones appear in great quantities at specific monumental center structures such as the Templo Redondo and the Ch'en Mul Cenote temple, indicating their significance to

certain elites and for ritual practice. The special role of dogs in Mayapan's ritual economy is examined in this paper by looking at their distribution across architectural contexts of diverse function. The analysis includes skeletal element representation, age, and frequencies of dog bones, as well as the production of special items made out of dog bones such as drilled tooth pendants. Differences in the spatial distribution of dog bones are best explained by the variable social and functional contexts of dog use at the site. Means of dog acquisition for elite use will be considered, including dog raising, tribute, and other mechanisms.

Nyaradi, Zsolt [102] see Riegert, Dorothy

Nycz, Christine [79] see Brunette, Jeremy

Nycz, Christine (University of Nebraska - Lincoln) and Matthew Douglass (University of Nebraska - Lincoln)

[220] *Chipped Stone Analysis from Two Middle Holocene Archaeological Sites in the East Central Great Plains*

Current research on Middle Holocene bison populations from the east central Great Plains utilizes isotope analysis to illustrate low regional mobility. While this pattern has interesting implications for land use and territoriality for the human populations that exploited these herds, few published reports detail archaeological assemblages or address features of prehistoric mobility in this subregion. Here we address this question through an investigation of chipped stone raw material variability from two Middle Holocene archaeological deposits (the Hill and Simonsen sites) in western Iowa. Results indicate that the geographic extent of material sources supports an interpretation of restricted hunter-gatherer mobility within this subregion during the early years of the Middle Holocene in western Iowa.

Nyers, Alex (Pacific Slope Archaeological Laboratory) and Karl Vollmer (High Performance Computing, Dalhousie University)

[77] *Archie - The Development and Implementation of an Open Source Archaeological Database System*

In 2009, the authors began development of an online, light-weight, open source inventory system for archaeological artifacts (Archie). With feedback from real world use in the field over the last several years, this system has evolved into a robust, secure application capable of handling hundreds of active users and millions of entries. Archie supports associating multimedia files such as photos, audio and video commentary, and 3D scans with artifacts, without any special client software beyond a web browser. This poster will discuss the features present within this application, a roadmap for future development, and its implementation in the field at the Cooper's Ferry Archaeological site in West Central Idaho.

Nygard, Travis [309] see Wren, Linnea

Nyman, James (University of North Carolina) and Vincas Steponaitis (University of North Carolina, Chapel Hill)

[231] *Indian Pottery at Fort Rosalie in Natchez, a French Colonial Outpost in the Lower Mississippi Valley, 1716-1763*

Fort Rosalie in present-day Natchez, Mississippi was a key outpost in France's colonization of the Lower Mississippi Valley. Built in the heart of the Natchez nation in 1716, the fort was destroyed during the Natchez uprising of 1729, then rebuilt and occupied by the French until 1763, when the territory was ceded to England. Our analysis of the indigenous ceramic assemblage from the National Park Service excavations at Fort Rosalie highlights the engagement between French and Indian cultures in the Louisiana colony during the first half of the 18th century. Indian women produced ceramic vessels for the soldiers at Fort Rosalie, sometimes after having taken these soldiers as spouses. Our analysis of the pottery reveals how the vessel forms reflect Natchez accommodation of French needs and tastes while also illustrating how Native people participated in the frontier economy. A detailed analysis of historic plans and maps provides additional information on the archaeological contexts from which these ceramics were derived.

Nystrom, Kenneth (State University of New York at New Paltz)

[126] *Embody Inequality: Race, Class, and Anatomy in 19th-20th Century United States*

Embodiment as the physiological response to cultural stressors has been considered by public health researchers and bioarchaeologists and provides valuable insight into how psychosocial stress and discrimination can negatively impact health. Within archaeology, embodiment also encapsulates how the body is modified to reflect cultural attitudes and conceptions regarding social identity. It is argued here that during the 19th and 20th centuries in the United States the identity of socially marginalized groups was linked to the living body. Race and class were intertwined vectors of inequality and both were considered to have bodily manifestations; racialization was most often predicated on 'biological' differences (e.g., skin color) while poverty was also considered an innate feature of a group. After death these embodied living identities legitimated the modification of their corpses into anatomical specimens used in medical training. While personhood was dissolved as the body became an object, the cutting, partitioning, and display of the dead body was ultimately grounded in a continuity of the living marginalized social identity. This paper will synthesize the available evidence of anatomization and present new data from excavations at the Erie County Poorhouse to discuss the complex relationship between race, class, and anatomy within the United States.

OBoyle, Robert (University Of Montana), Alvin Windy Boy (Chippewa Cree), Virginia O'Boyle (Chippewa Cree), Jason Brown (Chippewa Cree) and Duncan Standing Rock Sr. (Ojibwe)

[77] Success and Opportunity: Consultation, Federal Agencies, and Indian Country

This poster presents the efforts of the Chippewa Cree Cultural Resource Preservation Department in preserving the culture of the Chippewa Cree. The Chippewa Cree, of the Rocky Boy's Indian Reservation in North Central Montana, have been taking a proactive role in the preservation of significant cultural properties. From the online consultation, The Chippewa Cree Tribal Register, and the FEMA funded Cultural Resource Training Video, the Chippewa Cree have worked to stay proactive in the preservation of cultural properties critical to the survival of our people. These sites are not only archaeological or even sacred in nature, they are the biography of our people, and the stones and bones found across the land tell the story of the people who have been here for thousands of years. Working together with other Tribes and Federal partners the Chippewa Cree have moved forward our cultural preservation program to have real lasting effects to the resources, the tribe, and the public in general who have an interest in seeing culture preserved. Cultural resource preservation is the preservation not only of past, but of our language and our living culture, and most importantly the survival of the Chippewa Cree for generations to come.

O'Boyle, Robert [50] see Bello, Charles

OBrien, Lauren (Southern Methodist University)

[344] A New Look at the Communities of the Developmental Period in the Taos Valley

Throughout time, communities have moved and changed across the Southwest landscape. This can be seen during the Developmental period in the Taos Valley, as pithouse communities appeared during a time when multi-room pueblos and kiva architecture existed less than 30 miles away. To understand these changing communities and the decisions they made, we must first examine their use of space, both the locations they chose to settle and the structures they chose to build and inhabit. Investigations on this topic will shed light on many of the current debates of this area: the timing of Puebloan expansion into the Taos Valley, the direction and manifestation of this expansion, the identities of these groups, and the strategies they employed. Research on the Developmental period in the Taos Valley over the past 20 years has predominately been survey-based CRM projects. These projects have located and recorded many sites, but a comprehensive synthetic overview of this period, which is needed to look at these questions, is still necessary. Through an integration of the results of salvage and culture history based investigations (dating to 1950-1960), CRM projects, and current investigations, these lingering questions should be answered.

O'Brien, Matthew [16] see Surovell, Todd

O'Brien, Michael (University of Missouri)

[193] Discussant

Ochoa-Winemiller, Virginia and Terance Winemiller (Auburn University at Montgomery)

- [190] *The Application of Laser 3D Technology to Determine Common Origin of Ceramic Figurines, Stamps, and Whistles from Honduras*

Over the years, several archaeological studies have focused on ceramic figurines, whistles, and stamps. One daunting question encountered by researchers involves the relationship of figurine to mold and whether production and common source could be demonstrated through traditional methods of analysis. Evidence gathered to date suggests a level of standardization might have existed wherein modifications to a basic theme were accomplished by individual makers. To demonstrate standardization thus production and common source, a correlation must be established between mold and its positive figurine, whistle, stamp or between artifacts. We analyzed sample collections from Honduras and report on the integration of data derived from laser 3D scanning technology with applications developed for metrological analyses to test goodness of fit and surface deviation. Methods described in this paper have implications for modal analyses of other forms of ceramic artifacts as well.

O'Connell, James (University of Utah) and Brian Codding (University of Utah)

- [282] *Ideal Free Colonization of Australia's Arid Zone*

Australia's colonizing populations spread rapidly around much of the continent about 45kya, but vast regions of the arid interior remained unpopulated for millennia and under-populated through the Pleistocene. Here we run preliminary tests of qualitative predictions derived from an ideal free distribution model to examine how human foraging decisions, demographic pressure, and environmental suitability interacted to produce this patterning in the timing and distribution of settlement.

OConnor, Heather (University of Wisconsin - Madison)

- [35] *Sourcing Marine Shell in the Indian Ocean: Exploratory ICP-OES Analysis of Conus and Cypraea*

By the mid-third millennium BC, complex overseas networks of interaction had been established between West, Central, and South Asia. Oman and the Indus Valley were important sources of marine shell for overseas trade to Mesopotamia. However, no in-depth comparative studies have been undertaken that include shell artifacts from these regions of trade. Although the locations of ancient shell fisheries have been hypothesized based on modern distributions of mollusc species, a geochemical analysis of modern and ancient marine shell from modern day Pakistan, India, and the Sultanate of Oman utilizing Inductively Coupled Plasma – Optical Emission Spectroscopy (ICP-OES) analysis will more firmly locate important shell fisheries in the Indian Ocean. ICP-OES analysis is one method used in the geochemical sourcing of marine shell, along with Oxygen Isotope analysis. This paper will present the results of a preliminary ICP-OES analysis of modern Conus sp. and Cypraea sp. from three different locations in the Indian Ocean: the Karachi coast, the Gujarat coast (Dwarka), and Ra's al-Hadd in Oman. If this technique is viable, it will be possible to trace the source of objects made from important trade species found at inland sites in the Indus Valley, as well as in the Mesopotamian region.

Oda, Noriyoshi [223] see Terry, Karisa

Odegaard, Nancy, Marilen Pool (Arizona State Museum - University of Arizona), Gina Watkinson (Arizona State Museum - University of Arizona), Crista Pack (Arizona State Museum - University of Arizona) and Mike Jacobs (Arizona State Museum - University of Arizona)

- [336] *Woven Wonders: Research Options Through Advances in Conservation Examination and Imagery*

Advances in conservation practices and imaging techniques employed at the Arizona State Museum have expanded the research options for over twenty-two thousand archaeological perishable objects assembled through systematic archaeological research. The project has provided increased access to the collection, initiated new conservation treatment techniques, and reduced material loss from the collection. The Woven Wonders project, funded with a Save America's Treasure grant, has also resulted in a state-of-the-art visible storage vault with improved housing techniques and an adjacent interpretive gallery. A conservation survey database was created and photo-documentation protocols (including radiographs, xeroradiographs and other non-destructive techniques) were standardized to assess the object completeness, use ware, dye techniques, patterns of decay and use, and modifications. New treatments were studied and new outcomes have been established. The project is viewed as a continuum rather than an endpoint and is now a process for ongoing investigation and exploration. Ultimate goals from the project include long-term preservation and access to the collections, sustainable cultural bridges to tribal communities and constituents, and research products that are useful to multiple disciplines.

O'Donnell, Sarah (Missouri State University)

- [11] *Investigating Ozarks Marginality: A Study of Late Prehistoric Ceramics from the Northern Ozark Highland of Missouri*

Archaeologists have proposed several models of human habitation in the Missouri Ozarks during the Late Prehistoric period (A.D. 900-1500). These models position the Missouri Ozarks as an intermittently occupied zone, in contrast to adjacent regions occupied by sedentary and politically complex agriculturalists. Drawing on world systems theory, Ahler, Kreisa, and Edging (2010) propose an alternative model that positions the Missouri Ozarks as a margin in relation to the adjacent Cahokia Mississippian core. However, application of this model is constrained by uncertainty about the type of relationship that prevailed between Ozark margin societies and core (i.e., Mississippian and Caddo) societies. My study helps resolve this problem by using ceramic artifact data to clarify the nature of interaction between populations in the Missouri Ozark Highland and those in adjacent regions. Using shell- and limestone-tempered ceramics from sites within the Gasconade River Drainage, this study focuses on resolving questions of local versus nonlocal production. Analyses of ceramic geochemistry, via Instrumental Neutron Activation Analysis, indicate the manufacture of both shell- and limestone-tempered ceramics occurred locally, in close proximity to Gasconade Drainage sites. The results suggest a relationship of relative isolation between the Ozark margin and nearby core societies.

Oetelaar, Gerald (University of Calgary)

- [159] *Continuity and Change: The Construction, Persistence and Impermanence of Historically-Charged Places on the Northern Plains*

As social constructions, places provide important information on the way people experience and humanize a landscape. Humans experience a landscape through movement and define places based on the challenges of moving through a particular environment. The challenges depend on the available transportation technology and features of the landscape such as topography, hydrology and vegetation. Repeated use of the same pathways connecting these landmarks generates a trail network whereas the places serve as anchors for the narratives, songs, and rituals of the group. Patterned movement along the trails past the succession of named places retraces the footsteps of the ancestors and becomes a combined ritual pilgrimage, historical journey, and social odyssey. The quotidian actions of the people while camped at places along the network of trails influence the local ecology creating a series of microniches or desirable resource patches scattered across the homeland. In this paper, I explore the archaeological and ecological signatures of such place construction on the northern Plains with particular emphasis on the evidence for the persistence and change in the nature of the constructed places.

Offenbecker, Adrianne (University of Calgary), Kyle Waller (University of Missouri-Columbia), Jane Kelley (University of Calgary) and M. Anne Katzenberg (University of Calgary)

- [144] *Mortuary Variability at Paquimé and Its Implications for Sociocultural Differentiation*

The transition from the Viejo to the Medio period in the Casas Grandes region was marked by increasing sociocultural complexity at the core site of Paquimé. This is particularly evident in the burial practices and mortuary treatment of the individuals interred at the site. Our analysis focuses on the most complex burial discovered at Paquimé, a subfloor tomb containing the remains of at least 12 individuals. Burial 44-13 is comprised of two distinct "layers" of interments; the lower layer consists of six articulated skeletons and one skull, while the upper layer contains the disarticulated and fragmentary remains of five individuals. Here we evaluate the hypothesis that the upper level of human remains represents a sacred offering to the elite individuals below through a comparative analysis of health indicators, trauma, post-mortem processing, pathology, and taphonomy. Our results suggest that there are significant differences between the two layers, particularly in terms of post-mortem processing and age-at-death structure. We discuss these findings within the broader scope of mortuary treatment at Paquimé as a whole and argue that burial 44-13 enables us to more clearly contextualize changes in sociocultural complexity during the later Medio period.

Ogata, Nisao [305] see Munro-Stasiuk, Mandy

Ogburn, Dennis (University of North Carolina at Charlotte)

- [121] *Inca Things and Local Audiences: Adopting Elements of Imperial Material Culture at the Local Level*

For ancient empires, the agenda of incorporation and control of provinces did not entail the imposition of imperial material culture on provincial subjects. Instead, the adoption of elements of imperial material culture by local peoples was more of a voluntary phenomenon, but one that had many connotations

regarding the political, social, or economic motives of those making and using items that drew from imperial material culture. This paper takes a theoretical approach to the phenomenon, examining how the motives of provincial individuals, their attitudes toward the imperial state, and their levels of participation in state ideology can be understood by focusing on the nature of the cultural elements being adopted, the contexts of their manufacture and use, and the audiences that would have seen those items in use. These points are illustrated with archaeological evidence from the Inca occupation of southern Ecuador and elsewhere, and implications for understanding pre-Inca empires in the Andes are discussed.

Ogiogwa, Joan-Mary

[58] *Sungbo's Eredo: A Construct of Sociopolitical Institution.*

Re-writing the history of the rain forest belt of West Africa has increasingly become a focal point in the present spate of researches on-going in the region. This is owed to the emergence of 'new' data mostly coming from the work of scholars such as Chouin (2009). Chouin's work in Ghana has shown that contrary to the hitherto held views that the development of complex societies and the transformation of the forest of Ghana (and by inference the whole of West Africa) into farmland followed only after the opening of the Atlantic trade in the late 15th century-- a theory propounded by Wilks, 1993, that there had been a process of urbanization that might even have had its beginning from around the first millennium CE. This pre-Atlantic urbanisation was characterized by the building of extensive and monumental earthworks associated with settlements as well as large expanses of land around such settlements. To this end therefore, the present paper attempts to make a further contribution to the 'new' data using results obtained from recent archaeological work carried out on the Sungbo's Eredo, a 160km long earthwork in the rain forest region of south western Nigeria.

O'Gorman, Jodie [306] see Bengtson, Jennifer

O'Grady, Patrick and Janice Wood (University of Washington)

[148] *Tephra Traps and Projectile Points: An Update on the Volcaniclastic and Cultural Chronologies at Rimrock Draw Rockshelter (35HA3855), Harney County, Oregon, USA*

Laboratory analyses of samples collected during the 2011-2012 excavations at Rimrock Draw Rockshelter indicate regional eolian and pyroclastic surge materials are collected in "traps" influenced by both mechanical and chemical weathering processes. These tephra accumulations range in size from microstratigraphic layers visible only through particle size and geochemical analysis to massive deposits of Mazama ash in the stream channel adjacent to the rockshelter. Identified ash samples include Newberry (1000 RCYBP), Mazama O (6850 RCYBP), and St Helens SG (13,000 RCYBP), the latter collected from buried deposits above fragments of camelid teeth and a chalcedony flake tool. Trenching of both fluvial and eolian deposits in 2013 explored the relationship of erosion and deposition processes to cultural deposits within the rockshelter, yielding additional tephra samples to enhance the chronology of the region. Ash mantled clays preserve diagnostic artifacts associated with the Western Stemmed tradition; plus overshot flakes, bifaces with overshots, gravers, and fluting flakes that may be associated with fluted point technology. This paper, newly updated from the 2013 Paleoamerican Odyssey meeting reports the results of tephra analysis on samples collected from both archaeological and geologic deposits, and their relationship to diagnostic projectile points, extinct animal species, and radiocarbon dated features.

O'Grady, Patrick [324] see Collins, Joe

O'Hara, Michael [66] see Hegmon, Michelle

O'Keefe, Brendan [340] see Enloe, James

Okumura, Mercedes (University of Sao Paulo, Brazil) and Astolfo Araujo (University of Sao Paulo, Brazil)

[69] *Assessing Shape Variation of Early Holocene Bifacial Points from South-Eastern and Southern Brazil Using a Geometric Morphometric Approach*

Since the 1960s, most of the bifacial points found in archaeological sites from South-eastern and Southern Brazil have been lumped under the name Umbu Tradition, regardless of their geographical

origin or their chronological information. Through the application of geometric morphometric methods, this paper aims to test the hypothesis that there are important differences in the early Holocene bifacial points associated to the Umbu Tradition in South-eastern and Southern Brazil. We have analysed 248 bifacial points from South-eastern (states of Minas Gerais and São Paulo) and Southern (states of Paraná and Rio Grande do Sul). The sample spans from the Early to the Late Holocene. Our results point to important differences in the morphology of the points from Minas Gerais, São Paulo, and Paraná, while the materials from Rio Grande do Sul suggest a greater morphological homogeneity. The differences observed among different regions may suggest that there is a hidden and not yet truly recognized morphological diversity within the Umbu Tradition.

Oland, Maxine (Smith College)

- [338] *"With the Gifts and Good Treatment That He Gave Them": Elite Maya Adoption of Spanish Material Culture at Progresso Lagoon, Belize*

Spanish artifacts make up a tiny percentage of all artifacts found on the west shore of Progresso Lagoon, a 15th-17th century Maya community in northern Belize. Textual references suggest that Spanish encomenderos distributed these objects as "gifts" during reduction and pacification efforts, but the careful distribution of these artifacts suggests specific political and economic choices made by Maya individuals. This article compares Spanish material culture from Progresso Lagoon with other Maya sites along the frontier of the Spanish colony, in an attempt to define how strategies of Maya consumption of foreign objects varied with intensity of colonial interaction, social status, and function. The consumption of Spanish artifacts at Progresso Lagoon suggests elite strategies for retaining legitimacy in the uncertain political and economic climate of the fifteenth through seventeenth centuries.

Olguin, Ivan

- [238] *Imposición cultural y superposición arquitectónica en el centro cívico-ceremonial de Teotitlán del Valle, Oaxaca.*

La Zona Arqueológica de Teotitlán del Valle, Oaxaca, ubicada en el centro de dicha comunidad, se distingue por los admirables mosaicos de grecas de piedra que decoran el basamento prehispánico del Periodo Postclásico (900- 1521 d. C.), que al parecer sostuvo un complejo Cívico-Ceremonial zapoteco con edificios administrativos y residenciales similares a los que se encuentran en los sitios arqueológicos de Yagul y Mitla. Como en este último sitio, en Teotitlán se puede advertir una imposición cultural, manifestada por la superposición de un templo católico sobre un edificio prehispánico. En coordinación con el Centro INAH-Oaxaca y con la colaboración de la comunidad de Teotitlán del Valle, en el año 2012 se realizaron trabajos arqueológicos en el basamento prehispánico mencionado, adyacente al templo católico construido por la orden de los dominicos en el S. XVI. Con esta exploración se pudo registrar una serie de materiales arqueológicos, así como varios elementos arquitectónicos que corroboran la persistencia de los vestigios del recinto Cívico Ceremonial zapoteco por debajo del Templo católico, mismos que serán expuestos en esta ponencia.

Olsen, Erica (Crow Canyon Archaeological Center)

- [314] *Discussant*

Olszewski, Deborah

- [236] *Early Epipaleolithic (Nebekian) Strategies in the Western Highlands of Jordan: Wadi al-Hasa Region*

Early Epipaleolithic groups in the Levant have often been described as highly mobile. Although there are a few exceptions to this characterization (e.g., Kharaneh IV and Ohalo II), most sites are aerially small and said to represent short-term camps. This creates a scenario in which hunter-gatherer-forager groups were essentially constantly on the move. In this paper, we use information from the sites of KPS-75, Yutil al-Hasa, Tor Sageer, and Tor at-Tareeq in the Wadi al-Hasa region of Jordan to examine the concept of mobility and the "meaning" of site size and site type in the Pleistocene landscape. We argue that aerially small sites do not necessarily constitute short-term occupations, but as highly visible archaeological places in the landscape, they represent investment in place akin to the concept of "persistent places." Sites that might indicate high mobility would have been quite ephemeral and often are not recorded by traditional surveys which focus on identifying highly visible sites rather than on systematically recording "nonsite" locales.

- [236] *Chair*

OMansky, Matt (Youngstown State University)

[191] *Shaping Identity along Maya Trade Routes: The View from the Highland-Lowland Interface*
Recent research at a number of sites on trade routes along the Maya highland-lowland interface detected a range of cultural identities within a narrow geographic region. Material culture at Sebol, in the Alta Verapaz, indicates a populace with a strong highland identity while Cancuen, to the north, is a lowland site. Located between these sites, Raxruja Viejo is a large center with an amalgamation of highland and lowland features. This paper explores ways in which these sites, as nodes in ancient trade routes, drew from different regions to build identity, as reflected in material culture.

Omay, Barbara [140] see Leriche, Christina

O'Meara, Carolyn (UNAM)

[73] *Physical and Linguistic Marking of the Landscape – Are They Connected?*

One way humans mark or delimit the landscape they inhabit is through the naming of places. While there are numerous studies of the toponymies of the cultures of the world, it is not clear what kinds of places get named cross-culturally (see e.g., Burenkult & Levinson 2008). Humans also leave physical markers in their landscape, not just in the form of evidence of a camp site, for instance, but also markers with informational content. This work looks at toponyms in Seri (using data from Moser & Marlett 1995 and the author), a hunter-gatherer group living in northwestern Mexico, to see if there is an overlap between the types of geographic entities that receive toponyms in Seri and the places that are the result of physical modification. In particular, Seris had a common practice of burying their child's placenta in the desert near to its birthplace, sometimes accompanied by the planting of a cactus. It has been shown that Seri identified a larger area surrounding the burial site as corresponding to "their territory" (Hine & Hills 2000), however, these areas do not correspond with a named place.

Ongwen, D [17] see Basell, Laura

Oram, Richard (University of Stirling, UK)

[29] *With Their Backs to the Ocean: Socioeconomic and Cultural Reconfiguration in Hebridean Scotland c 1250 to c 1450*

Systemic changes in settlement structures and exploitation regimes in the Hebridean islands of Scotland in the two centuries after 1250 CE have been interpreted traditionally as consequent on primarily political factors. Shifts across that period from deep-water marine exploitation to inshore fishing and from mainly arable cultivation on the calcareous shell-sand machair districts to intensive pastoral activity on the interior 'black-land' areas evident in the archaeological and historical record, however, point to long-term societal responses to environmental change. While benefiting from a broader range of resource exploitation opportunities than were available to their Iceland and Greenlandic kinsmen, the responses of the Hebridean population to a range of environmental impacts resulted in social and cultural reconfiguration at fundamental levels. This paper explores those changes in the context of North Atlantic weather patterns and long-term climatic deterioration at the close of the MCA. It considers the impact of increased North Atlantic storminess, coupled with raised precipitation and falling temperatures, on the economic regime established in the region in the twelfth and thirteenth centuries. It concludes with discussion of the collapse of external market-oriented production, elite consumption and tribute-gathering within a subsistence economy, and the (re-)emergence of predatory behaviour.

[29] *Discussant*

Orange, Marie [249] see Le Bourdonnec, François-Xavier

Orange, Marie (Southern Cross GeoScience, Australia), François-Xavier Le Bourdonnec (IRAMAT-CRP2A, UMR 5060 CNRS-Université Bordeaux 3), Anja Scheffers (Southern Cross GeoScience, Australia) and Renaud Joannes-Boyau (Southern Cross GeoScience, Australia)

[249] *Introducing a New Complementary Geochemical Approach for Obsidian Sourcing: The Case of the Western Mediterranean*

Since the 1960s, and the first "real" sourcing campaign of obsidian artefacts by Cann and Renfrew (1964), analytical methods used to characterise obsidian and other rocks have seriously improved in precision and effectiveness. The use of analytical techniques such as PIXE-PIGME, SEM-EDS, XRF, INAA, ICP-MS or LA-ICP-MS, have led to various degrees of success, and methodological problems still

remain (artefact's size, surface regularity, soil contamination, etc.). While most of these techniques allow the characterization of the main obsidian sources, some artefact's provenance remain problematic, requiring more enhanced methods. To overcome these questions, we propose to use a multi-isotope ratio analysis. The use of multi-isotope ratios has been widely applied in geological research, but never to obsidian sourcing for archaeological purposes. In this study, we review the application of several characterization techniques (SEM-EDS, XRF and LA-ICP-MS) in a geologically well-known region, the west Mediterranean area, and then compared the results obtained with the new method.

Oré, Gabriela [19] see Makowski, Krzysztof

Ore Menendez, Gabriela (Vanderbilt University) and Steven Wernke (Vanderbilt University)

[188] Time Maps: Site-Intensive Lichenometric Survey at a Planned Colonial Town in Highland Peru
Late prehispanic and colonial-era settlements in the highland Andes often present extensive and complex architectural remains. We present a lichenometry-based methodology for dating such settlements. Though well established as a dating method in earth sciences, lichenometry remains underutilized in archaeological research in the Andes, despite its reliability, cost-effectiveness, and simplicity. In this case, we recorded metric and qualitative data on Rhizocarpon geographicum specimens growing on the surfaces of fieldstone buildings at a large planned colonial town (*reducción*) in southern highland Peru with extensive architectural remains and a four century occupational sequence. The results of this site-intensive survey provide near 100% coverage of lichenometric data from the architectural remains of the settlement, with over 800 specimen measurements. Prior studies established a growth curve, enabling absolute dating of building construction and abandonment. GIS-based analysis defines the sequence and extents of construction and occupation through a series of interpolated date surfaces. The results define the areas corresponding to prehispanic occupation, the initial construction of the colonial settlement, and areas remodeled or overbuilt during the mid- and late-colonial eras. We also discuss potential broader applications of the methodology.

Orijemie, Emuobosa

[40] Late Holocene Environmental Change and Cultural Response in South-Western Nigeria

The environmental changes in the late Holocene (4500-2000 yrs B.P.) of south-western Nigeria were very dramatic altering vegetation, precipitation and river systems. These changes included the complete disappearance of the mangrove swamp forest, decline in hitherto diverse rainforest, significant lowering of sea levels and influx of freshwater into swamps. The hitherto dense rainforest environment provided a base for the local subsistence economy synonymous to hunter-gathering of terrestrial and aquatic resources. Local communities also maintained interactions with culturally-similar groups in Bénin and Ghana. Upon the subsequent marked increase in freshwater, establishment and spread of secondary forest and coastal savanna, economic adaptation turned to agricultural practices for food production. This shift in culture though was the main way to achieving food security and sustainability, altered the environment beyond its threshold. These major contributing factors along with the introduction of foreign cultures promoted by colonialists prevented the re-establishment of the mangroves and rainforest.

ORourke, Mike

[165] Mapping Value: Making Space for 'Significance' in GIS-Based Archaeological Site management.

Much of the Arctic archaeological record is situated along or near the modern shoreline. These coastal sites are at substantial risk of damage or outright destruction by numerous processes which continually reshape the Arctic coasts. Such processes have been forecast to increase in severity and scope as climatic conditions continue to change in the years ahead, a situation which has necessitated new ways of thinking about regional-scale archaeological resource management. The threats of relative sea level rise and accelerating rates of shoreline erosion have been employed through GIS analytical frameworks to promote an informed approach to resource management by highlighting regions most at risk. Archaeological resource 'value' is a complicated and often contentious measure of public interest which has been mobilized in the management of heritage resources around the world. The uncritical application of value-measures in archaeology has been heavily critiqued however, and for good reason. Such critiques appear to have prevented the use of 'value' in GIS-based heritage management frameworks. This paper outlines my efforts to align notions of 'value' and 'threat' through the establishment of an archaeological site 'vulnerability model' for use in the dialogical management of archaeological sites along the Beaufort Sea, NWT, Canada.

O'Rourke, Laura

[204] *The View from Las Galeras, a Small Olmec Site in the Region of San Lorenzo*

The relative absence of stone at Las Galeras, a village in the hinterland of San Lorenzo, highlights how the tight control of imported stone into the region of San Lorenzo in the late Early Formative period was one of the ways that the ruling elite of San Lorenzo wielded and manifested economic and social power in this early civilization. Stone had to be imported into this region of clay and sand; the raw basalt and andesite stone that was used to create monumental architecture and sculpture, as well as the obsidian used in rituals, was also used to make utilitarian tools. As an imported and restricted commodity, the line between utilitarian and luxury is fluid: the obsidian blade that cuts into an animal and the basalt mano and metate that grind food are utilitarian implements; at the same time, the scarcity of these materials makes them luxury goods. In this way, the multiple uses of stone and the difficulty in obtaining it blurs the line between the everyday and the ritual.

Orozco, Joseph (CSULA)**[70] *An Examination of Faunal Remains from Midnight Terror Cave***

Over the course of three seasons from 2008-2010, California State University, Los Angeles conducted an intensive surface survey of Midnight Terror Cave. These investigations documented extensive modification of the cave to create broad, level areas suitable for public ritual. The project also recovered extensive human skeletal material thought to be the remains of sacrificial victims. Additional evidence of ritual comes from faunal remains associated with ritual features in the cave. In the course of the analysis, 682 animal bones were examined at Cal State L.A. The assemblage is unusual in containing high frequencies of fish and bird bone, but two species commonly identified in Maya ritual assemblage occur in low numbers. White-Tailed Deer (*Odocoileus virginianus*) and Ocellated Turkey (*Meleagris spp.*), which typically make up the largest amount of mammal and bird bone respectively in documented assemblages, are represented by only a single element each at Midnight Terror Cave. There are relatively few cave faunal analyses published so it is not possible to establish the nature of a typical cave assemblage but it is startling to see how divergent the Midnight Terror Cave assemblage is from others. A number of suggestions will be advanced for why this might be.

Orrego Corzo, Miguel [253] see Schieber de Lavarreda, Christa

Orser, Charles (Vanderbilt University)**[118] *The Capitalist Mode of Production and the Postcolonial Project***

Postcolonial studies have appeared within almost every discipline, including archaeology. Historical archaeologists using postcolonial theory have tended to adopt two approaches to the subject of capitalism: either they have neatly sidestepped it or ignored it completely, or they have claimed to be studying it while actually masking its impacts. Even some historical archaeologists who have investigated the post-1500 CE modern world have adopted these strategies. The seepage of neoliberal strategies into postcolonial studies has significantly hindered our ability to critique the capitalist project. Now is the time to reclaim the original radical and Marxist roots of the postcolonial perspective and to reinsert the mode of production concept within it.

Ortega-Cabrera, Veronica [293] see Archer, Jorge

Ortegon Zapata, David [158] see Dunning, Nicholas

Ortegón Zapata, David [195] see Smyth, Michael

Ortiz Díaz, Edith [293] see Cockrell, Bryan

Ortiz Ruiz, Maria (El Colegio de Michoacán A. C. Centro de Estudios Arqueológicos)**[319] *Los hornos para cal en el área Maya: caracterización de una tecnología prehispánica***

En esta ponencia proponemos la clasificación de la tecnología utilizada por los Mayas prehispánicos para la producción de cal. Esta propuesta surge de los de las excavaciones realizadas en el sitio de Oxkintok en el noroccidente de Yucatán. Estos datos nos permitirán re evaluar las clasificaciones y los conocimientos sobre la tecnología de los hornos de cocción de los mayas prehispánicos, los cuales han sido adjudicados etnográficamente.

Ortiz Vallejos, Jose Raul (University of Arizona)**[312] *Regional Interaction in the Northern Maya Highlands of Guatemala***

Recent archaeological excavations at El Soch, Guatemala, a site located along the Chixoy River on the eastern end of the Cuchumatanes Mountains, have provided new archaeological data concerning the development of societies in the northern Maya highlands of Guatemala, but they have also raised a number of questions about how archaeologists should approach broad regional inter-comparisons of material culture. Although this region has only been sporadically addressed by systematic archaeological research, it is promising the evidence gathered at El Soch portrays a dynamic region with the interaction and movements of people, ideas, and goods. This dynamism is found in all sub-regions in the northern highlands, though mainly between the eastern Cuchumatanes and the Alta Verapaz regions. This paper summarizes the ceramic chronology and the construction sequence of El Soch suggesting that shifts in material culture assemblages and practices from the end of the Early Classic to the Late Postclassic can be understood as indicators of regional interaction between different social groups across the northern highlands. I propose that significant social processes and events, such as migrations and expanding trade networks, could explain some regional patterns in the northern Maya highlands in different phases of its chronology.

Ortman, Scott (CU-Boulder)**[289] *Economic Development in Pueblo History: Methods and Data from the VEP***

Recent work in macroeconomics suggests that culture, and especially ideas that impact the scale of social coordination, are an essential ingredient of economic growth. It also suggests that growth does not derive from specific details of a capitalist economy but from more general aspects of human technology and sociality. These emerging perspectives create an important opening for a renewed dialogue between archaeologists and economists which may also lead to a greater role for archaeology in the public discourse. In this paper, I propose methods for translating the archaeological record into measures that are relevant for studying growth processes in the past and apply these measures to the episodes of Pueblo history that are the focus of the Village Ecodynamics Project. These analyses suggest that significant economic growth took place during the Chacoan era and in the century following the migration of Pueblo ancestors from the central Mesa Verde to northern Rio Grande study areas.

Ortman, Scott [289] see Schwindt, Dylan

Osborne, Daniel [79] see Wandsnider, LuAnn

Oscar Daniel, Llanos Jacinto [146] see Aïcha, Bachir Bacha

Osorio, Daniela [23] see Capriles, Jose

Osterholt, Amber**[272] *The Bioarchaeology of Trophy Bones: Identity and Postmortem Agency in the Archaic Eastern Woodlands***

The practice of trophy taking is a human activity that has been documented globally throughout time. In the Eastern Woodlands of North America, it was prevalent during the late Middle and Late Archaic and found at many ($n=22$) sites along major waterways in the Ohio and Tennessee River Valleys. Outside of this area, there is a marked decrease in the occurrence of trophy taking. This indicates an area of densification of trophy taking that deserves further investigation. Reasons for delimitation of trophy taking in this region are explored through analyses of trophy victims, distinguished by missing limbs or crania associated with perimortem cut marks, and articulated limbs and crania buried as grave goods. The meaning and power of trophy taking events, both removal and deposition, is examined using perspectives of post-mortem agency, which highlights the ways in which body parts retain the identity and agency of the individuals from whom they were harvested. Thinking about trophies in this manner contextualizes the ways trophies were used to establish and maintain group identity and social boundaries in the Ohio- Tennessee River Valleys during the late Middle and Late Archaic.

Osterholtz, Anna (University of Nevada Las Vegas)**[28] *Patterned Processing as Performative Violence at Sacred Ridge***

Violence serves social functions. Performative violence is used to reinforce social behavior and to create and reinforce social relationships between aggressors, witnesses, and victims. Sacred Ridge (a PI site in southwestern Colorado) is a large EP (Extreme Processing) assemblage where at least 33 individuals were killed, disarticulated and fragmented, and their remains placed within a pit structure. The crania, in particular, exhibit consistent patterning in fracture distribution and type, mutilation, burning, tool marks, and missing bone; this indicates that individual crania were treated similarly regardless of age or sex. Distribution of the remains within the pit structure indicates that the crania were deposited in a fragmented state, meaning they would have been unidentifiable as individuals and possibly as human beings. This presentation explores the patterned processing of the crania as performance. The roles of the aggressors, witnesses, and victims associated with this assemblage are explored through this performative lens.

[28] Chair

Osterholtz, Anna [67] see Martin, Debra

Osterhoudt, Curtis [290] see Goodale, Nathan

Otaola, Clara [23] see Neme, Gustavo

Otaola, Clara (CONICET-IANIGLA Museo de Historia Natural de San Rafael)

[206] *The Problem of Space Averaging In Zooarchaeological Data from Central Western Argentina: Different Interpretations about Resource “Intensification”*

The possible existence of a resource intensification process had been debated widely in central western Argentina. However, spatial units used to support the intensification model have not been critically considered in previous publications. Intensification process had been proposed considering southern Mendoza region as a unique spatial unit. This analytical lumping could have caused wrong interpretations about changes in faunal consumption during the Late Holocene. In this paper we show that changing the spatial analytical units produce different interpretations of faunal consumption in the past. Depending on the size of the spatial scale, the differences in the taxonomic richness through time will be sharper or lighter.

Otero, Francisco J. [63] see Casar, Isabel

Otis Charlton, Cynthia L. [72] see Fournier, Patricia

Ottenhoff, Randy (The University of Central Lancashire)

[334] *Incised Stones of the Great Basin: Associations and the Archaeology of Context*

This paper explores the close associations incised stones have with other artifacts at two sites in the Great Basin. Incised stones are small, portable, mostly flat objects that have designs incised on the surface. Left at caves, rock-shelters and open-air sites, these stones are a poorly understood artifact class not only in the Great Basin, but also worldwide. The placement of an incised stone beside other artifacts in just one excavation level may not hint at a pattern. However, my research examines every excavation level with incised stones from two sites: Hogup Cave, and Ruby Cave. In each site, incised stones have been grouped with their closest artifact neighbors. Does a pattern emerge? After a brief introduction of the chronology of incised stones, a combination of plan maps, graphs, and photos will walk through the deposition of incised stones. Patterns in the record will be discerned, and suggestions of what these patterns mean will be made.

Otto-Bliesner, Bette [13] see Cegielski, Wendy

Overholtzer, Lisa [179] see Fox, Keri

Overholtzer, Lisa (Wichita State University) and Angélica López-Forment (University of Calgary)

[293] *Turkey, Beef, or Veg? Diachronic and Synchronic Variation in commoner Household Production and Consumption Practices at Xaltocan, Mexico*

With the proliferation of household archaeology in Mesoamerica, archaeologists have increasingly carried out extensive, detailed excavations of domestic structures and associated features. Such excavations and greater attention to spatial context within household space have provided scholars with the opportunity to reconstruct the practices of everyday life in households. However, Mesoamericanists have less often been concerned with interpreting these data in terms of the decisions of individual commoner households. Drawing on theories of agency and practice, this paper examines commoner production and consumption practices using faunal evidence from sealed middens adjacent to domestic structures. In particular, it considers variation in these practices along both diachronic and synchronic axes. It reconstructs how members of the household known as Structure 122 altered their animal-related production and consumption practices as their broader political and economic contexts changed—ranging from the height of Xaltocan's power in the 13th century, to the rise of Mexica and other Nahuatl-speaking groups in the mid-14th century, to the early colonial era. It also reconstructs how such practices differed between families—comparing the Structure 122 and 124 households and patterns evident at the site-level—at a single point in time, during the early colonial period.

Owlett, Tricia [51] see Zhao, Hao

Owlett, Tricia (Stanford University)

[235] *Regional Perspectives on Shellfish Gathering from the Ryōkyō Islands, Japan*

The antiquity of shellfish gathering along the Ryōkyō Islands dates from the region's earliest inhabitants into the modern era. Invertebrate remains from the Ryōkyō Islands, Japan were identified using traditional zooarchaeological methods to determine the contribution of shellfish to the diet during the Middle to Late Shellmidden period (4000 B.C. to AD 1100). I quantify spatial and temporal variations at intra and intersite levels, and use ethnography to place mollusk gathering in the unique socio-historical context of these three shellmidden sites. The addition of these data to existing studies contributes to our knowledge of food procurement strategies, changing subsistence patterns, and paleoenvironmental reconstruction during this time period.

[235] *Chair*

Ownby, Mary [117] see Elson, Mark

Owoc, Mary Ann (Mercyhurst University) and Janna Napoli (University of Maryland)

[270] *From Ideology to Identity: Epitaph Memorialization in the History of the American Cemetery*

This presentation examines epitaph popularity and content in north-western Pennsylvania from the beginning of the 19th century to the present, and situates these trends within the context of the wider monument industry, prevailing ideologies and constructions of personhood, and, material forms. Notable trends in popularity, visibility, origin, and content can be seen to characterize epitaph use during this period. The extent to which detailed studies of memorial texts further our understanding of the ideologies that inform, and are actively manipulated by mourners and the funerary industry alike, will be examined.

Paap, Iken (Instituto Ibero-American Berlin)

[195] *Dzehkabtún (Campeche, México) – un Sitio Maya en la Zona Transitoria entre Puuc y Chenes*

En 2012 comenzaron las investigaciones sistemáticas en el sitio maya de Dzehkabtún (Campeche/Méjico) por el Proyecto Arqueológico Dzehkabtún (Instituto Ibero-American de Berlín) y con financiación por la Fundación Científica Alemana (DFG). Los resultados de las primeras excavaciones en 2013 indican que el sitio fue habitado desde el Preclásico Medio hasta el Epiclásico o el Postclásico Temprano. Aparte del levantamiento topográfico y una reconstrucción virtual en 3D de la arquitectura del sitio, el proyecto actual se dedica a analizar el contexto sociopolítico en la transición del Clásico al Postclásico en el área del Chenes, así como las causas del abandono de este sitio y de la mayoría de los sitios del Clásico en el centro de la península de Yucatán. Por un lado, los resultados de la primera temporada de excavaciones estratigráficas indican una continuidad marcada entre los habitantes del Clásico Tardío/Terminal y los constructores de edificios tipológicamente epi- y postclásicos en Dzehkabtún. Por otro lado, revelaron una ocupación inesperadamente marcada ya desde el Preclásico Medio y una amplia participación en las redes de intercambio de larga distancia durante el Clásico Temprano y Tardío.

Pacheco Arias, Leobardo (Universidad de las Américas Puebla-Zona Arqueológica de Monte Albán)**[238] Contexts of the Religious Architecture in Atzompa, Oaxaca**

Among the most impressive buildings made by the ancient Zapotec people who lived in the Valley of Oaxaca during the prehispanic era are their places of worship. Their building design, decoration and associated offerings made of ceramic allow us to study some aspects of ancient Zapotec religion and rituality. Here, we examine the architectural and ornamental features of five temples, four of them explored in the core area of the Monumental Complex of Atzompa (Buildings 3, 4, 6 and 16) and one on its periphery (Building 1 at Plaza K). These buildings, excavated between 2007-2012, are architecturally similar but with their own characteristics, are compared with those of the great city of Monte Albán that were built around the Late Classic Period. In addition to describing the patterns of distribution and construction of these temples, we seek to explore the links with recent archaeological objects found in these contexts, such as Zapotec effigy vessels.

Pacifico, David**[59] Urban Households and Social Hierarchy at El Purgatorio, Peru**

Following radical urban ethnographers, archaeologists have recently turned to examination of houses, households, and communities for understanding the way in which non-elites and their everyday practices contributed to large scale urban processes. This paper presents research from the residential district at El Purgatorio, Peru, dated to the latter part of the Late Intermediate Period (ca. AD 1300-1400). This research employed a "neighborhood archaeology" approach founded upon household archaeology and the community archaeology of Yaeger, Canuto, Wernke, Mac Sweeney, and others. Analysis of residential architecture in the popular residential district of El Purgatorio indicates that social hierarchy and household configuration were interrelated at El Purgatorio. This interrelation suggests that household configuration and kinship were important factors in the development of inequality at El Purgatorio. However, the examination of ceramics and organics recovered from these residences suggests that material inequalities in portable goods were not as pronounced. While preexisting social inequalities were brought to the city and further developed there, citywide economic institutions may have also worked to diminish material inequality between residents of diverse social statuses.

Pack, Crista [336] see Odegaard, Nancy

Padilla Gutierrez, Eliseo F. [128] see von Nagy, Christopher

Pagliaro, Jonathan (Santa Clara University), Travis Stanton (University of California, Riverside) and Donald Slater (Brandeis University)**[31] Is There an Ek Complex in Central Yucatan? Evaluating Early Ceramics from Yaxuna and Aktun Kuruxtun**

The Preclassic period in the northern Maya lowlands has been a focus of intense discussion for the past 15 years. Several projects have reported new data that indicate that the Ek ceramic complex from Komchen should predate Early Nabanche pottery and would thus date to the transition from the Early to Middle Preclassic. These data, however, come from the western side of the peninsula, and little is known about the material culture that existed at this transitional point in Central Yucatan. In this paper we discuss the ceramics and radiocarbon dates from two sites in the Yaxcabá region that bear on the transition to ceramic-using communities. Early dates from Yaxuna indicate that a version of Early Nabanche pottery dates as early as 1000 B.C. and is mixed with Ek ceramics that may have been imported. Dating from Aktun Kuruxtun corroborates these early Early Nabanche dates and provides evidence that Yotolin Burnished, a type that George Brainerd placed within the Early Preclassic, may be indicative of a subcomplex associated with the earliest Early Nabanche pottery in Central Yucatan.

Piales, Matthew (University of Arizona)**[200] Refinement of the Río Sonora Chronological Sequence**

The Río Sonora region continues to suffer from a lack of chronological control and, in particular, temporally sensitive diagnostic artifacts. In addition, the region lacks refined typological classifications of ceramics and other classes of material culture. These two problems are obviously closely related. Previous research in the area relied upon C14 analysis and a classification of architectural styles. This is extremely problematic since architectural styles are not mutually exclusive between periods, and vary widely across space. Reliance on C14 data is also problematic due to the wide error ranges inherent to

the calibration of dates from the 15th to 17th centuries. This paper will begin to address these issues by presenting 18 thermoluminescence dates, most made directly on Río Sonora Ceramics, from the Moctezuma Valley. Dated samples were preferentially selected from floor and other contexts to simultaneously evaluate architectural styles. Results provide preliminary ages for a variety of Río Sonora textured types and several styles related to the Casas Grandes tradition. These data allow an initial formulation of late period occupation in the Moctezuma Valley and a basic comparison with previous models based mainly on Sonora Valley data.

Piales, Matt [210] see Ballenger, Jesse

Paixao, Eduardo [116] see Goncalves, Celia

Paixão, Eduardo (University of Algarve), João Cascalheira (University of Algarve), João Marreiros (University of Algarve), Telmo Pereira (University of Algarve) and Nuno Bicho (University of Algarve)

[116] *Technological Approaches to Stone Tool Production: The Case of Layer 2 of Mesolithic Shelmiddens of Cabeço da Amoreira, Muge (Portugal).*

The discovery of the Muge shellmiddens dates back to the nineteenth century and is recognised to be of high importance to international Mesolithic studies. Located near the Tagus River, in central Portugal, this complex has provided high quality Mesolithic faunal remains, human remains, and lithic assemblages. This study will focus on the technology and typology of lithic artifacts, from the Layer 2 of Cabeço da Amoreira from the Muge Mesolithic complex. One of the main goals is to understand the importance of the various raw-materials present at the site and their relation with the different techno-typological aspects. This study seeks to advance our knowledge of economy, functional and stylistic elements, and its relation to the emergence of social complexity in the Muge Mesolithic communities.

Paiz Aragon, Lorena (Universidad del Valle de Guatemala) and Bárbara Arroyo (Instituto de Antropología e Historia de Guatemala)

[197] *The Maya Highlands and the Pacific Coast: Two Important Regions for the Development of Social Complexity of Southeastern Mesoamerica*

Sites located on the Maya Highlands and Pacific Coast of Guatemala demonstrate complex developments that some have proposed represent the emergence of some form of state society. The importance of this area dates back to the Preclassic period, but it is only briefly mentioned in historical accounts of the region. The diverse architecture and sculpture manifestations from these two regions show intense cultural exchange between them and other areas from the Maya lowlands, Eastern region, and Central Mexico. The sites located in these zones have great importance and relevance for the understanding of Mesoamerican sociocultural developments. This paper will summarize the state of studies in these areas and their relationship with neighboring regions.

Paja, Laszlo [222] see Giblin, Julia

Paja, Laszlo (Hungarian National Museum), Julia I. Giblin (Quinnipiac University), Györgyi Parditka (Hungarian National Museum) and Paul R. Duffy (University of Toronto)

[222] *Cremations in Contexts: the Micro-stratigraphic Investigation of Population and Practice at the Middle Bronze Age Cemetery of Békés Jégvermi-kert, Hungary*

Demographical and pathological attributes of a cemetery population's skeletal remains can be suggestive of living conditions of people during ancient times, but these data are obtained from cremated remains with greater difficulty. The fragmentary state and special fracture patterns of cremated bones may hide or destroy analytically relevant signs, and the removal of fill from cremation urns further fractures and reduces the amount of anthropologically useful morphological and metric information. Our paper focuses on the bioarchaeological results of the Middle Bronze Age (2000-1500 BC) cemetery of Békés Jégvermi-kert in Eastern Hungary, where most bodies were cremated before final interment. During our analyses, we used classical anthropological methods in combination with the layer-by-layer micro-stratigraphic excavation of cremation urns supported by images derived from computed tomography (CT). We demonstrate how the combination of CT visualization, in situ micro-excavation data, and the anatomical and metric characteristics of bony fragments informs us not only about the living conditions of ancient times, but also about mortuary practices of the community that rarely get documented.

Palacios-Fest, Manuel**[267] Paleoecology of the Blackwater Draw, South Bank, New Mexico**

The paleoecological reconstruction of Blackwater Draw in eastern New Mexico is of major significance to understand the environmental impact on human occupation in the arid Southwest. This study uses diatoms and microinvertebrates (ostracodes and mollusks) to identify patterns of environmental change for the time span between the Last Glacial Maximum (LGM) and the early Archaic period, covering the most important geoarchaeological episode, the Clovis occupation, in the region. Diatoms are abundant and show distributional patterns based both on salinity and brine composition. Ostracodes and mollusks, by contrast, are rare but indicate the pond's water chemistry and stream flow.

Palek, Cory (Graduate Student)**[172] A Comparative Analysis of Local and Non-local Chert Usage at Two Late Prehistoric Sites in South Western Pennsylvania.**

Recent investigations of Late Prehistoric lithic assemblages have reported the appearance of numerous chert types. Many of these investigations explored the significance and variation of local chert sources. However, there has been little research into the use of non-local chert type in Monongahela lithic assemblages. Onondaga and Loyalhanna chert sources can be found in close proximity to many Late Prehistoric sites in Western Pennsylvania and constitute the majority of the lithic material found in these assemblages. Non-local chert types such as Flint Ridge, Upper Mercer, and Jasper have also been identified in many of these lithic assemblages. This research utilized an intersite and intrasite comparative strategy to identify the differences in lithic reduction strategies between local and non-local chert sources. Two temporally and geographically similar Late Prehistoric sites in South Western Pennsylvania were used in this study.. Lithic analysis exploring variation in lithic industry, technological organization and curation were carried out at the individual site level. The results from the individual site analysis were then compared to identify any distinct variation between the two sites.

Paling, Jason [153] see Lowry, Justin

Palka, Joel (University of Illinois-Chicago)**[72] Metal Tools in Lacandon Maya Economics**

Metal tools of European manufacture quickly entered the exchange networks in the remote southern Maya Lowlands during the Spanish colonial period. While metal tools did not completely replace Maya stone implements, including chert projectile points and scrapers, machetes and axes became essential for native agriculture and local economies. This presentation covers the history and archaeology of the introduction of Euro-American metal tools to Lacandon Maya and their ancestors in Petén, Guatemala, and Chiapas, Mexico, and how these items transformed indigenous trade and agriculture.

Pallan Gayol, Carlos (INAH, Mexico/University of Bonn, Germany) and Antonio Benavides Castillo (INAH, Mexico. Regional Center Campeche)**[195] The Hieroglyphic Monuments from H-Wasil, Campeche**

At the heart of the Puuc region lies the site of H-Wasil, in Campeche, a few kilometers west of Labna and south of Kabah. It was first reported in 2007 by Antonio Benavides Castillo and included in the surveys conducted by Stephan Merk. The authors present here the results of a more in-depth field documentation and epigraphic analysis of the site's epigraphy. Standing architecture at H-Wasil displays Late- to Terminal Classic features, and of special interest is a small group of monuments with hieroglyphic inscriptions. The present paper deals with their decipherment and seeks to contextualize these findings into a broader perspective encompassing regional interaction among Puuc sites, as an effort toward overcoming the still prevailing lack of epigraphic documentation and analyses in this region when compared to other parts of the Maya lowlands. This type of work, when extended to several other sites in the Puuc, could then serve as a foundation for enabling historical reconstructions of such aspects as geopolitical interaction and prevailing rulership institutions and sociopolitical conditions during the decades immediately prior to the collapse and abandonment of numerous sites within this region.

Pallán Gayol, Carlos [319] see Ek, Jerald

Palmison, Molly (Texas State University - San Marcos)**[109] A Preliminary Analysis of the Robberg Assemblage at Erfkroon**

The site of Erfkroon, located in the western Free State of South Africa, contains an artifact and faunal assemblage that spans the Middle and Later Stone Ages. It has produced the only excavated Robberg assemblage found at an open air site in southern Africa. The majority of the assemblage consists of bladelets and bladelet cores which typify Robberg lithic assemblages found in caves and rock shelters on the South African Cape and interior. A Lockshoek component found stratigraphically above these artifacts helps demonstrate that these microliths fit squarely within the Robberg industry. These bladelets, along with cores, raw materials, processed faunal remains, multiple hearth features and the site's proximity to water, reflect camp activities. An analysis of tools and debitage revealed that both upland and nearby fluvial hornfels and cryptocrystalline sources were utilized for the acquisition of raw material. This paper provides an introductory analysis of the lithic technology used during the Robberg industry at Erfkroon and a comparison to cave and rock shelter Robberg assemblages.

Palomo, Antoni [22] see Pique, Raquel

Palumbo, Scott (College of Lake County)

[197] *Domestic Variation within Isthmo-Colombian Political Centers*

This paper explores changes and continuities in domestic organization within four Isthmo-Colombian political centers: Bariles (Panama), Bolas (Costa Rica), El Hatillo (Panama) and Mesitas (Colombia). Evidence for participation in craft specialization, ritual activities and the consumption of "wealth" are explored in detail and indicate clear differences between each case. This variation is discussed in relation to the ongoing discourse in Isthmo-Colombian studies.

Pan, Feifei [42] see Nagaoka, Lisa

Pan, Yan (School of Life Science, Fudan University)

[99] *Discussant*

Panakhyo, Maria (Southern Illinois University Carbondale)

[28] *Creating a Better Understanding of Prehistoric Peoples through Reanalysis of Collections of Commingled Human Remains*

Recent reanalysis of the Lewis Jones Cave Ossuary (LJCO) collection (1SC42) of commingled human remains provides insight into the burial behavior of prehistoric peoples living in northern Alabama during the Middle Woodland period (A.D. 100-500). Excavated from a natural cave site in St. Clair County, Alabama, the LJCO collection of human remains exemplifies Copena mortuary practices through the inclusion of copper and galena burial goods. Reanalysis of the LJCO collection involved the recording of age, sex, pathological indicators, and taphonomic features of nearly 1,300 skeletal elements. Assessment of these variables led to an estimation of approximately 62 individuals and initiated the process of segregating the bone elements into separate individuals. Observation of the physical characteristics of each bone element, specifically the biological features, indicated a diverse population interred within the cave ossuary including individuals of both sexes, all ages, and with varying pathological conditions. Results of this nature suggest prehistoric peoples utilizing Copena mortuary practices in northern Alabama did not practice a separation of individuals during the interment process. Conducting reanalysis of collections of commingled human remains, such as the LJCO collection, may provide a better way to understand the sociocultural practices of prehistoric peoples through their mortuary behavior.

Panich, Lee (Santa Clara University)

[338] *Diachronic Trends in Bead Consumption at Mission Santa Clara de Asís*

Archaeological investigations at California's Mission Santa Clara have recovered thousands of shell and glass beads from a variety of temporal and spatial contexts. In addition to numerous glass bead types, mission-era deposits from Santa Clara have yielded large quantities of beads from two distinct California shell bead traditions: clamshell disk beads and beads manufactured from Olivella shells. In contrast to expectations about technological replacement and decline, archaeological evidence from throughout the colonial period demonstrates that the mission's Indigenous inhabitants continued to use multiple types of shell beads—many likely acquired from other regions of California—alongside glass beads imported by Euroamerican colonists. This paper will examine diachronic trends in bead consumption as revealed through both incidental and intentional deposits, including residential areas, mortuary contexts, and other deposits that may be related to Indigenous mourning ceremonies. Beads from these contexts are

examined with an eye toward understanding how Native Americans at Santa Clara acquired beads of different materials and how they incorporated them into existing yet dynamic cultural practices. The diversity of beads in circulation at Mission Santa Clara suggests Indigenous peoples exercised considerable flexibility in negotiating the constraints to bead access and use posed by Spanish colonialism.

[119] *Chair*

Panich, Lee [119] see Schneider, Tsim

Pantoja, Raul

[195] *Un Acercamiento al Patrón de Asentamiento de Kabah, Yucatán.*

El área cultural conocida como Puuc, localizado en la parte sur del estado de Yucatán, México, geográficamente es un área de características geográficas peculiares, entre ellas, es la zona alta del estado, alcanzando en algunos lugares hasta 100 metros sobre el nivel del mar. Por ello, las poblaciones humanas que se asentaron en tiempos prehispánicos, fueron capaces de adaptarse a condiciones particulares que forman un patrón de asentamiento en toda la región. El estudio aquí presentado, es un acercamiento a la comprensión e interpretación de los asentamiento humanos en el sitio arqueológico de Kabah, lugar que posee una especial posición en el contexto cultural, político y social de la región en diversos periodos del desarrollo dela región.

Papadimitriou, Alkestis [5] see Day, Peter

Papadopoulos, Nikos [318] see Zimmer-Dauphinee, James

Papathanasiou, Anastasia [332] see Pullen, Daniel

Pappas, Christina (University of Kentucky)

[263] *Woodland Perishables in McCreary County, Kentucky*

This poster presents the results of analyses of Woodland-era cordage, matting, and slipper fragments recovered from the Spring Branch Shelter (15McY319) in McCreary County, Kentucky. Comparison with contemporaneous perishable assemblages shows intra-site variation in warps, selvages, and other textile structures and may indicate the presence of two different textile traditions. These findings suggest that the local social group was not homogenous. Expanding interregional interactions encouraged and increased the exchange of information and technologies during the Woodland period. Perishables from the Spring Branch Shelter are an example of these large-scale processes at the level of a site.

Parditka, Györgyi (Hungarian National Museum) and Paul R. Duffy (University of Toronto)

[222] *Mortuary Practice and the Emergence of Middle Bronze Age Communities on the Great Hungarian Plain*

The practice of cremation was introduced to the Great Hungarian Plain near the beginning of the Bronze Age and within 1500 years was virtually the only form of burial treatment of the Plain. This was also a time in which dense settlement and complex trade networks emerged, expanded, and collapsed. In this paper, we trace the arc of changing mortuary patterns across the Bronze Age (2700-750 BC) of the Great Hungarian Plain. We provide chronological and social context for the emergence of the Middle Bronze Age communities that built new trade routes, complex social relationships, and regional identities. We create a backdrop for the several research papers presented in this session, which seek to understand the rich social variability expressed during this regional florescence.

Parditka, Gyorgyi [222] see Giblin, Julia

Paredes-Umaña, Federico (ATACO ARCHAEOLOGICAL PROJECT) and Shintaro Suzuki (UNAM)

[161] *Late Preclassic Southeastern Mesoamerica, beyond the Maya Construct*

During the Late Preclassic, southeastern Mesoamerica was constituted by population nuclei usually described in terms of political entities and ethnic groups. But what is an "ethnic group"? Where should ethnicity be looked for? Terms like Maya, Xinca or Lenca have been used in recent decades to explain

population dynamics during the Late Preclassic. But, how are these human groups archaeologically defined? This paper introduces new archaeological data recovered from field seasons between 2007-2011, focused on monumental sculpture from present western El Salvador, and discuss local symbols and regional dynamics as a productive archaeological approach to group boundaries, contentious ideologies, and local configurations. Additionally we discuss modern bioarchaeological methods in order to obtain other perspectives on human group behavior, represented by biocultural practices, biological affiliation and pathological conditions, among others.

Parezo, Nancy [202] see Fowler, Catherine

Parfitt, Anne (Central Washington University) and Patrick McCutcheon (Professor)

[10] *Chemical Sourcing of Obsidian Lithic Fragments from the Grissom Site (45KT301) to Study Intra-site and Inter-site Source Variability*

The Grissom (45KT301) site, located in northeast Kittitas County, Washington, dates from 2500 B.P. to the Historic period. While much of the assemblage remains unanalyzed, recent preliminary analysis revealed a high frequency of obsidian chipped stone artifacts. A technological, functional and material analysis of 165 pieces of obsidian in addition to XRF analysis of 49 pieces was undertaken in order to provide information on the number of obsidian sources represented, source frequencies through time, and the distribution of sources across space. Nine unique sources were identified in the XRF analysis, one of which was a local tachylite source. While questions about source frequencies through time could not be definitively answered, source variation across space is higher in the southern part of the site than the northern part. Source variation across technological classes met expectations, but an intersite comparison did not show an expected pattern between distance from source and source abundance.

Pargeter, Justin (Stony Brook University)

[255] *Chair*

Pargeter, Justin [255] see Duke, Hilary

Paris, Elizabeth (University of Southern Mississippi) and Roberto López Bravo (Universidad de Ciencias y Artes de Chiapas)

[37] *Kings of the Hills: Borders and Boundaries of Early Postclassic Polities in Highland Chiapas*

This paper investigates the multifaceted ways that the borders and boundaries of small polities in highland Chiapas were defined and maintained during the Early Postclassic period. This region formed part of the western frontier of the Maya linguistic and cultural area, and has been characterized as a relatively autonomous economic and political periphery. Beginning in the Late Classic period, a network of small polities proliferated throughout highland Chiapas. Over time, polity boundaries and interpolarity relationships shifted as populations expanded and contracted, and the sociopolitical turmoil of lowland Maya polities to the east wrought transformations in long-distance exchange networks. Archaeological data can be used to examine the degree of porosity in spatial and social boundaries between highland polities, and the renegotiation of polity boundaries over time. The rulers of highland polities such as Moxviquil synthesized the natural and built environments to create defensible monumental centers, while also using architecture to manifest internal social divisions. We argue that polity boundaries were both permeable and mutable, as the populations and political influence of particular polities waxed and waned over time. Interpolity exchange relationships, and perhaps alliances, are reflected through the distributions of architectural styles, luxury goods, and utilitarian items.

Paris, Elizabeth [191] see Lopez Bravo, Roberto

Parish, Ryan (University of Memphis)

[211] *Provenance of Mississippian Chert Sword-form Bifaces Illustrating Selection Diversity in Inter-regional Resource Procurement*

Existing Mississippian chert resource selection models are largely centered upon well documented quarry sites. As a result, chert source is macroscopically assigned to these static locations on the landscape. Provenance results for a sample of Mississippian sword-form bifaces suggests that material selection decisions are potentially diverse and are not solely confined to material from major prehistoric quarry sites. Provenance data for a sample of Mississippian chert 'swords' highlights a variety of sources beyond

the Dover Quarry Complex possibly indicating inter-regional relationships between Middle and South Appalachian Mississippian polities. Results signify the importance of material selection within cultural meaning.

Park, Robert [115] see Milne, Brooke

Parker, Bradley [6] see McCool, Weston

Parker, Bradley (University of Utah)

[56] *Discussant*

Parker, Megan (Georgia State University) and Christopher Morehart (Arizona State University)

[70] *Culture vs. Behavior: Can We use Archaeobotanical Data from Ritual Contexts in the Maya Lowlands to Document Environmental Change?*

If ancient Maya cave sites were loci for ritual, is it possible to use archaeobotanical data from them to understand environmental change? The often formulaic and canonical dimensions of ritual should instruct us on how cultural models of reality mediate peoples' practices. If plant remains recovered from ritual contexts were in fact key elements of ceremonial assemblages, they possibly cannot be used as direct proxies of environmental changes. But such a statement does not mean they cannot be considered proxies for how people responded to changes in their ecological, political, and social worlds. We examine this issue using archaeobotanical data recovered from several cave sites in the upper Belize valley. We study spatial and temporal patterns of variation in these caves' archaeobotanical assemblages. Using data from over 15 sites allows us to investigate this question while also dealing with different sampling factors. The patterns of variation we document not only reveal the importance of considering how culture mediates human decision making. It also allows us to consider the broader social universe within which ritual practitioners lived—a socio-ecological and political context that conditioned not only their daily lives but also their ritual ones.

Parker, Evan (Tulane University)

[88] *Heritage Conflict Arbitration and the Media in Post-Katrina New Orleans*

In the wake of Hurricane Katrina, the press played a key role in ensuring the protection of the archaeological and historical heritage of the City of New Orleans. This paper examines the media coverage following the disaster and how it shaped the conflict between those who advocated for the recovery of the city's cultural patrimony and those who believed that the reconstruction of New Orleans was ultimately misguided. In the midst of this conflict, archaeologists, historians, and residents promoted the renewal of one America's richest historical treasures, yet the amplification of their voices through the press tipped the conflict in favor of reconstruction. As a result, much of the archaeological and historical heritage of the city has been preserved. Yet new conflicts have arisen with regards to the future of the city's heritage. These conflicts continue to undergo arbitration via traditional and alternative media organizations.

Parkinson, William [310] see Yerkes, Richard

Parkyn, Andrew, Armin Schmidt (GeodataWIZ Ltd: Geo Data + Visualisation), Chris Gaffney (University of Bradford) and Roger Walker (Geoscan Research)

[157] *The MSP40: A Multi-sensor Platform for the Geophysical Evaluation of Sensitive Archaeological Landscapes*

Mobile sensor platforms are now often used for archaeological geophysical surveys, with many of the developments coming from Continental Europe. The development of such platforms has mainly focused on a single sensor type, albeit offering multiple sensors, depths of detection or frequencies, but has not considered the physical impact on soil. The Geoscan Research Mobile Sensor Platform (MSP40) was designed to improve survey efficiency and remain a lightweight system. The platform can collect measurements from three earth resistance configurations simultaneously, showing directional variations of the current's flow through the soil. Additional sensors were integrated on to the hand-pulled cart to record simultaneous fluxgate gradiometer and microtopographic data. The MSP40 has been tested on a number of different soils at various times of the year with encouraging results. However, the continuous

collection rate and combination of techniques means a slight drop in data quality is inevitable when compared with manually collected data. The increased data density, availability of multiple-sensors data and improved rate of collection offset any slight reductions in data quality. The research has shown that the MSP40 can perform low-impact rapid site assessments on 'vulnerable' sites, whilst maximizing the information gained from a single traverse.

Parris, Caroline (Tulane University)**[167] Refitting Refuse: An Assessment of Late Classic Maya Depositional Behavior**

Refitting studies in archaeology have been used to investigate the creation and alteration of the archaeological record by both cultural and natural forces. From assessing the organization of technology to the evaluation of post-depositional stratigraphic disturbance by rodent burrowing, refitting studies can inform on a wide range of behavioral and taphonomic topics. The current study applies refitting methodology to pottery sherds in an attempt to reconstruct the depositional processes involved in the creation of a Late Classic midden deposit from the Maya site of La Corona, Petén, Guatemala. The formation processes associated with this deposit will be used to illuminate specific pre-depositional behaviors of the La Corona Maya. It is proposed that this midden is the result of a single consumption event whose remains were quickly processed and intentionally disposed. This study contributes to our understanding of Maya trash disposal practices and emphasizes the addition of refitting methodology to ceramic studies of large midden deposits for the reconstruction of ancient behavior.

Parsons, Jeffrey (University of Michigan)**[34] Discussant**

Parsons, Erin [121] see Van Buren, Mary

Pascal, Camila (ENAH)**[293] El cambio formal de algunos edificios de la zona arqueológica del Templo Mayor: El caso de las estructuras A y B.**

El recinto sagrado de Tenochtitlan ha sufrido diversos cambios a lo largo de su historia constructiva. Cada uno de los edificios que integran el conjunto se fueron modificando en un lapso de alrededor de 200 años según las necesidades del conjunto ceremonial. En especial, se puede observar que el grupo de edificios que ocupan el área central del recinto muestran un desarrollo vinculado al del Templo Mayor. Este trabajo describe los diferentes momentos constructivos que se pueden observar en algunos de los edificios de la zona arqueológica del Templo Mayor, tanto en sus elementos constructivos como en su forma general. Nos concentramos especialmente en el caso de los edificios A y B, y su relación con el principal inmueble tenochca. Justamente estas estructuras muestran algunos cambios importantes a nivel formal pues modifican no solamente sus dimensiones, sino algunas de sus partes constitutivas.

Pastrana, Alejandro [30] see Woods, James

Pastrana, Alejandro (INAH)**[72] Obsidiana - Continuidad Prehispánica e Integración en el Período Colonial Temprano, Centro de México**

La obsidiana fue un material estratégico y multifuncional en la época prehispánica, se empleó en actividades productivas, militares y religiosas. Después de la conquista en el período Colonial Temprano, continuó empleándose en varios oficios artesanales europeos. Sin embargo, su utilización hasta nuestros días, se debe a los atributos mágico-religiosos asignados tanto por indígenas como por los europeos.

Patch, Shawn (New South Associates, Inc.) and Sarah Lowry (New South Associates, Inc.)**[157] Midden, Mound, and Village: Archaeological Geophysics Survey of the Raccoon Creek WMA, Jackson County, Alabama**

Prior archaeological investigations in the upper Guntersville Reservoir in northeastern Alabama have indicated intensive occupations during the Woodland and Mississippian periods. The purpose of this paper is to discuss the results of a large-scale geophysical survey designed specifically to address several research questions related to prehistoric occupation in this area. We focus on the archaeological interpretations and inferences drawn from complementary geophysical datasets. Attention is called to intra- and inter-site feature patterning, comparisons with other archaeological investigations, identification

of stratigraphic and geomorphic elements that influenced prehistoric activities, and the use of geophysical datasets to assist in agency planning and the management of archaeological resources.

[196] Chair

Patch, Shawn [196] see Lowry, Sarah

Patel, Shankari (Foothill College)

[33] *Pioneer and Pilgrim: James Brady and the Archaeologies of Space, Place, and Landscape*

Over his thirty year career, James Brady has contributed significantly to the archaeologies of space, place and landscape, as among one of the earliest to recognize the key role of caves in the political and religious dimensions of ancient Mesoamerican life. Early on, Brady argued that caves, as with the natural world in general, provided elite justification for political domination. By equating the body politic as an organism, alive and part of a larger cosmic order, elites had a powerful metaphoric tool that defined difference and inequality as a given; inescapable if not a moral prerogative. Starting from this point, I explore how Brady's examinations of caves and pilgrimage have shaped archaeological discussions of landscapes in recent years and the potential direction of research in years to come. Using my own work on pilgrimage and religious authority, I argue that current frameworks of landscape and cave archaeology have the potential to move beyond elite centered analyses and consider the ways in which these spaces are important for understanding ancient gender and class dynamics.

Paterson, Alistair (Uni of Western Australia)

[244] *Human Uses of Barrow Island in Recent Centuries*

Barrow Island is a significant target for a range of activities known to have occurred along the West Australian coastline, as well as a hazard to shipping given the wreck of Australia's earliest shipwreck in 1622. After 1800, the island may have been visited by American whalers, explorers, and pearling vessels. Leases were granted by the colonial government to various pastoralists, turtle hunters, guano harvesters, and fishers. A shortly lived Lock Hospital for Aborigines may have existed, as well as a slave market run by pearlers. By the early 20th century, the island was a natural reserve, then oil field after WWII. The BIAP project is surveying the island for historical sites for the first time. The results of the 2013 season have revealed the presence of Aboriginal people and others at several locations. The sites will require particularly fine-grained dating of single episode events using historical materials to match locations with historical events, many of which exist outside historical records.

[331] Discussant

[244] Chair

Paterson, Alistair [244] see Ashley, Michael

Patil, Lokesh [289] see Kobti, Ziad

Patiño, Alejandro [227] see Morales-Aguilar, Carlos

Patrello, Ralph (University of Florida)

[106] *Contact and Communication in Southern Gaul, 400-600: The Ceramic Evidence*

The traditional historical narrative of late antique Gaul is one of gradual fragmentation and regionalization as a result of the so-called "barbarian migrations" and the fall of the Western Roman Empire.

Archaeologists have attempted to verify this narrative, based on the written sources, by searching for objects of supposed barbarian manufacture. The focus on such objects as projectile points, weapons, fibulae, belt buckles, and other items of "personal adornment" has effectively marginalized the study of ceramic evidence in western Europe for the period between 400 and 600 CE. I propose to address this lacuna on the basis of several recent surveys of ceramic finds from southern Gaul (modern southern France between the Loire and Garonne rivers). In doing so, I propose that we can trace lines of contact across the region on the basis of the ceramics evidence. I will use this evidence to illuminate the extent to which local communities participated in networks of communication and exchange in the late antique Mediterranean. I propose that through such a study, it will be possible to determine whether processes of regionalization took place, and to what extend such processes may have predated the arrival of barbarians in southern Gaul.

Pattee, Donald (University of Nevada, Reno)

- [166] *A Changing Valley, a Changing People? An Examination of the Prehistoric Occupation of Warner Valley, Oregon*

Warner Valley, Oregon was occupied as early as the terminal-Pleistocene (~11,000 radiocarbon years ago [14C] BP). Random and intuitive pedestrian survey performed over the course of three field seasons by the Great Basin Paleoindian Research Unit (GBPRU) in the northern portion of the valley, which has been designated the Northern Warner Valley Study Area (NWVSA), has resulted in over 100 newly-recorded sites dating to the Paleoindian and Archaic periods. This paper considers all site data (e.g., site size and location, types of tools present, lithic debitage attributes) as well as x-ray fluorescence data for a large sample of obsidian projectile points and debitage from the NWVSA. Data derived from the site and artifact sample facilitate the reconstruction of land-use by prehistoric groups in the NWVSA and surrounding region. Additionally, the analysis of temporally discrete sites and isolated diagnostic projectile points aids in determining if prehistoric behavior in Warner Valley changed through time.

Patterson, Winona (NMSU-Department of Anthropology), Todd Scarbrough (NMSU-Department of Anthropology), Kristin Corl (NMSU-Department of Anthropology) and Fumiyasu Arakawa (NMSU-Department of Anthropology)

- [42] *Mesmerizing, Sacred Place at Tank Mesa Village in Montezuma Canyon, Utah*

Tank Mesa Village, located in the Montezuma Canyon in southeast Utah, shows at least three occupational events during the late Baskemaker III/early Pueblo I, Pueblo II, and Pueblo III periods. Unlike many of ancestral Pueblo sites in the Four-Corners area, settlement patterns at Tank Mesa Village display multiple occupations that are uninterrupted. The earliest occupation occurred around A.D. 600, and a hiatus took place for at least one generation; ancestral Pueblo people returned and constructed two different villages around mid-1100s and around 1200. On the basis of recent reconnaissance and mapping of the site, we argue that the Tank Mesa Village site was a mesmerizing, sacred place for ancestral Pueblo people for several generations. Our argument is not only supported by the evidence of uninterrupted, multiple occupations of the site but also by the existence of nearby, elaborate rock art panel and potential water shrines.

Patterson, Erin (Tulane University)

- [93] *Reconstructing Health and Diet: Interpreting Patterns of Dental Pathologies in Two Classic Maya Populations*

Osteological analysis of human dentition is an important tool in the reconstruction of past lifeways. Teeth contain a wealth of information about ancient diet and health and tend to preserve well even when the rest of the skeleton does not. The skeletal remains analyzed in this study come from the Classic Maya sites of La Corona and El Perú-Waka' in Petén, Guatemala. The following indicators of health and diet are examined: linear enamel hypoplasias, caries, calculus, antemortem tooth loss, and dental attrition. The patterns and prevalence of these pathologies, when analyzed by age, sex, social status, etc., will provide important insight into Classic Maya life in the lowlands. These data will be articulated with the larger corpus of knowledge about Maya health and diet and will contribute to our growing understanding of Classic Maya life.

Patterson, Thomas (University of California, Riverside)

- [118] *Modes of Production in Southern California at the End of the Eighteenth Century*

Looking at archaeological and ethnohistorical evidence from Southern California through the lens of modes of production raises interesting questions about our understanding of the practices and institutions of First Nation peoples who lived immediately before and after the arrival of the Spaniards in the late eighteenth century. This paper considers the questions of terms--like money, barter, trade, and exchange--and their ambiguity, which potentially clouds out understanding of evidence.

Patterson, Erin [312] see Navarro-Farr, Olivia

Patton, John [284] see Bowser, Brenda

Pauketat, Timothy (University of Illinois)

- [145] *Discussant*

Paul, Kathleen (Arizona State University)

- [291] *Accessing Mid-Scale Collective Identities in the Past: New Bioarchaeological Perspectives on Kinship*

The application of social identity theory to bioarchaeological research has proven relevant for accessing various dimensions of social organization and the lived experience of past peoples. Despite its recent visibility, most of this research focuses on large-scale collective identities including gender, ethnicity, and religion from the perspectives of individuals and larger social groups, while mid-scale collective identities remain largely under-investigated. Kinship is an essential mid-scale identity for which (bio)archaeology can provide deep-time perspectives, insights that are increasingly significant given the ever-changing definitions of relatedness emerging concomitantly with rapid cultural transformations and new reproductive technologies. This paper provides historical background on the practice of kinship studies in bioarchaeology, highlighting the recent resurgence of kin-focused ethnographic research. We present examples of bioarchaeological research designs that embrace a) the greater resolution provided by new methodological and analytical developments, and b) more nuanced conceptions of "family" in order to move beyond the mere identification of biological kin in mortuary contexts to using kin-based identity as a framework for investigating sociopolitical organization. This paper will provide the theoretical orientation for the symposium while emphasizing the potential of family-focused bioarchaeological research to explore the interconnectivity of individual, kin-level, and population-level social identities.

- [291] *Chair*

Pavao-Zuckerman, Barnet (University of Arizona), J. Homer Thiel (Desert Archaeology, Inc.) and Jeremy Moss (National Park Service)

- [119] *The Joy of Archaeology at the Mission of Sorrows: Investigations at Mission Los Santos Ángeles de Guevavi*

Mission Los Santos Ángeles de Guevavi, a unit of Tumacácori National Historical Park, was among the earliest Spanish colonial missions in the Arizona-Sonora region active from 1691-1775. Mission Guevavi has been the subject of several archaeological surveys and limited excavations since the early 20th century. In 2013, a University of Arizona Archaeological Field School investigated several damaged and threatened contexts at the mission site, including the mission midden and an adobe structure of unknown function that may be an earlier church. Excavations in the mission-period midden illuminated mission ranching and agricultural activities, as well as Guevavi's engagement with a regional and global economy. Our initial field season also revealed several features of the site that were previously unknown, including the presence of additional structures in and around the mission compound. Planned research at the site in 2014 will reveal additional details regarding the age and function of the two adobe structures.

Pawlowicz, Matthew (Virginia Commonwealth University)

- [58] *Pursuing the Local in the Swahili World: Survey of Songo Mnara Island, Tanzania*

The Swahili communities of the East African coast have attracted quite a bit of attention from the breadth of their cultural and economic connections to the African interior and, especially, across the Indian Ocean. Yet Swahili cities were independent, competitive entities and the nature of their participation in those large-scale networks varied considerably. Drawing on data from a recent full coverage survey of Songo Mnara Island outside the walls of the well-known 15th-century site, this paper suggests that we can achieve a better understanding of that variation by exploiting a relatively underutilized scale of archaeological analysis on the coast – the immediate hinterland surrounding Swahili cities.

- [58] *Chair*

Pawn, Ian (Florida State University)

- [291] *Kinship at Tiszapolgar-Basatanya: A Bioarchaeological Study of Genetic and Affinal Relations during the Early to Middle Copper Age on the Hungarian Plain*

The Early to Middle Copper Age (4500-3500 B.C.) on the Hungarian Plain is well known for shifts in settlement patterns, trade, and mortuary treatment. Regional bioarchaeological studies have focused on defining the nature of interaction during this dynamic time. However, it is not well known how these changes in social organization affected concepts of kinship. The sociodynamics of the Copper Age likely influenced both genetic and affinal relationships between individuals; therefore cemeteries, containing both people and representations of identity, are valuable sources of information.

This paper will examine Copper Age kinship using Tiszapolgar-Basatanya, a large cemetery spanning the Early to Middle Copper Age. Researchers have argued that rows of graves, maintained over long periods, may have represented kin groups. This study examines this concept using similarities in dentition with

clusters of graves as the unit of analysis. However, kinship is not merely defined by genetics; this study will also use burial treatment and associated funerary objects to nuance understanding of the nature of kinship during the Copper Age. Drawing upon perspectives from gender archaeology, the paper will focus on affinal kinship and uses a combination of spatial patterning, mortuary treatment, and the identification of family structures in cemeteries.

Payne, Claudine (Arkansas Archeological Survey) and Michelle Rathgaber**[30] *The Arkansas Archeological Survey Model of Archaeological Practice: A Case Study***

From its inception, the Arkansas Archeological Survey (AAS) has advocated a multi-stranded approach to archaeological practice. Centered on research, the model also encompasses preservation and public communication. In his 20 years directing the AAS, Tom Green has expanded on this basic approach, championing new research techniques such as geophysical survey while actively promoting preservation efforts and collaboration with descendant communities. The Eaker project offers a case study of the classic AAS model of archaeological practice. An effort spearheaded by Green to establish a curation facility in northeast Arkansas led to community and legislative efforts to establish a national park at the Eaker site. These, in turn, resulted in the creation of the Survey's Blytheville Research Station and the Delta Gateway Museum. Research initiated by the Blytheville Station to support the national park efforts drew on geophysical survey to inform excavation and yield insights into broad-scale interpretation. And, crucial to the project was collaboration with the Arkansas Archeological Society, the Quapaw Tribe of Oklahoma, the City of Blytheville, the Center for Earthquake Research and Information, the Blytheville Courier News, and local civic groups. In sum, the Eaker project benefited from multiple strands of archaeological practice introduced or encouraged by Green.

Pazan, Kyra (The Ohio State University)**[310] *Subsistence, Settlement, and Social Stratification on the Great Hungarian Plain during the Transition to the Copper Age***

This paper concerns itself with hunting and animal domestication during the Late Neolithic (5000-4500 cal B.C.) and Early Copper Age (4500-4000 cal B.C.) on the Great Hungarian Plain. Intensively occupied tell sites and other surrounding flat areas characterized the landscape of the Carpathian Basin during the Late Neolithic. During the Early Copper Age, these tell sites dissolved into smaller, more widely dispersed settlements. Chi-square analysis of faunal data from Szeghalom-Kovaschalom and Veszto-Magor, two Late Neolithic sites, shows that hunting was more prevalent on tell sites than on flat areas. Additional analysis of the Early Copper Age sites of Veszto-Bikeri and Korosladany-Bikeri shows that the frequency of hunting and the occupation of tell sites declined simultaneously during the Early Copper Age. I propose that the variation in the faunal assemblages of tells and flat sites during the Late Neolithic can be attributed to a social hierarchy in which hunting was a luxury of the tell populations. Additionally, I conclude that the decline of hunting and dissolution of tells in the Early Copper Age is evidence of a rejection of that social hierarchy, which would have endangered the existence of the smaller and more interdependent Early Copper Age sites.

Pazmino, Estanislao [57] see Lippi, Ronald

Peacock, Evan (Mississippi State University)**[165] *A Critique of the Thematic Approach for Assessing the Significance of Historical Archaeological Sites***

A thematic approach is a common framework for assessing cultural properties from the Historic period in a CRM context. While there are some evident advantages to this approach from a humanistic perspective, it is faulty from a scientific perspective for several reasons, including a lack of attention to variability, incommensurable scales, the inescapably contemporary nature of themes, the minimal likelihood of anything new being learned, and the inherent subjectivity of a humanistic approach. Attempts to match some themes (e.g., ethnic lifeways) with the archaeological record have met with very limited success. Employing the Principle of Representativeness is an alternative approach under which both scientific and humanistic concerns can be addressed.

Peacock, Sandra [173] see Pokotylo, David

Pearsall, Deborah (University of Missouri)

[39] Discussant

Pearsall, Deborah [250] see Siegel, Peter

Peate, David [102] see Waterman, Anna

Peau, Tish [242] see Herdrich, David

Pechenkina, Ekaterina (Queens College of CUNY), Wenquan Fan (Henan Prudential Institute of Cultural Relics and) and Xiaolin Ma (Henan Prudential Institute of Cultural Relics and)

[126] Bioarchaeological Perspectives on Social Status in Early China

Based on analysis of skeletal collections from Neolithic and Bronze Age sites on the Central Plains of China and using funerary contexts as proxies for social status, we evaluated the consequences of social inequality and gender roles. In assessing burial status, we considered the number of grave goods, their type, and the materials they were made of, as well as the size, construction, and location of the burial chamber. Skeletal health parameters were divided into those reflecting juvenile health, health during adulthood, and traumatic injuries. During both the Neolithic and Bronze Ages, sex of the deceased was the best predictor of burial wealth. The wealth of funerary offerings and indicators of health were correlated in the Neolithic assemblage; these associations were weaker, but also significant in the Bronze Age assemblages. The most distinct differences in parameters contributing to health status were those for skeletal traumas and the occurrence of systemic infections in comparisons between sample sets from cemeteries ranked by us as higher or lower in status. These findings offer compelling evidence that social inequality significantly affected the distribution of health risks and access to resources in China by no later than the end of the Bronze Age.

Pedersen, Jeannine**[68] There is a New Curation Facility in Town: Strategies for the Development of Educational Programming, Outreach and Social Media**

The Dr. John D. Cooper Archaeological and Paleontological Center opened its doors in July of 2011 and became fully staffed in August of 2012. The Center is a partnership between Orange County Parks and California State University Fullerton and is the repository for Orange County, California's archaeological and paleontological material. After collecting material for almost 40 years, the County dedicated funds to build a Curation facility and laboratory to ensure the proper care and curation of millions of artifacts and specimens. Part of the mission of the Cooper Center is to provide educational programming and outreach to the greater community. In the last two years the staff and volunteers at the Center have developed programming, outreach, and social media in an effort to increase awareness and education within the community and beyond with the ultimate goal to demonstrate the value and importance of archaeology, cultural history, paleontology, and natural history to the public. We will share the different strategies and approaches we have taken in the past two years and discuss those that have proven most successful.

Pedler, DR [69] see Adovasio, James

Peelo, Sarah [119] see Blackmore, Chelsea

Peeples, Matt (Archaeology Southwest) and Gregson Schachner (University of California, Los Angeles)

[202] Comparing the Nature of Aggregated Settlements across the Zuni/Cibola Region

The eleventh through the thirteenth centuries A.D. were marked by a trend toward aggregation across the Zuni/Cibola region, as formerly dispersed households increasingly clustered in small areas, often centered on large public architectural features. In some areas, it is relatively easy to identify spatially distinct communities surrounded by unoccupied expanses. In other areas, clear settlement clusters are difficult to objectively define. These differences in our ability to identify clusters archaeologically likely arise from variation in the nature of social integration, boundedness, and the scale of communities across the region. In this paper, we formally compare aggregated settlements through time (ca. A.D. 1000-1300) in several well-surveyed portions of the Zuni/Cibola region (Lower Zuni River, Pescado Basin, and the El Morro Valley) along three dimensions of variation: 1) the demographic and spatial scale of clustering, 2) the frequency, nature, and geography of integrative activities, and 3) the degree of population mobility.

This comparison will allow us to better understand differences in the trajectories of community formation and organization across the Zuni/Cibola region as a whole. This research draws on Linda Cordell's perspectives on the processes associated with aggregation and the establishment of large villages and towns across the northern Southwest.

Peeples, Matthew [333] see Dungan, Katherine

Peeters, Hans (University of Groningen, Groningen Institute of Archaeology)

[229] *Discussant*

Peiró Vitoria, Andrea [154] see Muñoz Cosme, Gaspar

Pelegrin, Jacques [254] see Darras, Véronique

Peles, Ashley (UNC Chapel Hill), Erin Stevens Nelson (UNC Chapel Hill) and Mallory A. Melton (UNC Chapel Hill)

[260] *Foodways and Community at the Late Mississippian Site of Parchman Place*

Parchman Place (22CO511) is a Late Mississippian site in the northern Yazoo Basin of Mississippi. Archaeological investigations over multiple field seasons have resulted in the recovery of significant amounts of ceramic, faunal, and floral remains. We take advantage of all three of these datasets to obtain a more nuanced understanding of the ways in which people used foods in social contexts. By bringing together these different lines of evidence, we explore the daily food habits of the people of Parchman Place as well as the ways food may have been used as a method of building community.

Pellegrini, Evan [148] see Carey, Peter

Pena, Angel [43] see Corl, Kristin

Pena, Felicia (Department of Anthropology and Middle Eastern Cultures, Mississippi State Univ.) and Molly Zuckerman (Department of Anthropology and Middle Eastern Cult)

[303] *The Pox Enters the Space Age: Assessing the Impact of Mercury Treatments for Acquired Syphilis on Health in 17th to 19th Century London Using Pxrf*

Mercury was the most commonly employed treatment for syphilis in the 15th to early 20th centuries in Europe. However, debate persists about whether it 'killed or cured'. Various medical historians have questioned whether mercury ameliorated infection or instead exacerbated it, even leading to debility and death. This has led some to claim that "the use of mercury in the treatment of syphilis may have been the most colossal hoax ever perpetrated in a profession which has never been free of hoaxes." As no in vitro studies on the effectiveness of mercury exist, we analyzed several skeletal samples from 17th to 19th century London for evidence of mercury treatments using portable X-Ray Florescence spectrometry (pXRF). Mercury concentrations were characterized in a pathological sample of skeletons manifesting lesions suggestive of and specific to syphilis (N=22). To establish background, endogenous exposure, a non-pathological control sample (N=51) of skeletons spatially, chronologically, and socioeconomically matched to their pathological peers was also assessed; soil samples (N=11) were analyzed to test for diagenetic transfer of mercury. Mercury concentrations were assessed in relation to the severity of syphilitic lesions, skeletal stress indicators, and mortality profiles to investigate whether mercury produced more positive or poisonous effects.

Pendergast, David [72] see Mayfield, Tracie

Peniche May, Nancy (UCSD) and Jaime Awe (Institute of Archaeology - Belize)

[252] *Buried like a Tick: A Middle Preclassic Residency beneath Plaza B, Cahal Pech, Belize*

The earliest occupations in the Maya Area have aroused a great interest in the archaeological world. Investigations at several sites across the Maya lowlands (i.e. Tikal in the Petén, Komchen and Xocnáchel in the northern lowlands, and Xunantunich, Pacbitún, Cuello in Belize) have enabled us to learn more about the sociopolitical development in the Maya society during the Preclassic era. Yet many aspects about the quotidian life of the earlier inhabitants need to be further explored to understand local and

regional variability. Recent excavations at the southern section of Plaza B at Cahal Pech (Belize Valley) have offered an excellent opportunity to investigate a Middle Preclassic residency (Feature 27) that reveals new information about the nature and scope of the different activities conducted by its occupants and the status these persons held in society. This knowledge, along with the information coming from other areas of Cahal Pech and other Belize Valley sites, will provide a better understanding of the household patterning and variability as well the sociopolitical and economic organization prevailing during the Middle Preclassic period in this region of the Maya area.

Peraza, Carlos [52] see Russell, Bradley

Pereira, Gregory (CNRS-Université de Paris I)

[21] *Ephemeral Cities ? Estimating the Longevity of Postclassic Tarascan Urban Sites*

According to ethnohistoric documents, the Middle Postclassic period, which precedes the emergence of both the Mexica and Tarascan empires in Western and Central Mesoamerica, is characterized by instability, both political (fragmentation, competition, alliances and conflicts) and demographic (migrations, fast cycles of aggregation and disintegration or abandonment). Archaeologically, this period of Mesoamerican history is also marked by the establishment of large urban settlements that seem to reflect, in a material aspect, the migrations evoked in the texts. However, the study and comprehension of these migration processes is challenging due to the nature of the sources available. Precise knowledge of chronology, settlement formation processes, and occupation length is critical for appreciating the complexity of these phenomena. We base our research on sites located in the Zacapu region of Michoacan, attempting to identify the parameters most likely to shed light on the occupation history and formation processes of those ancient agglomerations. We consider several factors in the Zacapu settlements: radiometric dates, stratigraphy, waste and burials accumulations, as well as urbanism and spatial organization at the sites. Finally, we discuss our preliminary results in relation to current understanding of the studied social phenomena.

[21] Chair

Pereira, Telmo (Núcleo de Arqueologia e Paleoecologia da Universidade do Algarve), Nuno Bicho (Núcleo de Arqueologia e Paleoecologia da Universid), João Cascalheira (Núcleo de Arqueologia e Paleoecologia da Universid), João Marreiros (Núcleo de Arqueologia e Paleoecologia da Universid) and Célia Gonçalves (Núcleo de Arqueologia e Paleoecologia da Universid)

[116] *Testing the Impact of Coastal Environments in Social Inequality through Lithic Raw Materials*

Archaeological sites and sources of lithic raw materials are fixed points on the landscape. Because of that, changes seen in the frequency of these resources in the archaeological record are usually related with visibility, availability, cultural and technological factors. Recent studies have highlighted the impact that the coastal settling has on social organization, complexity and inequality. Muge is an inland river valley that faced an oceanic environment during the period between the 8.2 ka event and the rise of Neolithic. This makes the Mesolithic occupations in this region crucial to understand the impact of coastal adaptations on social complexity. In this paper we present a high-resolution intra-site study of the lithic raw materials in Cabeço da Amoreira in order to test for the existence of such complexity and bring important insights to the issue of social inequality among hunter-gatherers.

Pereira, Telmo [116] see Paixão, Eduardo

Peres, Tanya [53] see Ledford, Kelly

Peres, Tanya (Middle Tenn State Univ)

[192] *Shellfishing Does Not Equal Starvation: Debunking Modern Biases against an Ancient Lifeway in Tennessee*

There is a long-held bias among archaeologists regarding the role of shellfish in the diets of precolumbian North Americans. Despite presenting an easily accessible and nutritionally beneficial resource, shellfish have been traditionally viewed as a marginal food source consumed in response to starvation or environmental crisis. This bias stems from the emphasis on dietary protein sources during the heyday of Processualism, the supplemental role of shellfish and their association with women and children in modern and ethnographic gathering-collecting cultures, and the lack of large quantitative datasets on such sites that allow us to look at longterm

occupations. Recent surveys and excavations of shellfish-bearing sites along the Middle Cumberland River in Tennessee have yielded temporal and spatial data that allow us to reevaluate the role of shellfishing in the lifeways of people occupying these sites from the middle to late Archaic through Mississippian periods.

Perez, Kelita [146] see Stanish, Charles

Perez Robles, Griselda [312] see Navarro-Farr, Olivia

Perez-Juez, Amalia (Boston University), PAUL GOLDBERG (Boston University) and ALEXANDER SMITH (BROWN UNIVERSITY)

[300] *Quarrying, Site Fabric and Site Use in the First Millennium Menorca, Spain*

The island of Menorca, Spain, hosted the development of the Talayotic Culture in the first millennium BC. During this period, the landscape was transformed by the construction of megalithic structures, both for public buildings –watchtowers and sanctuaries- as well as private buildings –domestic spaces, storage areas. These striking features have been extensively studied in recent decades. Some important archaeological projects have been carried out in buildings, dealing primarily with the architecture and the objects found in them. Interestingly enough, although all these structures are built with a specific local limestone, there has been very little attention paid to the provenance of raw materials and quarrying techniques. A similar lack of interest applies to the inter-building spaces in the settlements or non-architectural environments. These ‘inter-architectural’ areas have wonderful potential for understanding the complete fabric of the living space and can serve to weld activities within individual dwelling spaces to communal areas. In this poster we present some initial results of our excavations at Torre d'en Galmés, Menorca, that contribute to a greater understanding of the large site complex as a whole, quarrying and building methods specifically, and how all this relates to other sites in the Balearic Islands.

Pérez-Juez, Amalia [332] see Smith, Alexander

Perkins, Stephen [79] see Drass, Richard

Perkins, Carrie (Belize Valley Archaeological Reconnaissance Project)

[319] *Chultunob of the Belize River Valley: Exploring Morphology, Function, and Meaning*

Recent excavation and analysis conducted on four chultunob of the Belize River Valley has focused on investigating the morphology, function and meaning of these small, man-made subterranean chambers. Through this work, we have been able to gain valuable insight into the role chultunob played in the everyday life of the ancient Maya while artifact assemblage, geographic placement and specific morphology have all helped to build on theories suggesting their place in the funerary process. The aim of this paper is to present the results of the excavation and subsequent analysis of four chultunob located within the ancient Maya sites of Baking Pot, Cahal Pech and Lower Dover.

Perrin, Thomas [201] see Marchand, Grégor

Perrot-Minnot, Sébastien [191] see Costa, Philippe

Perry, Megan [13] see Roepe, Kelsey

Perttula, Timothy K. [30] see Trubitt, Mary Beth

Pestle, William (University of Miami), L. Antonio Curet (National Museum of the American Indian, Smithsonian), Joshua Torres (National Park Service, St. Croix, USVI), Reniel Rodríguez Ramos (Social Sciences Program, Universidad de Puerto Rico) and Carmen Laguer Diaz (Department of Anthropology, University of Florida)

[269] *Proyecto Arqueológico Regional de Añasco: New Findings and Regional Research Trajectories in Western Puerto Rico*

The west coast of Puerto Rico remains understudied in comparison to other regions of the island despite

the fact that historical documentation and previous, albeit limited, archaeological research suggest substantive pre-colonial and historic occupation of the region. In this research we present an overview and results of a recent field survey in the Añasco drainage basin in western Puerto Rico, including: 1) a regional predictive model for site location potential, 2) the results of preliminary regional walkover and subsurface testing, and 3) findings from the first season of excavations at a newly located Ceramic Age site. On one level, these findings support the potential of future archaeological study and generally validate the proposed field methods. Furthermore, these preliminary data suggest and/or confirm: 1) a possibility of Archaic inhabitation, 2) the involvement of the region's Ceramic Age inhabitants in island-wide and inter-island exchange networks, 3) evidence for an early Historic (contact period) Spanish presence, and 4) intriguing patterns of 18th/19th century socio-economic processes.

[269] *Chair*

Peter, Veth [244] see Ashley, Michael

Peters, Ann (University of Pennsylvania Museum)

[336] *Evidence for production Practices, Artifact Arrangements and Postmortem Rites at the Paracas Necropolis Based on Patterns Of Fiber Deterioration*

Since 2005, Peruvian and international researchers have worked to restore contextual information and restudy the components of 'Paracas Necropolis' mortuary bundles excavated in 1927-28 at the Necropolis of Wari Kayan at the Paracas site, under the direction of Julio C. Tello. For four years the project "Practice in Life, Presence after Death: Style and Substance at the Paracas Necropolis" has reconstructed gravelots and analyzed the form and material composition of the associated artifacts, in order to develop proposals on social identities and relationships asserted in continuing interaction between the living and the dead. Crossing archival data with analysis of textiles and other fiber-based artifacts that structure and adorn an ancestral effigy built around the remains of an individual, new types of information emerge that shed light on production processes and mortuary ritual. We have defined types of information provided by patterns of fiber destruction, including dye technologies, prior use of artifacts, their arrangement in the mortuary bundle, and previously unidentified practices that formed part of the funerary and ancestral rites.

[336] *Discussant*

[336] *Chair*

Peterson, Jane (Marquette University)

[71] *Integrating Local Perspectives: An Early Neolithic Case from Southern Jordan*

The early Neolithic of southern Jordan provides a case study for how local, contextual approaches can shed light on agropastoral developments in Southwest Asia. Several Neolithic excavation projects and land-use studies in the Wadi al-Hasa of Jordan provide significant data sets. Localized spatial patterning of material culture, architecture, mortuary practices, and botanical remains suggest that decision-making and social interaction took place at sub-regional scales that overlapped in complex ways. This diversity suggests that local populations chose to adopt, ignore or modify different aspects of regional practice. Certainly the mosaic Early Holocene environmental and climatic conditions played a role. Understanding a phenomenon as multifaceted as the rise of domestication economies benefits from multi-scalar approaches that integrate local patterns into larger modelling efforts.

[71] *Chair*

Peterson, Elizabeth (Simon Fraser University)

[144] *Something Different within Casas Grades lithic Technology: New Finding from Small Sites in Casas Grades, Chihuahua Mexico*

This paper reports on findings from the analysis on lithic collections from four Medio period small sites uncovered during the 2013 summer excavations in the Casas Grades region of Chihuahua Mexico. While prior excavations within the region have placed focus on the large and medium sized site types found throughout the region, the summer 2013 excavations focused solely upon the small, lesser-understood sites in order to evaluate their relation both spatially and temporally to the rest of the area including the large site of Paquimé. Analysis of the lithic from these small sites revealed there to be a different strategy for the organizing of their lithic technology that was separate from that found at the other two site types. Such findings indicate a change within the selection of specific behavioral strategies the occupants were acting upon that may reveal more information as to what role these small sites played within the larger known Casas Grades interaction sphere.

[144] Chair

Peterson, Veronica (Vassar College)

[172] *Buried in Burial Data: Statistical Pattern Identification in Native American Burials from Pennsylvania*

Many years of excavations at multiple sites in Pennsylvania's Susquehanna Valley have produced an overwhelming amount of burial data. This data set is believed to contain substantial information about multiple cultures, such as the Shenks Ferry and Susquehannock occupants of the same sites in virtually the same time period. The sheer volume of data, however, has precluded traditional straightforward analyses, hindering our ability to recognize patterns that may reveal details on how the two groups interacted. Multivariate statistical analyses provide an opportunity to look for such patterns. Rather than basing the cultural classification of a burial on a single variable such as body position, as has been done with the Shenks Ferry (extended) and Susquehannock (flexed), statistical analysis allows us to visualize multiple types of burials by determining other important variables and principal components (i.e., the typical burial of an adult male or female of the Shenks Ferry culture). The results provide alternate means for testing hypotheses about Shenks Ferry and Susquehannock cultural interaction and culture change. Such region-wide analysis could be expanded to assess interaction with other groups, to further test theories of culture change, and possibly to assist with determinations of cultural affiliation for repatriation.

Peterson, John (University of Guam)

[237] *The Gallina World beyond Wild Horse Canyon: Investigations of a Gallina Phase Landscape in Northern New Mexico*

Intensive field survey of over three sections of northwest-facing slopes at over 8000' elevation documented an impressive and extensive Gallina phase settlement and agricultural field system. Gallina sites are found north of the Jemez Mountains into Southern Colorado, and appear to have been parts of a highland refugium during a period of intense drought from the end of the Chaco era ca. 1050 – 1300 A.C.E. Stone towers and deep pithouses are distributed systematically throughout mountain terrain on the south slopes of the Gallina River canyon. Over 100 structures were found during the survey, mostly with maize-farming terraces. Many towers align as an intervisible network on the ridges and rims above the canyon Vistas and solstice alignments with Polvadera Peak to the southeast link the Gallina with the Tewa worlds. This project follows in the tradition of intensive, large-scale interdisciplinary field programs such as the W.S. Ranch Field School project in western New Mexico established by James Neely that was the training site for many archaeologists who continued to apply this research model in the Southwest or in other distant island worlds. This project was a University of Texas at El Paso archaeological field school 1997-1999.

[237] Chair

Pett, Daniel [36] see Bevan, Andrew

Pevny, Charlotte (R. Christopher Goodwin & Associates, Inc.), R. Christopher Goodwin (R. Christopher Goodwin & Associates, Inc.) and William Barse (R. Christopher Goodwin & Associates, Inc.)

[308] *Technological Organization at Site 8LE2105: Human Response to Late Pleistocene Environmental Change in Northern Florida*

Ripley Bullen defined the Bolen projectile point in 1958, but since then most of the ensuing archeological evidence regarding this Early Archaic phenomenon has been limited to surface finds. Recently, several sites with intact Bolen components have been excavated professionally and subsequently reported. One of these sites, 8LE2105, contained two stratigraphically separate Bolen components with a pooled mean average date of 11,273 cal BP (9870+38 14C). This site provides new data that allow exploration of lithic technologies and site use. Considered in the context of data collected from other Bolen sites in north Florida, this information provides a more robust understanding of the Bolen toolkit, technological change, and settlement of hunter-gatherer adaptations at the onset of modern climates.

[308] Chair

Pezzutti, Florencia [21] see Solinis-Casparius, Rodrigo

Pezzutti, Florencia (Colorado State University), Stephen Leisz (Colorado State University) and Christopher Fisher (Colorado State University)

[154] *Architecture in the Point Cloud: Identifying, Mapping, and Interpreting Architectural Features in*

2D+

Full Coverage archaeological survey is often labor intensive and time consuming, especially in areas with dense architectural remains. LiDAR is fast becoming a powerful alternative to traditional surveying and mapping of archaeological settlements and cultural landscapes. This paper will explore the use of LiDAR derived 2D+ point clouds and hillshade models created from the point clouds to identify individual architectural features at the ancient urban center of Angamuco, Michoacán, Mexico. We present a comparison of methods to delineate and identify ancient features which range from visual interpretation of 2D+ point clouds and hillshades to the innovative use of object based classification techniques applied to products created from point cloud data.

Pfeiffer, Susan (University of Toronto) and Elizabeth Sawchuk (University of Toronto)**[186] *Funerary Practices in the West Turkana Pillar Sites: Evidence from the Burials***

Excavations at West Turkana pillar sites in 2012 and 2013 provide substantial information about the funerary uses of these sites. The Lothagam North site is the primary source of information (GeJi9, MNI=25), with corroboration from Lothagam West (GeJi10, MNI=3) and Manemanya (GcJh5, MNI=2). Most burials are primary interments, with newborn to old age and both sexes represented. Most bodies seem to have been demarcated by boulders or rock slabs on top of the head. Body positions are variable, but tight leg flexion and arms flexed so that hands are beneath the chin is the most common. Orientation of the body is variable, by cardinal direction and plane. Most people were buried with ornamentation, but grave gifts are rare. The density of burials at the Lothagam North site contributes information about site formation. Juveniles tend to have been buried less deeply than most adults were, bodies were close to one another, yet there is minimal evidence of the disruption of prior burials by subsequent interments. Such information from burials can inform broader questions of site formation and the status of those buried therein.

Phelps, Danielle (University of Arizona) and James T. Watson (Arizona State Museum, University of Arizona)**[43] *Bad Death or Blood Feud? Mortuary Performance and Signaling among Early Farming Communities in the Sonoran Desert***

Early Agricultural period (circa 2100 B.C. - A.D. 50) sites represent the earliest permanent village settlements based on agricultural investment in the southwest U.S. and northwest Mexico. Members of irrigation-based communities located on floodplains likely experienced considerable social tensions generated by balancing public cooperation for the management and maintenance of irrigation systems and private property interests among households controlling agricultural fields. The performance of normative mortuary ritual functioned to publicly integrate a shared community identity while simultaneously legitimizing household interests through descent and inheritance. However, several interments fall outside normative residues of mortuary ritual performance and instead likely correspond to "body disposals." These deviant burials could represent prescribed mortuary treatment for "bad deaths," or could have resulted from violent acts such as revenge killings—a form of costly signaling that results in the deposition and desecration of individuals by the perpetrators of such violence. These actions influence and manipulate an intended audience similar to premeditated mortuary performance, but they represent basal violent reactions (in that details are less premeditated) possibly stemming from blood feuds that result in costly signaling. The resulting action can be 'costly' because of the potential it creates for inviting reprisal from the kin/community of the deceased.

Philip, Graham [75] see Wilkinson, Tony

Phillips, Bil [33] see Rissolo, Dominique

Phillips, Paige (The University of South Florida)**[140] *Examining Activity Organization through Geochemical Analysis at Tlalancaleca, Puebla, Mexico (800 BC-AD 100)***

This poster presents the results of a geochemical investigation of soils and sediments from Tlalancaleca (ca. 800 BC to AD 100), a large urban center in the Puebla Valley of the central Mexican highlands. The main ceremonial center in the site center, the Cerro Grande Complex, was cored in 2013, providing over 500 soil and sediment samples from Formative occupation surfaces. The samples were subjected to geochemical analysis, including pH, Mehlich phosphate colorimetry, and a series of tests for organic residues developed by Luis Barba. Select samples were also characterized using Inductively Coupled

Plasma-Mass Spectrometry to examine a broad suite of elemental concentrations for correlation with human activity patterns during the period of Tlalancaleca's occupation. In understanding the chemical residues in the plazas and terraces within the complex of Cerro Grande, the activities of these areas and thus the uses of these spaces have come to light, revealing the social and political dynamics of space at the Cerro Grande complex and larger site of Tlalancaleca.

Phillips, Harriet (University of California Merced), Holley Moyes (University California Merced), Justine Issavi (Stanford University) and Nicholas Bourgeois (University California Merced)

[277] *Mapping the Underworld: Innovations in Cave Mapping at Las Cuevas Using GIS*

Maps are abstractions of the real world that are essentially arguments for a particular view of a space. Cave surveys conducted by archaeologists and those of spelunkers are necessarily different and no cave map will be identical to another. Therefore, it is not surprising that to understand and render caves from their perspective, archaeologists must develop their own cave survey methods. Cavers traditionally survey natural caves using compasses, clinometers and more recently distometers, moving from "station to station." A sketch map is generated in the field and some distances are measured, but this is not always systematic. Total stations or other heavy digital equipment is rarely employed because of obvious access issues in many caves. At Las Cuevas we needed to develop a hybrid form of cave mapping demanding very high accuracy in some areas. We employed traditional cave survey techniques making hand-drawn maps using compass, clinometer, and distometers, with digital technologies to increase our level of accuracy yet retain the detail of recording that only hand-drawn maps can offer. Using GIS as a tool in this process we were able to produce maps that are both visually informative and capable of managing and analyzing our data.

Phillips, Erin (University of Alabama)

[327] *Three Models for Social Contexts of the Production and Use of Moundville's Hemphill-Style Engraved Pottery*

This paper evaluates three models that have been proposed for social contexts of the production and use of Hemphill-style engraved pottery within the Moundville polity. Moundville is a major Mississippian center located in west central Alabama with 32 earthen mounds. There are an additional 15 single mound centers within the polity located along the Black Warrior River. The Hemphill style is Moundville's local representational art style that can be found in several genres including stone palettes, copper gorgets, shell gorgets, stone pendants, as well as engraved and incised pottery. This paper focuses only on the engraved pottery (ca. AD 1325-1450) as it seems likely that the social contexts of the production and use of the various genres may be different. The political economy model, the sacred economy model, and the associations model will be evaluated based on stylistic evidence, usewear, and distribution.

Philmon, Kendra (Kalispe Tribe of Indians) and Clifford Brown (Florida Atlantic University)

[153] *Bioarchaeological Analysis of Cusirisna Cave, Nicaragua*

There is little archaeological data regarding the prehistory of central Nicaragua, especially in reference to mortuary practice and the use of caves. We analyzed human remains and artifacts from Cusirisna Cave, Boaco, collected in the 1870s by Dr. Earl Flint, an explorer for the Harvard Peabody Museum with the goal of understanding mortuary practice and the function of Cusirisna Cave through a bioarchaeological lens. The study of the commingled osteological remains (n=82) established MNI (=9); estimated sex, age, and stature; identified pathology and trauma; and examination of cranial modification for the purpose of studying ethnic affiliation. The associated artifact assemblage included shell and greenstone beads, guacales (bowls made from jícaras), and a well-preserved wooden duho. A radiocarbon assay using the accelerator mass spectrometry technique on a sample from one of the guacales yielded a date of cal A.D. 1450 with a 2-sigma calibrated interval (95% probability) of Cal AD 1430 to 1483 (Cal BP 520 to 470) (Beta-315973). The late date provides an opportunity to interpret the remains in light of the available ethnohistorical evidence from the region, specifically using skeletal remains and context to understand ritual practice in a Nicaraguan cave.

Picard, Jennifer [264] see Kolb, Michael

Picard, Jennifer (University of Wisconsin-Milwaukee)

[340] *A Diachronic Analysis of Floral Remains at Aztalan, a Multicomponent Late Prehistoric Site in Jefferson County, Wisconsin*

The Aztalan site is a heavily fortified Late Prehistoric village in southeast Wisconsin. Excavations in 1984

in the riverbank midden revealed a complex stratigraphic profile with evidence for an initial Late Woodland component followed by a mixed Late Woodland/Middle Mississippian occupation. A diachronic paleoethnobotanical analysis of these components is presented alongside data recovered during the 2011 field season from a probable early Mississippian context. Analysis suggests similar patterns of wild and domesticated plant use for both components, although overall taxa diversity is low. New direct AMS dates on Zea mays specimens prompt a discussion on the possibility of cross-contamination at a multicomponent site.

[340] Chair

Picha, Paul (State Hist Soc of North Dakota) and Carl Falk (PaleoCultural Research Group)

[265] "Toss of the Dice." *Gaming Pieces in Middle Missouri Archaeology*

Gaming pieces and gambling practices have figured prominently in discourse within economic anthropology and in describing exchange systems in North American archaeology. A review of Mandan, Hidatsa, and Arikara ethnography and history suggests the importance of gambling behavior for nineteenth century Plains Villager exchange systems. The Middle Missouri archaeological record provides the opportunity to examine the material correlates of gaming practices from the longue durée. Examples drawn from archaeological and ethnographic collections are analyzed with respect to style horizons, intertribal relations, and pre-contact and post-contact exchange systems for the Northern Great Plains.

Pickering, Robert (Gilcrease Museum/University of Tulsa)

[189] *Results of External and Internal Examinations of the Human Figures from Shaft Tombs*

The finely crafted hollow ceramic figures from West Mexico have been recognized for their visual appeal for over a century. These figures spurred waves of looting and generations of people creating replicas. Many figures and entire collections have been donated to museums with minimal contextual data. Reaction to such collections often falls into two disparate responses; either the objects are assumed to be genuine because they are in a museum or since they have minimal data, the figures are deemed to have no significant research value. This project explores the premise that museum collections of Occidente figures do have research value that is revealed through detailed internal and external examinations. The first goal of this research is to create a system of objective and reproducible observations for determining authenticity. Work has primarily focused on observing mineral deposits and insect puparia. Observations of the internal surfaces of figures with a medical endoscope and CT scanning equipment dramatically enhance the ability to find indicators of authenticity. These observations partially recontextualize the figures so that they can become part of the second and most critical objective of this project – to understand the use and meaning of hollow ceramic shaft tomb figures.

Pierce, Daniel (University of Missouri-Columbia)

[339] *Obsidian Source Frequencies as a Social Attribute at San Felipe Aztatán, Nayarit, Mexico*

This research uses a combination of color sorting and XRF geochemical sourcing to identify patterns in volcanic sources of obsidian artifacts at Postclassic-period San Felipe Aztatán in Nayarit, Mexico. Despite nearby sources being easily accessible, more sophisticated lithic reduction techniques seem to have been used only for more distant sources. With no substantial qualitative differences between obsidian sources, purely social factors likely resulted in the temporal and spatial distribution patterns at San Felipe Aztatán. I argue that the restricted access to distant sources, such as Pachuca, created elevated value of obsidian blades and thus created, maintained and legitimated elite identities. At San Felipe Aztatán, the limited area in which Pachuca obsidian is found may indicate an area of elite residence or elite activity, while its limited temporal distribution may reflect the peak of trade and influence of the Aztatlán tradition before the expanding Tarascan Empire. This research may have greater application for other sites within the Aztatlán tradition. If obsidian source can be utilized to identify social stratification, we may be able to understand the spatial and social organization of specific sites as well as the complex dynamic trading relationships between sites.

Pierson, Stacey (SOAS, University of London)

[194] *Production, Consumption and Visuality: Abundance and Chinese Porcelain, 1350-1800*

Chinese porcelain was and is characterized by abundance in production, consumption, decoration and function. In China, from about 1300 porcelains were made at Jingdezhen for domestic and foreign consumption, utilizing large quantities of raw materials, labour and energy. The evidence of abundance is visible today in the huge sherd heaps at the imperial kilns, the textual records of vast

orders for specific occasions and the deforestation of whole areas of south China. Visually, porcelain in China further demonstrated a cultural desire for representations of abundance through the often dense and repetitive decoration that can be seen on Chinese porcelains from the 14th century onward. For foreign consumers, the development of maritime trade from as early as the Tang dynasty ensured that they too could also acquire and use large quantities of Chinese porcelain. Abundance is therefore an important framework for the understanding of key characteristics of the character and impact of Chinese porcelain domestically and overseas. With a view to exploring this new way of looking at Chinese porcelain, this paper will consider manifestations of abundance in three different contexts: a Yuan dynasty dish, the Ming imperial factory, and a Qing dynasty shipwreck.

Pijoan, Carmen (I.N.A.H./Mexico) and Josefina Mansilla (Instituto Nacional de Antropología e Historia)

[25] Human Cranial Masks from Central Mexico: Techniques and Usage

This study focuses on five cranial human masks from Postclassic central Mexico. Four belong to two children and two adult males found in two offerings at Templo Mayor. The fifth adult male mask was found in Tlatelolco among 100 skulls belonging to a tzompantli or skull rack. This latter mask is less ornate than the ones found in Templo Mayor, it is also lacking eyes shells and knives in mouth. Here we analyze, explain and discuss the techniques (cut marks, impacts, bone cutting, and pigmentation, among others) employed to elaborate such masks. We also discuss the evidence of repetitive usage of one of these masks in several ritual occasions. This investigation contributes to the knowledge of relevant ritual elements to the cosmovisión of the central part of ancient Mexico.

Pijoan, Carmen [164] see Mansilla, Josefina

Pike, Matthew [266] see Wilson, Jeremy

Pikirayi, Innocent

[145] The Post-Great Zimbabwe city: Towns, Palaces, Villages, and Functional Specialization in the Mutapa State, Northern Zimbabwe, 1500-1900 AD

Some Portuguese written sources referring to southern Zambezia – the region dominated by the Zambezi River – describe capitals of the Mutapa State variously as "...of stone and clay and very large...." or composed of "...many houses of wood and straw." In one of the towns, the residence of the king is described as "...a very large place, whence the merchants take to Sofala gold which they give to the Moors without weighing for coloured cloths and beads which among them are most valued..." (Theal, 1898-1903, vol. 1, 95-6). It is evident from both archaeological and available written sources that although population aggregation continued in northern Zimbabwe in towns akin to the extant Great Zimbabwe, the gradual disappearance of 'elite' stone-walled palaces signified the demise of the much earlier classical city. Socio-political complexity continued in different forms, however, with functional and other specialization taking place within villages contiguous to and beyond palaces.

Pilco Vargas, Rene [105] see Bryan, Adrienne

Pilles, Peter and Kimberly Spurr (Museum of Northern Arizona)

[247] Reconstructing Northern Sinagua Demography and Population Dynamics: How Documentation for NAGPRA Can Inform Models of Ancestral Human Relationships

Human burials recovered from Coconino National Forest land during the last century are being documented prior to repatriation under NAGPRA. Working with tribal consultants, we have developed a documentation regimen to provide information about prehistoric demography, health, and skeletal traits that indicate genetic relationships within and among cultural groups across the Southwest. Our goal is to evaluate and expand models of ancestral migrations and interactions that are of interest to tribal members and archaeologists, and to expand our understanding of Southwestern human history. Our work to date suggests that patterns of morphology in human remains that reflect genetic relationships may be mirrored by distinctive characteristics of ceramic vessels from the same sites, possibly indicating the presence and movement of cultural subgroups such as families or clans.

Pilliard, Sarah (Stony Brook University)

[186] Stone Tools on the Moving Frontier: Lithic Technology and Early Herding in Northwest Kenya

The prehistoric spread of food production was associated with changing social organization as early

farmers and herders negotiated new environments, new subsistence bases, and new groups of people. In the Turkana Basin, Kenya, where herding was the first form of food production, early pastoralism may be linked to the creation of monumental architecture. Around 4000 bp, contemporary with the earliest livestock in the Turkana Basin, people constructed 'pillar sites' containing burials, stone platforms, and basalt pillars. Analysis of lithics from the 2012 excavations of four West Turkana pillar sites shows how they were used for short-term, specialized purposes, whereas other contemporary sites were used for longer durations. Pillar site lithic assemblages can also clarify whether these sites were constructed by one or multiple groups of people on the landscape. This case study elucidates the 'frontier zone' of food production in which there may have been a mosaic of different cultural groups dealing with a novel social landscape.

Pilloud, Marin and Clark Larsen (The Ohio State University, Columbus, OH)

- [291] *Alternative Definitions of Kin within Bioarchaeology: A Case Study from Neolithic Çatalhöyük, Turkey*

Within bioarchaeological research, kinship has been studied through biodistance analyses that identify patterns of biological relatedness within a skeletal sample. As a stand-alone method, this approach assumes that kinship is biologically defined. However, kinship is a much more complex social unifier, extending well beyond the biological realm. It is therefore important to explore possible alternative definitions of kin in past societies utilizing human remains within archaeological contexts. Using dental data from Neolithic Çatalhöyük, Turkey, a biodistance analysis was undertaken to explore biological patterns in relation to interment location (subfloor house burials). A biological division was identified at a large community level; however, meaningful patterns were not identified at the individual level. Based on these results, we argue that this early farming community was largely not biologically structured at the household and neighborhood level. Instead, we draw from the wealth of archaeological data to argue that social structure was likely fluid and complex, depending on any number of factors, including house residence, food production, social bonds, ideological views, and to a lesser extent, biological affinity. This study highlights the need for a connection of human biological and archaeological data for developing a more informed understanding of kinship in the past.

Pinkey-Drobnis, Aurora [158] see Frappier, Amy

Pintar, Elizabeth [93] see Bolnick, Deborah

Pintar, Elizabeth (Austin Comm. College) and Jorge G. Martínez (ISES-Universidad Nacional de Tucumán-Argentina)

- [287] *Obsidian Projectile Points: Patterns of Variation and Range of Mobility during the Mid-Holocene in the Salt Puna of NW Argentina, South-Central Andes*

Although projectile points have dominated the discussion of Paleoindian archaeology in North and South America, this tool class has not figured prominently in the archaeology of hunter-gatherers of the South-Central Andes. Here we present a typological, technological and morphological analysis of obsidian, quartzite and vulcanite projectile points found in Antofagasta de la Sierra, Catamarca. We compare projectile points from tightly dated Middle Holocene contexts and investigate patterns of technological, morphological and stylistic variation between projectile points manufactured of local and non-local raw materials. Geochemical source identification is used to draw general archaeological implications regarding wide mobility range that includes the use of five obsidian sources distant 30-120 km.

Pinto Lima, Helena (Universidade do Estado do Amazonas - Brazil)

- [331] *Archaeology and Traditional Communities in Amazonia*

Archaeological sites in the Amazon are generally composed of anthropogenic black soils and ceramics found in locations that are re-inhabited by contemporary communities. This is due to chance but also punctuated by a series of elements of cultural choices which are repeated over time. Thus, archaeological materials are, in a way, part of daily riverine life. Archaeologists have looked towards contemporary societies to understand not only aspects related to past societies, but also to better frame social interactions in the present. In this way archaeology is not just a way to understand the past, but also a social practice experienced in the present. Present-day riverine communities constitute a privileged object of study in the practice of Amazonian archaeology. Their (re)signification of the place where they live and its spatial and material components are important elements that contribute to a more holistic understanding of interactions between community and the archaeological record, in a process of continuous formation

and transformation of the archaeological site. Through archaeological approaches that allow for a broader dialogue and multivocality that interrelates different spheres of knowledge, including traditional and scientific knowledge, Amazonian societies are themselves actors that contribute to the construction of archaeological knowledge.

Piperno, Dolores [250] see Reitz, Elizabeth

Piperno, Dolores (Smithsonian National Museum of Natural History) and Christine Hastorf (University of California at Berkeley)

[250] *Deborah M. Pearsall and World Ethnobiology*

The papers in this session will be discussed and ideas offered for future directions in the field.

Pique, Raquel (Departament de Prehistòria), Susagna Romero (Departament de Prehistòria, Universitat Autònoma d), Antoni Palomo (Departament de Prehistòria, Universitat Autònoma d), Josep Tarrús (MUSeu ARqueològic Comarcal de Banyoles) and Xavier Terradas (Departament d'Arqueologia i Antropologia, Institut)

[22] *The Production and Use of Ropes in the Early Neolithic Site of La Draga (Banyoles, Spain)*

La Draga is an Early Neolithic site located on the shore of Lake Banyoles (Spain). The archaeological layer of the earliest phase of occupation, dated to 5,300-4,900 cal BC, has been preserved in waterlogged conditions. Several fragments of ropes have been preserved in the site, providing a unique example of rope production by the early farmers in the Western Mediterranean region. The objective of this work is to present the types of ropes recovered at the site. Several ropes made of vegetal twisted fibres and some made of lianas show the diversity of rope production. This paper presents a discussion of rope production and examines the potential uses of these items.

Pirtle, Jennifer (The University of Tulsa)

[179] *Gender, Age, and Status in Ancient West Mexican Figurines Through the Lens of Body Modification*

The Mexican states of Nayarit, Jalisco, and Colima comprise most of the area in which the so-called shaft tomb culture flourished circa 300 BCE to 300 CE. The most distinguishable grave goods found within these tombs are ceramic figurines that are thought to represent the people themselves, rather than deities or deity-impersonators. Based upon this hypothesis, this paper investigates attributes of gender, age, and status in Ancient West Mexico by means of identifying and analyzing body modification and adornment as viewed on the ceramic figurines. Unfortunately, research in the Occidente has suffered from extensive looting and widespread production of modern copies. To counter these negative effects, recent research into authenticity of individual figurines will be used to verify that only genuine features are considered. Various physical representations on the figurines, such as tattooing, piercing, body painting, and cranial deformation, will be identified and statistically analyzed in order to discern their connection to gender, age, and status.

Piscitelli, Matthew (University of Illinois-Chicago), Sofia Chacaltana Cortez (University of Illinois-Chicago), Nicola Sharratt (Bard Graduate Center, American Museum of Natural H), Mark Golitko (The Field Museum) and P. Ryan Williams (The Field Museum)

[19] *Inferring Sociopolitical Dynamics in the Moquegua Valley through Geochemical Analysis*

This paper presents the first synthesis of available geochemical data from the Moquegua Valley in southern Peru. LA-ICP-MS analysis has been conducted on raw clay sources from the lower, middle, and upper portions of the valley. Additional geochemical analysis has been performed on ceramic samples collected from Middle Horizon (500-1,000 A.D.) through Late Horizon (1,450-1,532 A.D.) sites in the Moquegua Valley. These comprehensive data allow for a broad characterization of social interaction among groups inhabiting the region for over a millennium. Furthermore, the information gleaned from geochemical analysis forms the basis for an ongoing effort to answer important anthropological questions. More specifically, this research is helping to understand ceramic production and distribution among prehistoric Andean communities, to elucidate interactions between ethnic groups, and to infer socio-political dynamics throughout several periods of dramatic cultural transformations.

Piscitelli, Matthew [146] see Wolff, Nicholas

Pitblado, Bonnie [10] see Dalpra, Cody

Pitblado, Bonnie (University of Oklahoma)

[69] *Earlier and Higher than You Thought: The Peopling of the Rocky Mountains*

We've all heard the cliched response to why one climbs a mountain: "because it's there." Yet recently gathered evidence indicates that First Americans occupied the Rocky Mountains just as soon as alpine glacial melting allowed. The archaeological signature they left behind is inconsistent with merely traveling over or through the Rockies to move from some relatively flat "Point A" to another relatively flat "Point B." Instead, the signature suggests sustained use of the Rockies very early in the continental peopling process. Clearly, the motivation(s) for terminal Pleistocene colonization of the Rocky Mountains extended well beyond "because they were there."

In this paper I explore three inter-related topics. I first discuss the unique ecological structure and resource base of the Rocky Mountains—particularly when compared to the archaeologically better-known adjacent Plains and Far West—highlighting why we should expect prehistoric people to have been drawn to them. Next, I overview the time frame for initial colonization of the Rockies, touching on the variability in occupation dates as one moves north/south. Finally, I discuss what extant archaeological evidence suggests about how, precisely, First Americans exploited the heterogeneous Rocky Mountain landscape.

[274] *Discussant*

[334] *Chair*

Pitezal, Todd [47] see Searcy, Michael

Pitman, Heidi [22] see Fullagar, Richard

Pittman, Holly (University of Pennsylvania)

[329] *Glyptic Art in the Uruk Expansion: Measuring Interaction and Differentiation through Imagery* The late fourth millennium BCE drainage basin of the Tigris and Euphrates Rivers saw the introduction of material forms, known under the rubric of Middle and Late Uruk and originating in the lowlands, into strategically located sites in the Jezira steppe zone of upper Mesopotamia. This contribution characterizes and evaluates the visual evidence, both iconographic and stylistic, preserved as impressions of cylinder and stamp seals on clay devices used in the administration of goods and labor. It is argued that this imagery and style originates in Khuzistan emerging out of a long tradition of economic administrative practice centered around figural and abstract imagery impressed on anepigraphic documents and clay closing devices. A comparison of the iconographic repertory of images from Uruk and Susa/Chogha Mish suggests that distinct sectors of the economy were administered in the two zones of the lowlands. An extended comparison that includes imagery from sites across the Uruk diaspora deepens our grasp of the motivations for the expansion and the diverse character of the colonies and their relation to the substrate Late Chalcolithic communities.

Placzek, Christa (James Cook University) and Peter Veth (University of West Australia)

[244] *Climate Reconstructions from Barrow Island Speleothems*

Cave carbonates are proven archives of terrestrial climate variation. Indeed, such records are among the most useful records of past climate as the chemical proxy data preserved in carbonates evidence changes in rainfall, mean temperature, and surface vegetation data at high resolution. Climate records from cave carbonates are unique in that they are high resolution, generating snapshots of palaeoclimate that can be used to greatly refine the more generalized climate records preserved by sediments and fossils of the time. Cave carbonates can also be dated radiometrically using U-Th methods to provide robust chronologies, providing some of the best age control for past climate changes. Two large subterranean caves with speleothems are located on Barrow Island, providing opportunities for climatic reconstruction from cave carbonates. Development of these climate archives will offer insights into climate that is directly applicable to the human occupation history of the site. The potential of Barrow Island to provide both a recent a deep-time perspective on tropical/subtropical climate variability suggest that it will add to critical understanding of the local, regional, and global drivers of climate change.

Plank, Shannon (Eastern Kentucky University), Iliana Ancona Aragón (Universidad Autónoma de Yucatán) and Isabelle Martínez-Muñiz (University of Kentucky)

[305] Two Thousand Years of Ceramics along the Uci-Cansahcab Sacbe

Three seasons of excavation at Maya sites in the region of the Uci-Cansahcab sacbe in northwest Yucatan, Mexico have produced a corpus of ceramic material that spans the Middle Preclassic through the Colonial periods. This paper outlines the results of the first stage of analysis, which permit us to 1) sketch the chronology of the population foci of Uci, Kancab, and Ucanha, as well as of surrounding low-density but continuous rural settlement; 2) discuss the dynamics of shifting regional affiliations over a span of 2,000 years; and 3) contribute to a larger regional conversation about at least two current problematics. First, materials from the site of Kancab, in particular, address the issue of pre-Mamom ceramics in northwest Yucatan. Second, ceramics from multiple locales in the Uci-Cansahcab environs allow us to approach the fuzzy trajectory of the evolution of red-slipped wares between the Late Preclassic and Early Classic periods in this region.

Plannette, Carol**[174] Space Defined: Mortuary Analysis and the Symbolic Depiction of Spatial Organization.**

Archaeologists have long been interested in the relationships that form the burial rites and rituals in the Andean region. As a result, an important consideration to the analysis of mortuary practices is the utilization of the landscape and space. Various pre-Columbian cultures have been known to allocate unique spaces for the interment of their dead. These chosen burial landscapes, whether generated from a natural terrain or manufactured, create a symbolic representation of the culture's relationship with the land and their ancestors. There remain, however, numerous issues to be resolved, including the dynamics of the sociocultural relationships of the Moche people of the north coast. The application of landscape analysis to specific Moche burial grounds provides useful opportunities to reexamine various factors regarding the cultural symbolism and identity of the people associated with the burial areas. This poster focuses on the opportunities provided by landscape analysis to discuss the Moche's arrangement of burial space in a new framework, providing insight into the sociocultural relationships of their mortuary practices, ancestor veneration, and their everyday lives.

Plaza, David (Eastern New Mexico University)**[322] Digital Preservation Approaches for Legacy Archaeological Collections**

Archaeology is faced with the inheritance problem of managing legacy collections, partly due to the high expense of maintaining such collections. Often these datasets are underutilized and difficult to properly preserve or to integrate into the current archaeological dialogue. To address this problem, an examination of the current condition of the records and artifacts of legacy archaeological collections is needed. In this research, recursive archaeology and living documents will be used as guiding principles for a research design to integrate the Anasazi Origins Project (AOP) Legacy Archaeological Collection into the current archaeological dialogue using electronic databases such as a geodatabase. Traditional and digital preservation methods will be used and presented to construct a conceptual frame of reference for similar types of legacy archaeological collections. This research is an effort to preserve and disseminate the dataset that helped to define the Archaic northern Southwest of the United States, the Oshara Tradition.

[101] Discussant

Plemons, Amber [126] see Zuckerman, Molly

Plets, Gertjan (University of Oklahoma)**[215] When Scientific, Indigenous and Capitalist Epistemologies Collide - Investigating Heritage Conflicts and Repatriation in Contemporary Russia**

This paper explores the construction, contestation and appropriations of different post-Soviet heritages in the multi-cultural Altai Republic (federal subject of Russia). It particularly investigates the conflict surrounding the excavation, scientific investigation, and subsequent repatriation of a remarkably well-preserved frozen female mummy (named the Ice Maiden) found 20 years ago. The extent of this dispute is more than merely a story of two opposed approaches to cultural heritage; it is rooted in the specific sociopolitical background of archaeology and Indigenous rights in contemporary Russia and frames within the post-Soviet period of ethno-cultural cataclysm in which appropriation of heritage and history further expanded. By applying a relational social framework to social practice to the multiple, historically-embedded conceptualizations and appropriations of archaeological heritage I develop a multi-actor stewardship approach to Indigenous archaeology in Russia. The Ice Maiden case clearly presents archaeology as part of a broader holistic process, dominated by different actors with their own particular agendas and dispositions. Episodes of heritage contestation not only enable a comprehensive

understanding of Indigenous politics and archaeological ethics in contemporary Russia, but also present archaeological heritage as a social practice providing a unique information source on the dynamics of a transitional multi-cultural society.

Plew, Mark (Boise State University) and Jan Kee**[334] *Incised Stones from Idaho***

Incised stones have been reported from locations across Idaho—most commonly in the panhandle region. Though relatively rare, they are in some instances associated with Late Archaic (2000-150 B.P.) period sites and in southeastern Idaho with the Fremont pattern. Five types have been described and include cobbles with small incisions along lateral margins, cobbles having centrally placed straight parallel lines, cobbles with centrally placed hachure, stones with irregular etchings, and highly decorative stones that combine a variety of motifs. This paper reviews the geographic and temporal distribution of incised stones in Idaho offering observations regarding their function.

Pluckhahn, Thomas [11] see Wallis, Neill

Pluckhahn, Thomas (University South Florida) and Victor Thompson (University of Georgia)**[85] *Production, Exchange, and Complexity at Crystal River***

Crystal River (8CI1) is a Middle and Late Woodland period (ca. 300 B.C. to A.D. 1050) site on Florida's west-central coast. The site is famous for its distinctive monumental architecture and diverse suite of local and extra-local Hopewellian trade goods. Archaeologists have traditionally explained the site's seemingly precocious complexity as a product of elite control of the production and exchange of whelk shell cups and ornaments. Recent work suggests a more heterarchical complexity with a less linear relationship to production and exchange. Craft production and exchange may have been—to an extent—centralized at Crystal River, but were diverse, small in scale, embedded in ritual, and dependent on relationships with communities elsewhere for raw materials and people. We argue that this centralization resulted from the interplay of ritual, economic, and ecological structures and the agency of elites who encouraged, but did not control, the process.

Plunger, Elizabeth (University of California, San Diego) and Paul Goldstein (University of California, San Diego)**[203] *Tunics, Tapestries, and Gendered Bodies: Male- and Female-associated Clothing Sets from Tiwanaku Burials at Rio Muerto, Moquegua, Southern Peru***

Gender is an important and inescapable facet of both individual identities and of the structures and functions of whole societies, yet is often difficult to parse out through the material record. The formation of gender identities and the nature of gender relations under the Andean Middle Horizon state societies are two of the least understood aspects of the Wari and Tiwanaku civilizations. Little is known about when, where and how gender identities were constructed, and how gendering fit into the larger process of socialization. In the case presented here, preservation conditions permit the contextual examination of clothing from individual, scientifically excavated burials from the Tiwanaku culture site of Rio Muerto (600-1000 A.D.). Using data from burial clothing as well as paleodemographic information about the individuals interred, the researchers have isolated a number of "outfits" that are particular to male and female individuals. Here we discuss the implications of the differences and similarities in these clothing sets, the clues this may hold to gender categories and boundaries, and how these societal constraints were enacted and reinforced through material culture worn on the body.

Plunket, Patricia (Universidad de las Americas Puebla)**[254] *Lessons from Tetimpa: A Formative Village in Mexico's Central***

Fifteen years of fieldwork at the highland site of Tetimpa in Puebla, Mexico, have provided rich data sets that allow us to visualize both patterning and variation among the households of this large dispersed village that was occupied from the Middle to the Terminal Formative. Here we reflect on what these data from 27 houses reveal about social organization, storage technology, exchange networks, and domestic ritual at the village level during this time period.

[112] *Discussant***Pluta, Paul (University of Maine) and Alice R. Kelley (University of Maine)****[264] *Fluvial Deposition and El Niño at San José de Moro, Peru***

In coastal Peru, the El Niño climate anomaly is a frequent cause of devastation and social disruption for

human populations. However, the prehistoric chronology of this phenomenon is poorly understood, limiting our understanding of the interrelationship of El Niño and the archaeological record. In this study we interpret an alluvial sedimentary sequence at the archaeological site at San José de Moro to infer patterns of past El Niño flooding. This location experiences flooding only during periods of El Niño rainfall due to the limited size of the Chamán River's drainage basin and its coastal desert setting. The sedimentary sequence formed at the site is thus interpreted as a record of past El Niño flooding. Our detailed geologic analysis suggests changes in El Niño intensity over time. A major shift from broad, fine grained, floodplain deposits to higher energy, coarse grained, channelized deposits may indicate an increase in flood velocity at this site or a change in channel location related to increased flood discharges, both potentially caused by an increase in the strength of El Niño events. This climatically driven landscape change has significant implications for reconstruction of past climate patterns and the impact of this phenomenon on prehistoric humans.

Pohl, Mary D. [128] see von Nagy, Christopher

Pohl, John (UCLA)

[339] Chicomoztoc as an Inter-Regional Exchange Zone

The legend of Chicomoztoc, is largely regarded by ethnohistorians as a mythic event by which Nahua populations accounted for their migration south into the Basin of Mexico and the Plain of Puebla under the leadership of Chichimec culture heroes who subsequently became the focus of religious cults established within their city-states. This examination of the "Seven Caves" is not so concerned with the myth itself or even the specific location but more importantly how it could have functioned as an intermediate frontier zone for cultural and economic exchange between the Casas Grandes, Aztatlan, and Huaxtec traditions.

[339] Chair

Poirier, Marcela (Purdue University), Hendrik Van Gijseghem (Université de Montréal) and Kevin Vaughn (Purdue University)

[211] Hematite Mining and Ritual in Ancient Peru

We report on multiple seasons of excavation at Mina Primavera, a remarkably well-preserved hematite mine located in the Nasca region of the southern Peruvian coast. Remarkably well-preserved, it has yielded an impressive diversity of materials that include tools, ceramics, textiles, food remains, and items related to ritual. Evidence indicates that the principal extractive activities occurred in the first centuries AD by members of Nasca society. The place's status and importance in the south coastal landscape appear to have changed through time, and it was sporadically visited and used for diverse reasons until the 20th century. This research takes advantage of a rare archaeological context and highlights the intersection of place, materiality, and landscape in its many dimensions.

Pokines, James T. [223] see Ames, Christopher

Pokotylo, David (University of British Columbia), Sandra Peacock (University of British Columbia - Okanagan) and Brian Kooyman (University of Calgary)

[173] Use, Reuse and the Lifecycle of Earth Ovens on the Canadian Plateau: A Case Study from the White Rock Springs Site (EeRj 226), British Columbia

Archaeologists have often dated earth ovens/roasting pits used by Plateau collector communities for large-scale root processing on the basis of single radiocarbon sample per feature. Consequently, they treat oven construction and use as a "one off" event in discussions of root resource intensification. Using a series of 45 radiocarbon dates collected from various depositional zones of 10 roasting pit features at the White Rock Springs site (EeRj 226), British Columbia, we show that roasting pits have a complex life history of use, re-use, maintenance, and renovation. While roasting pit dimensions have been inferred to vary with respect to the quantity and type of plant materials processed and nature of the socioeconomic group, change in pit size over time is often cited as evidence of changing levels of overall root resource intensification. We argue that the re-use of roasting pit facilities is a significant factor in explaining size variation and requires archaeologists to rethink existing models of resource intensification.

Politis, Gustavo (INCUAPA-CONICET, Argentina)

[73] Signs in the Forest: Territorial Markers of the Tropical Forest Hunter-Gatherers of South America
Hunter-gathers of the tropical forest of South America conceive their territory in several dimensions.

However, the band or co-resident group territory is the one which is felt, perceived and used as the “closest” both in spatial and emotional terms. This land has been thus constructed for generations, and its texture has been transformed and modified, in a subtle way, through the centuries. Moreover, the band territory is also signaled by means of a variety of marks on the land: broken branches, animal bones, feathers, scratches in trees, etc. All these marks are saturated with coded information and contain different layers of meaning. The Nukak from the Colombian Amazon and the Hotï from the Upper Orinoco of Venezuela provide good examples to illustrate and explore these kinds of actions and to better understand the territorial behavior of tropical forest hunter-gatherers. In this paper, these issues will be presented and discussed and will be compared with similar information from other hunter-gatherers of South America such as the Ayoreo and the Hetá.

Pollack, David [28] see Killoran, Peter

Pollack, David (Kentucky Archaeological Survey) and Gwynn Henderson (Kentucky Archaeological Survey)

[340] Fort Ancient Ritual Poles

Large ritual poles are most commonly associated with plazas or central places within a community. Within these contexts, they may have served as marker posts or as symbols of community existence and identity. The rituals and ceremonies during which these poles were pulled and reset may have been as important to the community as the pole itself. In this paper, we explore the possibility that by ca. A.D. 1400 shorter ritual/sacred poles were being erected inside Fort Ancient public structures. We argue that the presence of these interior poles and their repeated resetting and capping represents a shift from rituals and ceremonies that were open to all, to ones that were restricted to a segment of the community.

Pollard, Helen (Michigan State University)

[254] Tula of the Toltecs and Tzintzuntzan of the Tarascans

Unlike other core regions of Mesoamerica central Michoacán did not have a long history of city-states and empires during the Classic and Early Postclassic periods (AD 200-1100), but was politically and economically peripheral to powerful polities to the east and west. However, in the last centuries before European Conquest a highly centralized state emerged in the Lake Pátzcuaro Basin, which was rapidly transformed into an expanding empire. The late emergence of the Tarascan state after AD 1350 and its survival into the early sixteenth century has provided us with the opportunity to use both archaeological and documentary sources of data. These sources present a complex, and somewhat counter-intuitive, pattern of ruling elites who claim an immigrant Chichimec heritage to justify their cooption of the native Purépecha nobility, while at the same time presenting themselves as fully ethnically purépecha. Moreover, they have materialized the state and its institutions using a template from the Toltec world of Epiclassic and Early Postclassic north-central Mexico. In the ecologically and politically unstable world of the Postclassic both commoners and elites alike apparently saw benefits in following this new form of society and internalizing it as the only true society they had ever known.

Pollard, Dustin [299] see Benedetti, Mike

Pomedio, Chloé (archaeologist)

[200] The Incised Ceramics of Sayula Basin: An Interregional Perspective

The Sayula Project (UDG-INAH-IRD) allows us to study ceramic production in prehispanic times around the Sayula Basin. During the Classic and Epiclassic periods (Sayula Phase), Sayula and Atoyac incised types employ decorative techniques that are reminiscent of incised ceramics produced elsewhere in northwest Mesoamerica (i.e., Bajío, Michoacán, Jalisco, and Zacatecas regions). The technological study, related to the iconographic classification of the Sayula incised ceramics, permits us to understand some anthropological aspects of this specific tradition of ceramic production regarding the choices of potters. Thus, comparing the technological and iconographic attributes of Sayula and Atoyac incised types to similar traditions in neighboring areas should provide a clearer picture of the interregional relationships represented by these decorated ceramics.

Pomédio, Chloé [200] see Torvinen, Andrea

Pomfret, James (Georgia DOT)

[196] Geophysical Investigation of Andersonville Cemetery

The Andersonville National Historic Site, located in southwest Georgia, is the site of the infamous Andersonville Civil War Prison. Over a period of 14 months the confederate prison held 45,000 union soldiers, of which nearly 13,000 died from starvation and disease. The prison cemetery is located adjacent to the prison and holds the remains of all who died at Andersonville Prison. Based on limited information from soldier diaries and prison records, it has been understood that the earliest part of the cemetery contained individual interments in wood coffins. As the number of dead increased, the burial methods changed from individual interments to mass burials in trenches. Using Ground Penetrating Radar, Resistivity, and Magnetometer, a geophysical survey was conducted in the prison cemetery in an effort to determine at what point during the 14 month history of the prison did the interment method change from individual burials in coffins to mass burials without coffins.

Pontzer, Herman [16] see Raichlen, David

Pool, Christopher (University of Kentucky)**[279] Making Urban Places in the Late Formative Gulf Lowlands, Mexico**

Cities are palimpsests. As a spatial and historical process, urbanization responds to perceived needs and aspirations of the moment as well as the physical and remembered imprint of the past. These points are well represented in the archaeological record of the southern and south-central Gulf lowlands of Mexico. While sharing a generally dispersed population pattern common to most lowland centers in Mesoamerica, Late Formative centers in this region exhibit impressive variation in nucleation, boundedness, monumentality, and the layouts of civic-ceremonial complexes. Grounded in our work in and around Tres Zapotes, Veracruz, but employing a comparative perspective, we argue that much of this variation results from politically strategic negotiations among factions and emergent classes and the reconciliation of differing politico-economic traditions with contemporaneous realities.

[1] *Discussant*

[254] *Chair*

Pool, Christopher [128] see Venter, Marcie

Pope, Melody [263] see Collins, Angela

Pooljoy, Traci (University of North Texas, Department of Geography), Amy Eddins (University of North Texas, Department of Geography) and Steve Wolverton (University of North Texas, Department of Geography)**[206] Applied Zooarchaeology of the Late Holocene Freshwater Mussel Community in the Upper Trinity River of North Texas**

Recent studies indicate that the late Holocene (approximately 2000 to 500 B.P.) freshwater mussel community in the Upper Trinity river of north Texas was more diverse in terms of species richness than the contemporary community. However, archaeomalacological data have been studied from only a handful of sites, some with small mussel assemblages. We report new data from 41TR198 a late Holocene site on the West Fork of the Trinity near Fort Worth. We analyze nestedness and species area curves to assess data quality to determine if the Upper Trinity faunas are representative of the late Holocene mussel community in terms of taxonomic composition. Results indicate that these applied zooarchaeological data provide an important conservation and restoration benchmark for the Upper Trinity river, which is a highly modified system due to reservoir impoundment, water use, and water treatment.

Popescu, Gabriel (SHESC, Arizona State University)**[223] Edge Length and Flake Production Strategies in the Middle Paleolithic of Romanian Southern Carpathians**

In order to better understand the Middle Paleolithic behavior, it is necessary to study lithic technology beyond the inferences of typological classification. Recent advances in theoretical and methodological approaches to lithic studies have led to new perspectives on past human behavioral systems, and have shown that the 20th century industrial paradigm, still widely used in Paleolithic archaeology, is not well suited to address research questions on Paleolithic behavioral systems. One of these advances is the use of the Conservation Index, or of the edge length to mass index. This paper documents the technological

responses to lithic resource constraints, through the use of a raw material efficiency index expressed as the ratio of edge length to mass, to emphasize the efficiency with which a knapping strategy converted a mass of stone into flake edge. The data set is represented by several assemblages from significant Paleolithic sites from the region of the Romanian Southern Carpathians, e.g., Nandru-Peștera Curată, Ohaba Ponor-Bordu Mare, and Baia de Fier-Peștera Muierii.

Popetz, Kimberley (Jefferson Patterson Park & Museum)**[152] Turning Privies into Class Projects**

What would happen if we gave a group of high school students the opportunity to act as archaeologists and curators with a real archaeological collection? Would they benefit from the experience? Would we? And what about the rest of the community? Could they derive some benefit from the project as well? We decided to find out. Students worked with a collection of artifacts that was excavated more than 30 years ago, turning it into an exhibit for the public. If you're contemplating a similar project, join us to learn what worked and what to avoid.

Popov, Vladimir [287] see Suda, Yoshimitsu

Popova, Laura (Arizona State University)**[124] Very Local Vegetation Histories: Analyzing Pollen Signatures from a Wet Forest Hollow in the Ural Mountain Foothills**

Palynologists, for the most part, sample large lakes and bogs to produce pollen diagrams that show shifts in the regional vegetation over long periods of time. Archaeologists, however, usually want to know about subtle shifts in the local vegetation that indicate intentional human use of plants. Such shifts can be discerned by examining sediment cores from smaller basins, like a wet forest hollow, that record the pollen deposited from arboreal plants in the immediate vicinity of the sampling site. In this paper, I will discuss the vegetation history of one of these small basins, a wet forest hollow in the Ural Mountain foothills (Samara, Russia). Focusing on this one place, seemingly distant from settlements and cities, I will explain how small changes in the vegetation over time indicate larger social-cultural and political changes in the region starting with the interesting absence of the forest in the Iron Age and ending with the active manipulation of the arboreal species in the forest in recent history.

Porraz, Guillaume [16] see Tomasso, Antonin

Porrett, Brian (College of Wooster) and P. Nick Kardulias (The College of Wooster)**[301] A World-Systems Perspective of Early Bronze Age Fortifications in the Levant**

This study investigates Early Bronze Age fortification walls in the Levant. The lands of Canaan and Judah in the Southern Levant were situated between larger and more populated nations. The application of a world-systems analysis framework to sites with fortification walls in this region permits unique insight into the political systems at work regarding early state formation. This report focuses on evidence retrieved from the site of Tell es-Safi over the past two field seasons (2012 and 2013). The fortifications there are compared to those at other sites in the Southern Levant. A comparison of various sites from different cultural contexts reveals diverse fortification construction strategies tailored to the specific needs of these communities. These differences may be attributed to the diverse locations, available resources, political structure, and/or cultural beliefs at these sites. World-systems analysis may help to explain the variation in construction strategies as well as provide a broader understanding of Early Bronze fortifications in the Levant.

Porter, Benjamin (University of California, Berkeley)**[296] Archaeology Should Be Undisciplined: Exploring a Four-Fields Approach in the Context of Area Studies Archaeology**

A good test of an intellectual framework like anthropology's four-fields approach is its durability during transfer to neighboring fields. Evaluating this transferability is particularly relevant for area studies archaeologists working in Classics, East Asian, Latin American, Middle Eastern, and South Asian Studies. Area studies archaeologists share all archaeologists' concern for the documentation and analysis of past societies. Yet, most area studies archaeologists do not share anthropological archaeologists' commitment to the investigation of culture as a universal phenomenon of human practice, a commitment that often provides the implicit glue between the four-fields. Area studies archaeologists

instead concentrate on history, religion, and other aspects of humanism. And yet, many themes that concern each of the four-fields circulate in area studies pedagogy and practice: an interest in the creation of materials and how they come to be endowed with meanings; emphasis on the role of language, discourse, and the production of texts; a concern for how human collectives form and dissolve; and an interest in the representation and manipulation of human bodies in art and mortuary practices. This paper explores the implications of this “undisciplining” of the four-fields approach in the practice of area studies archaeology.

Ports, Kyle (Texas Tech University)

- [137] *Entering Xibalba: A Report on Subterranean Feature Investigations at the Dos Hombres to Gran Cacao Archaeological Project (DH2GC) in Northwest Belize*

Caves and subterranean features are an integral aspect of ancient Maya sacred space. For many years archeologists have studied large intricate cave systems that can be associated with elite ceremonial centers. However, by presenting the results of the 2012-2013 excavations of subterranean features located at the site of N950 within the Dos Hombres to Gran Cacao Archaeological Project (DH2GC), this poster will focus on smaller cave features within the socioeconomic context of the Maya hinterlands. The intent of this poster is to provide interpretations using artifact analysis and spatial characteristics to understand how the Maya utilized the features located at N950. In addition this poster will present an outline of future investigations of subterranean features within the DH2GC project, new data may provide a better formulation of the roles that caves played in ancient Maya hinterland settlements.

Ports, Kyle [292] see Cortes-Rincon, Marisol

Poteate, Aaron (University of Oregon)

- [286] *Digging in the Dark: The Influence of Spatial Sampling in Zooarchaeological Analysis*

The choice of specific sampling strategies for zooarchaeological analysis has important implications for determining the kinds of information collected from a particular site. The location of units or spatial sampling of a site can be a primary factor in the recovery and interpretation of faunal materials. While variation in the kind, size, and formation of deposits has often led to a reliance on judgmental sampling, researchers should more strongly consider how their selections may impact results. To highlight the importance of choice, hypothetical models of basic archaeological site formations were used to test various spatial sampling strategies. Understanding the formation of faunal deposits, in particular their intermittent nature, can better inform researchers on spatial sampling techniques and what size, frequency, and location of units are required to achieve statistically significant results. This paper targets small island residential models to avoid the complexity of larger residential areas, while providing fundamental trends and insights. Establishing an adequate sample size based on the research questions and specific locations will provide more reliable information, enabling archaeologists to better compare sites and assemblages within a given area.

[286] *Chair*

Potter, Ben (University of Alaska Fairbanks)

- [23] *Technological and Economic Organization in Central Alaska: New Data from Mead and Upward Sun River*

I report on recent intrasite and intersite research in central Alaska geared towards exploring late Pleistocene to middle Holocene organization of technology and economy. This work encompasses excavations at the Mead site and Upward Sun River, where multiple feature-related activity areas in several components add to our understanding of site structural and organizational variability. Excavation and survey data from adjacent uplands suggest structured variation in land use strategies, providing a more comprehensive dataset to evaluate regional hunter-gatherer adaptive strategies. Results indicate climate change at the end of the last glacial did not alter technological strategies, though there is evidence of widening diet breadth during the Younger Dryas chronozone followed by narrowing diet breadth during the early Holocene.

Potter, Jim [119] see Dietler, John

Potter, James (SWCA), Mark Varien (Crow Canyon Archaeological Center) and Tito Naranjo

- [194] *Performing Abundance in the Northern American Southwest*

The northern American Southwest has typically been viewed as a landscape of scarcity due to limited precipitation and relatively short growing seasons. Despite this view, Pueblo people have thrived in the region and the concept of abundance, while not typically associated with Pueblo groups, can provide insights into the dynamics that characterize their society. In this paper we use the concept of abundance to examine two important aspects of Pueblo life. The first is feasting associated with ceremonialism that was important to community social organization. In contrast to other parts of the world, communal feasting in the northern Southwest involves common, everyday "abundant" resources, such as ceramic bowls, maize, and rabbits, rather than rare, valuable, or feasting-specific resources. In this way feasting may be thought of as a communal performance of household abundance. The second is the increasing elaboration of artifact assemblages through time that were associated with both feasting and daily domestic life, particularly decorated serving bowls. By comparing the assemblages from three villages dating to different time periods, similarities and differences in these assemblages show how household abundance was translated conceptually to communal abundance through performance of the feast and through elaboration of common household items.

Potter, David (UNMH University of Utah), Shannon Boomgarden (NHMU-University of Utah), Issac Hart (NHMU-University of Utah) and Duncan Metcalfe (NHMU-University of Utah)

[317] Microrefuse Analysis from Superimposed Structures at Big Village - Range Creek, Utah

Range Creek Canyon is located in the West Tavaputs Plateau area of East Central Utah. Students and staff of the Range Creek Field Station have recorded nearly 450 prehistoric Fremont sites in the canyon, including residential, storage, and rock art sites. Of these, three large village sites have been excavated. Big Village (42Em2861) is a Fremont site with a relatively long record of occupation. Excavation at Big Village over the last three years has produced radiocarbon dates ranging from A.D. 889 to A.D. 1123. Current excavations have revealed three, possibly four, superimposed occupation levels with associated structures and hearths. Bulk fill from three hearths and floors were collected and processed through screening for microrefuse analysis. Results of microrefuse analyses have been shown to be indicative of the range of activities that occur within a structure or on a living surface. The results of the analysis of each hearth and associated floor are compared and dated to show changes through time.

Potts, Richard [26] see Brooks, Alison

Poupeau, Gérard [249] see Le Bourdonnec, François-Xavier

Powell, Doss (Paradise Valley Community College)

[32] Subsistence and Social Change during the Late Pithouse Period at the Harris Site

The Late Pithouse period in the Mimbres Mogollon region was a dynamic time that witnessed changes in the social structure and organization of household groups. We present zooarchaeological data from recent excavations at the Harris Site in the Mimbres River Valley to explore the implications that subsistence-settlement systems and resource exploitation have on our understanding of the organization of household groups at the end of the Pithouse Period.

Power, Torin [137] see Casias, Rhiana

Powis, Terry [123] see Howie, Linda

Powis, Terry (Kennesaw State University), Norbert Stanchly (Trent University) and George Micheletti (University of Central Florida)

[252] Middle Preclassic Development of the Main Plaza at the Ancient Maya Site of Pacbitun, Belize

Over the past 75 years, archaeologists have realized the benefits of investigating early Maya communities beneath plaza surfaces. Sites like Barton Ramie, Cahal Pech, Caracol, Ceibal, Colha, Cuello, Tikal, and Uaxactun have produced a wealth of information on Preclassic buildings, burials, and caches. In the Belize Valley, there has been a concerted effort since the late 1980s to recover as much information as possible about the Preclassic Maya by targeting plazas. This approach has been very effective at Pacbitun where we have uncovered new information on the earliest community located within the main plaza at the site. This paper reports on recent investigations in Plaza A and provides new information on E-Groups and/or Triadic Eastern Plaza Complexes that may be compared with other sites in the region to identify general patterns in Preclassic Maya development.

Pozorski, Shelia [59] see Pozorski, Thomas

Pozorski, Thomas (University of Texas-Pan American) and Shelia Pozorski (University of Texas-Pan American)

[59] *Domestic Complexity at 1500 B.C.: Exploring the Roots of Andean Domestic Practices within Two Casma Valley Residential Components*

The Casma Valley on the North Coast of Peru was home to the Sechin Alto Polity, one of the grandest Initial Period (2100-1000 B.C.) developments. Two sites within this polity, Pampa de las Llamas-Moxeke and Huerequeque, contain well-preserved domestic zones that have been extensively excavated by the authors. Resultant data provide insights into how the resident populations participated in and responded to life within a highly centralized political and economic organization. Examples include clear evidence of social inequality in the residential sector, artifacts that document specialized production through cottage industry, and intrasite hierarchy with ramifications at the household level. Many such key Initial Period domestic practices persisted and are known from major north coast polities such as the Moche and Chimú, thereby contributing significantly to the roots of a greater Andean tradition.

Prates, Luciano [6] see Martinez, Gustavo

Pratt, William and David Brown

[188] *Searching for Truth in Local Legends: Investigations at the Chapel of Ecuador's Oldest Hacienda*
Archaeological investigations conducted in 2011 and 2012 were undertaken to explore the chapel of Ecuador's oldest hacienda. Hacienda Guachala was founded in 1580 with the inauguration of the chapel which, according to local legend, was built on top of an Inka temple. Historic records indicate that when the Spanish arrived, the site was burning having been set alight by the fleeing Inka. Pieces of the disassembled Inka baths which once occupied the site are still visible in the colonial construction and a series of colcas line the hill above confirming that the site was indeed Inka. In 1736, members of the French Geodesic Mission stayed at the hacienda. When one of the members of the expedition contracted malaria and passed away he was reported to have been buried inside the floor of the chapel. In 2008 GPR was conducted inside the chapel and revealed several anomalies. The goal of the 2011 and 2012 archaeological investigations was twofold: 1) Determine the architecture of the chapel itself to confirm whether the legends of the Inka temple are true 2) Review the anomalies picked up by the GPR in 2008 to see if the grave of the French Geodesic member could be identified.

Premo, Luke [16] see Kuhn, Steven

Premo, Luke (Department of Anthropology, Washington State University)

[193] *Cultural Transmission and Diversity in Time-Averaged Assemblages*

Archaeologists have adopted methods from population genetics to study modes of cultural transmission in time-transgressive datasets, i.e., assemblages. However, it remains unclear to what extent methods originally developed to assess neutrality in genes sampled from a population at a single point in time are applicable to cultural variants sampled from assemblages of artifacts that accumulated through time. Here, I apply a suite of previously published methods to assemblages simulated under unbiased cultural transmission. Even under the controlled conditions afforded by computer simulation, all but one method (the variants frequency approach) fail to correctly identify unbiased cultural transmission in samples collected from moderately to severely time-averaged assemblages. While it is encouraging that the method that is best at identifying unbiased cultural transmission in simulated time-averaged data is robust to relative sample size, additional work is needed to determine whether even the variants frequency approach is powerful enough to dependably identify "weakly" biased forms of cultural transmission in empirical assemblages.

Prentiss, Anna (University of Montana) and Alexandra Williams

[145] *Theorizing the Historical Development and Peak Structure of Dense Aggregate "Villages" in the Middle Fraser Canyon, British Columbia*

The large "villages" of the Middle Fraser Canyon of interior British Columbia have puzzled archaeologists for several decades. With exceptionally large houses clustering in numbers of 80 or more, it is possible that some of these communities may have exceeded 1000 persons during the late portion of the "Classic Lillooet" period. Households may have been internally ranked with family space arranged around the internal peripheries of floors. Houses within villages were organized in densely packed geometric

arrangements that include lines, arcs, and circles, in some cases with distinct plaza areas. The arrangement of villages within the Mid-Fraser landscape was similarly patterned with a triad of settlement sizes with evidence for routine interaction marked by exchange of goods. This fractal pattern of settlement organization along with a range of other evidence (e.g. public feasting and other rituals) implicates the likelihood of a complex history, particularly in the period of 1000-2000 years ago. We draw from a range of theoretical models (innovation, emergence, and cultural macroevolution theory) to offer some initial statements on the nature of that history. To accomplish this, we introduce concepts of platforms, emergence, extrapolation, and exaptation as essential to this modeling process.

[290] Chair

Prentiss, Anna M. [175] see Hill, Katherine

Prescott, Catherine (Hamilton College), Nathan Goodale (Hamilton College) and Alissa Nauman (Hamilton College)

[76] *Cooking for the Camp: An Archaeological Field School Cookbook*

There is a lot more learning that goes on at an archaeological field school than just survey field methods and excavation techniques. Many students come to field school with different levels of skills, for some it may not be their first dig experience, for others it is their first real camping experience. One aspect to an archaeological field school that may take students out of their comfort level is learning how to cook for large groups; large, hungry groups of people. And each field school is different: different eating habits, different dietary restrictions and preferences. Over the course of a 6-week field school, we followed the development of students' abilities within the kitchen. Using the Mac app iBooks Author, we created a digital, shareable cookbook filled with recipes provided and cooked by the students. No matter their skill level or previous cooking experience, students are, at first, a bit overwhelmed at the prospect of cooking for a large group. But as the weeks passed and students became more comfortable in dealing with the large quantities of food, meals became more complex with additional side dishes and more adventurous starters.

Preucel, Robert (Haffenreffer Museum, Brown University)

[296] Discussant

Prewitt, Elton

[199] *Painted Pebbles in the Lower Pecos Canyonlands*

Small painted stones from dry rockshelters throughout the Lower Pecos Canyonlands traditionally are interpreted as ritual objects. Attributed to women's roles in increase rituals involving fertility and water abundance, specific motifs are identified as insects like butterflies and other creatures and natural phenomena relating to life cycles. Post-painting breakage of painted pebbles may be intentional and once used for their intended purposes, they no longer were sacred and were returned to secular use as mundane tools. Many pebbles, whether whole or broken, display pitting and scratching use-wear suggestive of knapping tools. To investigate these ideas and expand our understanding of the artifacts, Drs. Jean Clottes, Carolyn Boyd and I developed a method grounded in data collection. Using sophisticated imaging equipment, we analyze pebbles individually, re-creating painting sequences to examine how designs were created and to identify possible relationships between design and use-wear. We also collected extensive attribute data from pebbles to objectively identify patterns in their complex imagery. Data generated from our sample of nearly 700 specimens will allow us to analyze these patterns and provide hypotheses regarding the possible meaning, function, and significance of painted pebbles to the Archaic and Late Prehistoric peoples of the Lower Pecos Canyonlands.

Prezzano, Susan (Clarion University)

[239] *Contributions of the Washington Office to the Archaeology of the Northeast and Mid-Atlantic Regions*

Although the River Basin Survey (RBS) program is best known from the large-scale projects performed in the western United States, archaeologists out of the Washington RBS office implemented a considerable volume of archaeological investigations in the Mid-Atlantic and Northeast starting in the late 1940s and continuing into the 1960s. These surveys comprise some of the earliest professional archaeology performed in many river systems. The benefits of the RBS to the discipline are considerable, including the discovery of important sites central to the understanding of regional culture history within the Eastern Woodlands. Early in their careers, important archaeologists such as Ralph Solecki and William Mayer-

Oakes contributed to the RBS in the Northeast and Mid-Atlantic regions.

Price, T. Douglas [21] see Freiwald, Carolyn

Price, Max (Harvard University)

[84] *Animal Husbandry and Secondary Products at Chalcolithic Marj Rabba (Lower Galilee)*

The site of Marj Rabba, located in the Lower Galilee region of Israel, contains fourth and fifth millennium occupations. Excavations began in 2009 with the aim of understanding the evolution of complex society in the Chalcolithic period in northern Israel, a previously understudied region. Of particular interest is how the production and exploitation of secondary pastoral products figured into the local economy. In this paper, I present faunal data collected from five seasons of excavation. The results show that while textile production was important, herders did not depart from generalized production strategies. Pig production, part of an unspecialized meat economy, was particularly prominent. This likely reflects optimal environmental conditions for raising pigs in the Chalcolithic. On the other hand, pathologies to the appendicular skeleton of cattle are evidence for animal traction. This may relate to intensified production of cereal agriculture.

[84] *Chair*

Prieto, Gabriel [245] see Sutter, Richard

Prieto, Oscar

[245] *Social Dynamics and Economic Interactions of an Early Initial Period Maritime Community: The Gramalote Case*

Recent excavations at the early Initial Period (1550-1250 B.C.) site of Gramalote, located in the Moche Valley, north coast of Peru are confirming that the households of this fishing community shared a marine-oriented economy based on shark and sea-lion meat, complemented by fish, seabirds and abundant mollusks. There is evidence that Gramalote inhabitants were practicing wetland-type horticulture to grow reeds, gourds and squash in large quantity. Some households were engaged in non-subsistence activities such as the manufacture of shell beads, basketry, mats and the production of red pigment on a large scale. These data offer a new perspective in our understanding of the early stages of Andean prehistory, based on the study of social dynamics from a bottom-up perspective. In a broader sense, this research aims to provide an alternative model to study fishing settlements, integrating subsistence pattern studies, technological aspects and the household approach.

[245] *Chair*

Prince, Paul [325] see Holly, Donald

Prins, Adam [65] see Adams, Matthew

Prociuk, Nadya (University of Texas at Austin)

[89] *Inscribing Identity: A Case Study of Symbolic Communication from the Iron Age Castro Culture of North-Western Iberia*

How did the symbols saturating the material culture of the Castro people serve a social and political, not merely decorative, role during the Late Bronze and Iron Ages of north-western Iberia? My research explores the interconnected aspects of identity, symbols and material culture within the Castro Culture of Late Bronze and Iron Age Portugal. Using materials from five sites within the Castro region of northern Portugal, I examine the context, frequency, and association of various symbolic motifs as they appear on ceramics, domestic and public architecture, and objects of personal adornment. Comparing this data with that from excavations conducted at the Cividade de Bagunte site, I attempt to trace the ways in which the Castro people may have employed various symbolic motifs to communicate elements of personal and group identity by inscribing particular symbols in different social contexts. These symbols may have functioned to convey aspects of identity both within Castro communities and to the larger Atlantic and Mediterranean social spheres in which they participated. This paper will present the theoretical underpinnings of the project as well as preliminary research results.

Proctor, Terren (McGill University)

[278] *The Last Neanderthals: An Examination of Climatic Influence on the Extinction of the Neanderthals*

While many areas of paleoanthropology are debated, perhaps none is as contentious as that of the Neanderthals. Among the most hotly debated topics concerning Neanderthals are concerned is the question of their extinction. Why? How? When? There are a number of prevalent theories, though all experience the same problems of providing adequate proof despite the problems plaguing all prehistoric archaeology: the problem of dating, the problem of preservation and the problem of proving a reconstruction of the past. This paper aims to examine the influence of the climate upon the extinction of the Neanderthals, including why this glacial era was different from the other, as well as the importance of the coast for the late survival of the species.

[278] *Chair*

Profitt, Tomos [255] see Byrne, Fergus

Protzen, Jean-Pierre

[120] *Pilgrimages to Pachacamac and Titicaca in Inca Times*

Long-distance and populous pilgrimages in Inca times to important shrines like Pachacamac and Titicaca were not only religious acts but played a significant role in the integration of conquered peoples into the Inca Empire and the legitimization of the power of the Incas. We propose to explore how the approach to the sanctuary, the landscape, the architecture and the shrine itself, as well as the ceremonies and sacrifices along the way, contributed to the religious experience of the pilgrims, and in what ways the pilgrims acknowledged and submitted to the power of the Inca.

Prufer, Keith (University of New Mexico)

[337] *Evaluating Airborne LiDAR for Detecting Settlements and Modified Landscapes in Disturbed Environments at Uxbenka, Belize*

LiDAR has the potential to enhance existing regional studies of settlement distributions and landscape modifications, as well as to increase the resolution of related hydrological modeling, view shed analysis, and least cost paths. We present data from 134 square kilometers of LiDAR, which is centered on the Classic Period Maya center Uxbenká, and discuss its potential for detecting archaeological settlements and landscape modifications in areas of vegetation heavily disturbed by shifting agriculture. Vegetation density, type, and height impacts LiDAR ground reflection, evidenced in density of ground returns in the point cloud and can reduce visibility of smaller structures, terraces, and other anthropogenic features under certain regimes. Ground-truthing and comparison with pedestrian survey results allow us to estimate these limitations for varying stages of forest recovery. Profile models of ground and high-resolution (< 1m) topographic maps created from the LiDAR DEM aid in predicting the locations of otherwise invisible household groups and structures spread across the landscape.

[33] *Discussant*

Prufer, Keith [138] see Jordan, Jillian

Puckett, Neil (Texas A&M CSFA)

[225] *Lost and Found: Using GIS to Identify Viable Underwater Projects*

Over three decades of work has shown the viability of researching, surveying, and excavating terrestrial archaeology in an underwater context. Many of these investigations have been done in naturally submerged environments. However, over the last six decades numerous sites were anthropogenically inundated as a result of reservoir construction. Many of these sites were written off after being recorded in a flurry of investigation prior to their submersion. With the proven viability of underwater research, it is clear many such sites are still accessible for additional investigation. Unfortunately, data concerning their location, condition, age, and depth is not easily accessible. As such, they are often bypassed by governmental agencies, CRM firms, and most academic researchers. This paper presents a model for developing a GIS database that provides easy access to information concerning artificially inundated sites. The model is applied across the Great Basin and the resulting database is presented. As is shown, it provides visual, textual, and digital information on the applicable sites. This information allows potential researchers to quickly identify crucial details about site archaeology and location in order to determine the possibility and importance of conducting additional investigations at sites previously thought lost to the march of progress.

Pugh, Timothy [147] see Lamela Lopez, Raquel

Pugh, Timothy (Queens College and The Graduate Center) [147] *The 2013 Season at Nixtun-Ch'ich', Petén, Guatemala*

A social group called the Itza occupied the Petén lakes regions of Petén, Guatemala from initial contact in 1525 until after their conquest in 1697. The 2013 field season at Nixtun-Ch'ich' in Petén, Guatemala investigated a faction of the Itza called the Chakan Itza. The project excavated a Late Postclassic period ceremonial complex and associated domestic groups in Sector QQ and conducted a new detailed survey of part of the site. Horizontal excavations uncovered a ceremonial complex with two colonnaded halls constructed side by side. The halls were decorated with sculpted snake, parrot, and turtle imagery and included effigy and composite censers. The masonry of the halls differs from that found in other colonnaded halls in Petén. The forms of the residences in the domestic groups were difficult to document as they did not include substantial walls. Nevertheless, the residences contain a variety of artifacts and features indicative of domestic practices. The 2013 survey of the western portion of the site added details to an earlier map and remapped a large ballcourt in the northern portion of the site. Limited testing in the ballcourt revealed some details about its construction history and use.

[147] Chair

Pugliese, Francisco Antonio (MAE/USP BRAZIL), Eduardo Góes Neves (Museu de Arqueologia e Etnologia da USP - Brazil) and Guilherme Mongeló (Museu de Arqueologia e Etnologia da USP - Brazil)**[129] *Exploration, Mapping and Excavation of the Fluvial Shellmounds of the Guaporé Basin, Southwestern Amazonia***

Shellmounds are visible fixtures of the archaeological record of the New World, being known from the California coast to Patagonia. In lowland South America, shellmounds have been noticed and studied since the Nineteenth century along the Atlantic coast of southern Brazil. Most of those shellmounds are placed near the seashore or at estuarine areas. It is little known, however, that fluvial shellmounds are also found in other settings, including the deep interior of the Amazon basin. In this work, we present the results of research in the Monte Castelo archaeological site, a fluvial shellmound in the middle Guapore basin, southwestern Rondonia state, at the border of Bolívia and Brazil. The context of Monte Castelo site is worth exploring because the excavated ceramic fragments show decorative features, such as zone-incised cross-hatching or hachure-zoning, known in some of the earliest known potteries of New World, such as Puerto Hormiga, in Colombia, Valdivia, in Ecuador, and Early Tumishcainyo, in the Peruvian Amazon. Hence, the investigation of such contexts allows for a better understanding of early contacts between the Andes and the Amazon in the pre-colonial history of South America.

Puig Castell, Jordi [105] see Toyne, Jennifer Marla

Pullen, Daniel (Florida State University), William Parkinson (Field Museum of Anthropology), Anastasia Papathanasiou (Ephoreia of Paleoanthropology and Speleology of So), Panagiotis Karkanas (Ephoreia of Paleoanthropology and Speleology of So) and Michael Galaty (Mississippi State University)**[332] *Alepotrypa Cave and Its Regional Context in the Late and Final Neolithic Aegean***

Current work at the Alepotrypa Cave at Diros in the Mani, southern Greece, now allows us to place Alepotrypa into a larger regional framework of the Late Neolithic and Final Neolithic Aegean. A regional survey and the excavation of an adjacent open-air site complement the continuing excavations and scientific program within the cave. Comparison of material from three areas in the Peloponnesos, Greece, where both excavation of a cave and/or open-air site and a survey have recovered material dating to LN and FN (the Corinthia, the southern Argolid, and the Mani), reveals regional variability in settlement patterns. The northern Peloponnesos (the Corinthia) follows the pattern of central and northern Greece with the establishment of multiple long-lasting open-air settlements within a region through the LN and FN, whereas the southern Peloponnesos sees single or no open-air settlements in similar sized territories in the LN. Instead, in the LN, these southern regions seem to be focused on the use of caves such as Alepotrypa, with abundant open-air settlements appearing in addition to caves in the FN. On the local level our project aims to explain the relationship between the cave and its surroundings through the LN and FN periods.

Punk, Michele**[117] *The Application of Geoarchaeology to the Practice of Cultural Resource Management in the Pacific Northwest: Small Discoveries and Large Implications***

Geoarchaeology provides a different lens through which archaeologists can understand and properly address the management of cultural resources. This is true for the early planning stages of a project, during the investigation and interpretation phase, or at the end of the project when what we've learned should be disseminated and incorporated into the lexicon of considerations for cultural resource planning and management in a region. By viewing recent archaeological discoveries in Oregon and Washington through a geoarchaeological lens, the larger implications of these small discoveries can be understood and integrated into cultural resource management practices on a local and regional scale.

Punzo, Jose Luis (Instituto Nacional de Antropología e Historia)

[339] *Moving North: Metallurgy in West and Northwest Mesoamerica during the Postclassic (A.D. 900-1450)*

Metallurgy in Mesoamerica suddenly appears for the first time in West Mexico around A.D. 700. In this paper I analyze metal artifacts found in West and Northwest Mesoamerica, items associated with the Azatlán Tradition at that time. I explore the rapid expansion of metal items, first in western Mesoamerica, then northward along the Mexican Pacific coast in the Azatlán World, inland into the Chalchihuites and Casas Grandes regions, and north into the American Southwest.

Punzo Díaz, José Luis [140] see Sandoval Mora, Cindy Cristina

Purdue, Louise (Arizona State University, School of Sustainability)

[149] *From the River to the Fields: An Integrated Study of Water Systems towards a Better Understanding of Socio-Environmental Interactions*

Water management has contributed to the construction and organization of human communities since the emergence of the first agricultural societies. The evolution of water availability and allocation strategies through time and its impact on cultural shifts is a socio-environmental question necessarily raised by researchers. However, traditional approaches to answer this challenge rarely consider water systems at the interface of nature and culture. Yet irrigation systems are an image of an existent agrosystem and an adaptation to a changing hydrosystem they depend upon and impact on various spatio-temporal scales. This socio-environmental signature is recorded in the hydraulic structures temporality (construction, maintenance, abandonment), their spatial organization, and sedimentary fill. The principle and limits of an integrated multi-proxi approach applied to this research object are presented and discussed in this presentation. Hydraulic structures are studied from their intake to the fields they supply, and their systemic study allows for the formulation of dynamic models of anthroposystems, locally to regionally. The study of a prehistoric Hohokam irrigation system in the semi-arid Phoenix basin, Arizona will be presented as an example. This approach is a key tool to measure the long-term vulnerability and resilience of agricultural communities and evolve from retrospective to prospective analyses.

Purser, Margaret [134] *Discussant*

Putsavage, Kathryn J. [43] see De Smet, Timothy

Pyburn, James [158] see Frappier, Amy

Pyburn, Anne (Indiana University)

[240] *The Next Generation: Thoughts on Mentoring Archaeologists*

In 1980, slightly more than half of the incoming class of graduate students at the University of Arizona were female. There were no female archaeologists on the faculty. Today I am a member of a faculty that includes 8 archaeologists, currently all female. I have seven graduate students; one is male. My colleagues are similarly low on male students. In this presentation I will consider whether this is a discipline-wide demographic shift, or simply an artifact of an all-female faculty. Since there is still a salary and promotion gap between male and female professionals, such a shift implies a pressing need to change some of our mentoring strategies.

Pye, Jeremy (Cultural Resource Analysts, Inc.)

[155] *"Unwanted Guests": Malaria and Other Parasites in 19th Century Tucson, Arizona*

The Alameda-Stone Cemetery, Tucson, Arizona, was in use between the early 1860s and 1882 before

being closed. During that period, it served as the only municipal cemetery for Tucson, a city which acted as a hub of interaction between national influences from Mexico and the United States. The community was multiethnic, consisting of Hispanics, Native Americans (Tohono O'odham, Akimel O'odham, Yaqui, and Apaches), Anglo-Americans, African-Americans and recent migrants from Europe, Canada, South America, and Asia. Not surprisingly, a variety of parasites affected the people of Tucson, as well as the associated military post, Fort Lowell, in the 19th century. Drawing on historical, archaeological, osteological, archaeoparasitological, and environmental information, this paper investigates how the infection of people by several species of parasites, was impacted by changes that took place in both the physical and cultural landscape.

[155] Chair

Qin, Zhen (Washington University in St. Louis)

[51] *An Exploration of the Process of Agricultural Intensification at Sanyangzhuang Site, Henan Province, China: A Geoarchaeological Approach*

This paper focuses on the process of agricultural intensification, especially the evolution of agricultural technologies from the Early Bronze Age to the end of Western Han dynasty (roughly from 4000 B.P. to 2000 B.P.). During this period, three advances in agricultural technology were probably invented and applied: (1) The plow was intensively used by farmers to make ridges and furrows, and to maintain the porosity and permeability of the cultivated soil; (2) various kinds of manures, such as ashes and human/animal dungs, were adopted to keep the soil fertile; (3) irrigation systems were constructed to keep water accessible in the semi-arid climate condition. However, these "advances" are nothing more than hypotheses or possibilities because they have not been tested by archaeological findings. In the research, the author will integrate existing findings and samples from Sanyangzhuang site and conduct geoarchaeology-based research by analyzing soil samples to see if the advances of agricultural technologies in historical documents are true or false.

[51] Chair

Quates, E.W. Duane (U.S. Army, Fort Drum, NY) [54] Moderator

Quave, Kylie [121] see Covey, Ronald

QUESADA, OCTAVIO (Universidad Nacional Autónoma de México)

[62] *Olmec Iconography: Prevalence of Naturalistic and Abstract Signs in a Visual Language*
In this paper, after comprehensive study of a wide sample of Olmec plastic monuments (1400-100 B.C.) the distribution of naturalistic and abstract signs of what can be called an Olmec visual language is described. In 890 Olmec pieces analyzed, four main natures were found: human (80%); serpentine (8.3%), avian (6.6%) and feline (3.1%). Among the pieces studied were found those whose nature was single and those whose nature was combined. In both cases one nature is the "noun", while subsequent natures work as "adjectives". Combinatory analyses of the four single natures and twelve possible combinations between two, show highly asymmetric data. There is a remarkable prevalence of serpentized humans, followed not closely by humans and snakes alone; other groups that are present include humans stylized with avian or feline traits; snakes bearing human attributes and serpentized birds and felines; five of the twelve possible combinations are completely absent. Furthermore, the iconic set of two opposing snakes and four abstract signs which stand for serpentine traits, are recognizable. The conclusion is that both types of signs -figurative and abstract- are the elements of a visual communication system, each with a specific function in the concerted task of creating sense.

Quick, Russell (Cultural Resource Analysts, Inc.)

[196] *No Toe-Bone Left Behind: Multi-Method Geophysics for Historic Cemetery Delineation*

In the last decade, the delineation of unmarked historic cemeteries has become increasingly important as development encroaches on defunct churchyards and family cemeteries. Geophysical methods have increasingly been employed to meet the need for a fast, accurate, and inexpensive way of delineating these resources in a non-invasive manner. A recent poorly conceived study at Arlington National Cemetery, however, concluded that geophysical methods are ineffective for locating graves. This paper presents the results of surveys conducted at several historic cemeteries across the Midwest. These surveys indicate that, in a sense, the critique of geophysical methods is partially correct: the use of individual methods is not always effective. Here it is argued that the use of multiple geophysical methods,

including ground penetrating radar and magnetometry, can increase the confidence in geophysical cemetery delineation to a level that is acceptable for cemetery management.

Quinlan, Angus (Nevada Rock Art Foundation)**[282] *Distant Meanings: The Social and Landscape Contexts of Great Basin Rock Art***

Focusing on the western Great Basin, this paper explores spatial variability in rock art styles, themes, and archaeological and landscape contexts as a first step in reconstructing how prehistoric populations may have categorized their environments as social landscapes. Rock art locales may be understood as assemblages of visual symbolism, produced by repeated social actions that inscribe social memory in time-space. These enduring symbolic marks in the landscape potentially establish places of cultural meanings that social agents draw upon to create precedents for the veracity and authority of their social practices and roles. Rock art in the western Great Basin is only found at certain places in the landscape, both settled and remote, raising the question of what aspects of social life were performed against a backdrop of cultural symbolism and why these locales and the activities performed there were selected for symbolic treatment? The roles of western Great Basin rock art and social landscapes in social reproduction are explored through a regional sample of 130 rock art sites that range from the Middle Archaic through the Late Archaic.

Quinn, Colin (University of Michigan)**[20] *Modeling Dynamics of Community Organization in Resource Procurement Zones: A Bronze Age Transylvanian Case Study***

Due to a paucity of anthropologically-oriented archaeological projects, theory, and models to systematically evaluate resource procurement, the long-term dynamics of communities in procurement zones, areas where resources are extracted locally and exchanged widely, remain poorly understood. Using settlement and mortuary data from the metal and salt-rich region of southwest Transylvania during the Bronze Age, this paper explores and problematizes the dynamics of political economic models for change in community organization in procurement zones. By looking at multiple resources, across multiple social dimensions, and at multiple scales, it is possible to begin to characterize shifts in community organization in resource-rich areas.

Quinn, Colin [153] see Lowry, Justin

Quinn, Colin (Dartmouth College), Deborah Nichols (Dartmouth College), Michael D. Glascock (University of Missouri) and Jason Paling (Plymouth State University)**[311] *Chiquilistagua Archaeological Project 2013 Obsidian Analysis and Sourcing***

We will report on obsidian artifacts that have been analyzed; found in 2013 with the Chiquilistagua Archaeological Project in Nicaragua. The site of Chiquilistagua is located west of modern day capital Managua and began preliminary excavations in 2012. The 2013 field season marked the first official excavations with follow up analysis and cataloging of artifacts ranging from compacted floor, obsidian, other lithics, and ceramics. Collected obsidian artifacts underwent in depth physical analysis as well as X-Ray Fluorescence Analysis at the Missouri University Research Reactor to chemically fingerprint and identify geological sources. There were 137 pieces of obsidian found consisting of small blades, flakes, core fragments, exhausted cores, and a nodule fragment. The identification of geological sources allows for a basic trade network to be established for the domestic village site of Chiquilistagua, Nicaragua; Tempisque to Bagaces Periods (B.C. 500-300 A.D., 300 A.D.- A.D. 800 respectively).

Quintana Owen, Patricia [164] see Vazquez De Agredos Pascual, Maria Luisa

R. Segura, Oliva (UAQ), Mahinda Martínez (Universidad Autónoma de Querétaro) and Luis Hernández-Sandoval (Universidad Autónoma de Querétaro)**[336] *Microscopía electrónica de barrido para la identificación de textiles arqueológicos: el caso de El Rosario, Querétaro***

La identificación de textiles arqueológicos requiere diferentes técnicas, entre ellas el uso de microscopía electrónica de barrido (MEB), que permite usar fragmentos pequeños de muestras con diferente grado de deterioro, como materiales carbonizados. Los fragmentos textiles analizados se encontraron carbonizados y cubiertos por sedimento sobre el segundo piso (650 d.C) del Edificio Principal del sitio arqueológico El Rosario en Querétaro, México. Para determinar el material vegetal de elaboración, la muestra se comparó con siete tipos de fibras vegetales locales tanto de monocotiledóneas como de dicotiledóneas, entre ellas algodón (*Gossypium hirsutum*) y maguey (*Agave*), utilizadas ampliamente en

Mesoamérica para textiles. Las muestras fueron cubiertas con oro y observadas al MEB. También se diafanizaron y tiñeron con safranina para observarlas al microscopio de luz. La microscopía de luz permitió reconocer que el textil es una mezcla de fibras de dico y monocotiledóneas. Con el MEB se observan detalles para reconocer las fibras a nivel de especie, como el algodón que se caracterizan por ser filamentos aplastados y retorcidos con lumen amplio. También permitió reconocer que la fibra de monocotiledónea no era maguey.

Rabbysmith, Steve [117] see Cyr, Howard

RabbySmith, Steve (Brockington and Associates), Carrie Williams (Naval Air Station Pensacola) and Kad Henderson (Brockington and Associates)

[125] *Archaeological Investigations at the Barrancas Site, 8ES1354: American Period Occupation and Use during the Nineteenth Century.*

The Barrancas Site (8ES1354), a large multi component archaeological site located at Naval Air Station, Pensacola, has produced a wide variety of cultural material and intact deposits related to its extensive occupation and reflective of its strategic importance on Florida's Pensacola Bay. Past investigations of the site have focused primarily on the substantial first Spanish Period occupation at the Presidio Santa María de Galve and associated fortification San Carlos de Austria. However, a recent cultural resources compliance study carried out on other portions of the site have revealed deposits associated with American nineteenth century cultural components, including an Antebellum Creole home site, a Civil War Union encampment, and a post-Civil War Army installation. This paper provides an overview of the site's later historical occupation and related archaeological remains and seeks to exemplify the Navy's commitment to preserving this and other important historic properties while maintaining its mission

Racila, Ana-Monica [241] see Mack, Jennifer

Raczek, Teresa (Kennesaw State University) [35] *Discussant*

Radde, Hugh (California State University Northridge)

[142] *Interpreting the Cultural Landscape at Toyon Bay (CA-SCAI-564) on Catalina Island*

Previous research on Santa Catalina Island off the coast of Los Angeles has provided valuable insight about the indigenous islanders through the lens of cultural ecology. These studies have contributed to our understanding of complex maritime hunter-gather-fisher practices that sustained Native people for over 8000 years of occupation. While this body of work speaks volumes to the prehistory of Catalina, it is here argued that Landscape theory can lend an alternative perspective that complements previous research and builds on our understanding of social activity and the relationships of islanders. Utilizing the prehistoric village located at Toyon Bay (CA-SCAI-564) as a case study, this paper aims to present how the interpretation of satellite sites in the adjacent canyon can be analyzed through landscape theory, specifically by taskscapes as defined by Ingold. Through this powerful perspective, one can hope to view the symbolic ordering of space and place as perceived by a given group of occupants. In this sense, the landscape provides much more information to archaeologists than simply dots, boundaries, and resources. The canyon and village tell a story of generations of use tied to social relations and community.

Rademaker, Kurt (University of Maine), Gregory Hodges (University of Arizona), Gordon Bromley (University of Maine) and Daniel Sandweiss (University of Maine)

[69] *Late-Glacial Settlement of the High Peruvian Andes*

The Pucuncho Basin, located at 4480 m elevation in the southern Peruvian Andes, contains some of the oldest known archaeological sites in the Andes Mountains and the highest ice-age sites yet discovered in the Americas. Two linked Terminal Pleistocene sites occupy landforms where Alca obsidian crops out and are proximal to productive wetland habitats home to herds of Andean herbivores. The Pucuncho open-air site has fluted Fishtail projectile points diagnostic to ~12.8-11.7 ka. Seven kilometers east, Cuncaicha rockshelter contains robust occupation evidence spanning the past ~12.4 ka. Our high-resolution chronology at Cuncaicha shelter includes 35 AMS ages on ultrapurified bone collagen obtained at two laboratories, with 23 AMS ages constraining the Terminal Pleistocene component. The Cuncaicha sequence and a high-resolution glacial-geologic record developed at Nevado Coropuna just south of the basin demonstrate that despite colder temperatures, more extensive glaciers, and low-oxygen conditions, successful human colonization of the high-altitude Andes began at the end of the last ice age. Raw material and tool assemblages at Pucuncho Basin sites and the Terminal Pleistocene fishing site

Quebrada Jaguay 150 km south on the Pacific Coast suggest linkages between early sites with very different adaptations situated in diverse ecological zones.

Radewagen, Erika [242] see Herdrich, David

Radovanovic, Ivana, Rolfe Mandel (University of Kansas) and Dusan Mihailovic (University of Belgrade)

[310] *Mesolithic Settlement in the Iron Gates Region: Integrating Current Archaeological and Geoarchaeological Evidence*

This paper presents results from a recent survey of the Mesolithic sites in the flatlands and mountainous hinterlands of the Danube Iron Gates region. Previously explored and currently submerged sites located along the Danube Gorges' riverbanks represent only a fraction of the regional early Holocene hunter-gatherers' settlement network. Based on previous studies of stratified archaeological sites, there appear to be gaps in the record of human occupation during the early and middle Holocene in the region, which has sparked questions about the cause of such chronological discontinuities. Our study included a geoarchaeological assessment of the Holocene and terminal Pleistocene alluvial stratigraphy at a newly recorded site on the Danube River. Also, stable carbon isotope values were determined on soil organic matter from buried alluvial paleosols. Results of the investigation allow us to address the temporal and spatial patterns of recorded archaeological sites and consider geomorphic processes that have shaped that record. Our findings also provide a more reliable framework for understanding Mesolithic hunter-gatherer land-use in the Iron Gates region.

[310] Chair

Rafferty, Sean [172] see Nadeau, Jaclyn

Rafferty, Janet (Mississippi State University)

[216] *Site Occupation: Repeated or Continuous Use*

Even in sedentary settlement patterns, occupations can be short- or long-term and sites may be reoccupied. Short-term sedentary settlement has been documented for the Woodland through Protohistoric periods in the upland Tombigbee River valley of north-central Mississippi. It is important to examine variability within this sequence to detect and explain changes that occurred. The Middle Woodland Cork site (22Ok746) had ca. 200 1x1 m excavation units placed along an east-west ridge. Ceramic seriation shows that the west end was used first, followed in sequence by areas increasingly farther east. The site is fairly small, 20x150 m. Whether the artifacts represent a continuous occupation or reoccupation and whether each part of the site was used the same way are two issues of interest. To confirm the chronological order, a detailed stylistic analysis of hafted bifaces was done. The main variation found is in intensity of occupation, as measured by quantity and kind of artifacts recovered per cubic meter. Exotics (quartz crystal flakes, galena, and copper), while rare, have a broad distribution. The site appears to represent one occupation rather than reuse. In sedentary settlement patterns in the region, there is repeated use of landscapes, but not usually of particular small locations.

Ragsdale, Corey [103] see Edgar, Heather

Ragsdale, Corey (University of New Mexico) and Heather JH Edgar (University of New Mexico)

[247] *Cultural Effects on Phenetic Distances among Postclassic Mexican and Southwest United States Populations*

The Southwest United States (US) and Mesoamerica are often thought of as disparate regional networks separated by Northern Mexico. Chaco Canyon in the Southwest US, Tlatelolco in Central Mexico, and Casas Grandes in Northern Mexico all had large inter-regional trade centers that economically connected these networks. This study investigated how factors such as geographic distance, shared migration history, trade, and political interaction affected biological relationships and population affinities among sites in Mexico and the Southwest US during the Postclassic period (A.D. 900~1520). Distances based on cultural and ecological variables derived from archaeological and ethnohistoric data were compared with phenetic distances obtained from dental morphological traits. The results of the Mantel tests show trade ($p = 0.012$), shared migration history ($p = 0.004$), and geographic distance ($p = 0.05$) to be significantly correlated with phenetic distances, while political interaction ($p = 0.133$) was not. Partial Mantel tests show trade ($p = 0.049$) and shared migration history ($p = 0.003$) remain significant when controlling for similarities with geographic distance, but geographic distance is not significant when

similarities with trade ($p = 0.681$) and shared migration history ($p = 0.667$) are controlled. These results highlight the importance of economic relationships and shared migration history among contemporaneous populations across geographic regions in prehistoric Mexico and the Southwest US.

Raichlen, David [16] see Wallace, Ian

Raichlen, David, Brian Wood (Department of Anthropology, Yale University), Adam Gordon (Department of Anthropology, University at Albany), Frank Marlowe (Department of Anthropology, Cambridge University) and Herman Pontzer (Department of Anthropology, Hunter College)

[16] *Scale-Free Foraging in Human Hunter-Gatherers: Lévy Walks Are a Fundamental Feature of Human Mobility*

When searching for food, many organisms adopt a super-diffusive, scale-free movement pattern, called a Lévy walk, considered optimal when foraging for heterogeneously located resources with little prior knowledge of distribution patterns. While memory of food locations and higher cognition may limit the benefits of random walk strategies, no studies to date have explored search patterns during human foraging. Here, for the first time, we show that human hunter-gatherers, the Hadza of Northern Tanzania, use Lévy walk searches much of the time. Lévy walks are used when searching for a wide variety of foods, suggesting even in the most cognitively complex forager on earth, random walk searches are an essential element of foraging strategy. Lévy walk foraging is likely a key element of human prehistory, given the adoption of a hunting and gathering lifestyle nearly 2 million years ago. Super-diffusive foraging may have allowed hominins to explore larger home ranges, and may have played a role in patterns of raw material transport and residential camp distributions in the archaeological record. In the end, a greater understanding of mobility patterns and search strategy may help us better interpret interactions between humans and their environments in both the present and the past.

Railey, Jim (SWCA - Albuquerque)

[7] *Long-Term Trends in Far Southeastern New Mexico: Zooming In and Out*

Hundreds of radiocarbon dates from the BLM's Carlsbad Field Office region, in far southeastern New Mexico, reveal long-term trends reflecting climate change and variation in hunter-gatherer mobility, subsistence economics, and settlement organization. How mobile hunter-gatherers responded to climatic downturns, such as the onset of the Medieval Dry Period, remains a key question for this on-going research. Did groups in the Mescalero Plain concentrate at surviving water sources, did they migrate to better-watered locations (such as the Pecos River and mountain foothills to the west), or did some combination of both occur? To explore this question, I zoom into the Cedar Lake Playa Depression. This presumed oasis has hosted numerous archaeological excavations, which have produced over 70 radiocarbon dates. The cumulative frequency of dates from here is, overall, similar to that for the region as a whole. Compared to the broader region, however, dates from the Cedar Lake area show an even more precipitous frequency plunge following the onset of the Medieval Dry Period. This suggests the possibility that many people may have simply left the Mescalero Plain at this time, or perhaps the Cedar Lake Playa was not a favored oasis at this time.

Rains Clauss, Lee [97] *Discussant*

Rakita, Gordon F.M. [44] see Krug, Andrew

Rakita, Gordon (University of North Florida), Shaza Wester Davis (University of North Florida) and Elizabeth McCarthy (University of Missouri)

[44] *Scratching the Surface: Surface Sampling of the 76 Draw Site, Luna County, New Mexico*

Archaeologists in the American Southwest have long used examinations of surface artifacts to assess potential subsurface deposits, relatively date sites, assess cultural affiliation, and select locations for excavation units. However, various factors including alluvial and aeolian processes and historic and contemporary land use can impact the distribution and density of surface materials. This poster reports the results of an intensive surface sampling and mapping of the 76 Draw site in southwestern New Mexico. The purpose of this sampling was to assess how useful surface artifacts are at providing indications of subsurface deposits, provide guidance for future subsurface excavations, and assess cultural connections between the Casas Grandes, Salado, Black Mountain, and El Paso Phase Jornada in the Animas region.

[144] *Discussant*

[44] Chair

Rakita , Nicholas [44] see Fernandez, Andrew

Ramage, Lauren

[285] Patterns of Settlement Hierarchy in the Lurin Valley during the Late Intermediate and Late Horizon

The purpose of this research will be to examine the patterns of settlement hierarchy present at various sites located throughout the Lurin Valley during the Late Intermediate and Late Horizon periods. My work will attempt to first establish these patterns and then also to identify potential similarities between them at sites such as Panquima, Tijerales, and numerous other areas. Using computer-based models, I seek to analyze the spatial relationship of these sites both in relation to one another and also in relation to their location within the valley as a whole. Furthermore, I intend to examine how the positioning of these sites and, subsequently, how the relationships between them potentially influenced the intra-site characteristics present within their respective locations. In essence, my work will first discuss the ways in which physical location as well as site proximity in the valley shaped the intra-site characteristics of many of the Lurin Valley settlements. It will then examine the social dynamics present at each of these sites in relation to settlement hierarchy and compare them to surrounding areas in order to better understand the socio-political relationships between sites in the valley during this time period.

Ramirez, Susana [21] see Liot, Catherine

Ramirez, Susan (Texas Christian University)

[245] Fish[i]stories: Seafolk of the Northern Peruvian Coast

This paper summarizes chroniclers' accounts and other primary source references to fisherfolk in the colonial era found in the archives of Spain and Peru. It focuses primarily on the sixteenth century, years in which coastal inhabitants suffered devastating losses from exotic, unknown diseases; confronted the arrival of foreign invaders who did not speak any of the Andean languages; witnessed the breakup of ethnic groups and the assignment of different segments to new masters with needs that were very different than those associated with Inca hegemony; resisted pressures to change gods and disavow ancestor worship; heard about and saw new cultural forms – including new definitions of morality, right and wrong; built newly mandated homes and settlements sometimes far from their previous homesteads; and protested the loss of geographical mobility so crucial to the exploitation of the multiple available resources necessary for basic subsistence. The analysis shows that fisherfolk formed an integral and important segment of the populations of all the major curacazgos (chieftainships) on the north coast, interacting actively with their farming neighbors.

Ramirez-Urrea De Swartz, Susana (Universidad de Guadalajara)

[339] Social Organization in the Aztatlán Tradition (850-1350 A.D.): The Sayula and Chapala Basins (Jalisco), a Case Study

Social organization during the Aztatlán Tradition is quite unknown. Research in several areas in Western Mexico has given some insights about how Aztatlán groups were politically, economically and ideologically structured. Archaeological research in the Sayula Basin, together with comparative studies in the Chapala Basin, indicates that the Aztatlán network could be organized into political units that shared different ritual activities, burial patterns, ceramic styles, specialization, exchange, etc. Each political unit had a major site, a cabecera, where the high status people lived and perhaps controlled the regional exchange and specialization within that political unit.

Ramon Celis, Pedro

[238] La fortaleza de Yagul, investigaciones recientes a través del estudio de su topografía

Desde mediados del siglo pasado se han realizado estudios relacionados a la invasión de los grupos mixtecos al Valle de Oaxaca y la reacción que los habitantes zapotecos tuvieron a este efecto. Uno de los fenómenos que se pueden observar fue la construcción de puntos defensivos en el valle de Tlacolula. En este escrito analizaremos uno de estos asentamientos a la luz de nuevas investigaciones realizadas mediante técnicas arqueométricas, nos referimos a la fortaleza de Yagul, la cual ha estado en debate sobre si se trata en efecto de un área de defensa o con otro tipo de propósito.

[238] Chair

Ramsey Ford, Dawn (HDR Engineering, Inc.)

[316] *Hydropower and Cultural Resources Management: A Case Study from California's Sierra Nevada*

The Federal Power Act (16 USC ch.12) provides the Federal Energy Regulatory Commission (FERC) the authority to license non-federal hydropower projects on navigable waterways and federal lands. Over the last decade, many utility and power agencies have been in the process of renewing their FERC licenses and as such are required to comply with federal laws and regulations, including Section 106 of the National Historic Preservation Act. HDR Engineering, Inc. has been instrumental in this process and has been tasked with the inventory, evaluation, and treatment of historic properties affected by the ongoing operations and maintenance of a number of hydropower projects. This poster explores some of the challenges for inventorying cultural resources at large hydroelectric projects through a case study of the Yuba River Development Project, located in the northern Sierra Nevada of California. Much of the landscape, particularly around the project reservoir, is extremely steep terrain with dense vegetation. This environment presented a number of difficulties in conducting intensive archaeological surveys in order to thoroughly identify cultural resources that might be affected by the project.

Randall, Lindsay (Robert S. Peabody Museum of Archaeology)

[202] *After Pecos: Linda S. Cordell's Legacy at the Robert S. Peabody Museum of Archaeology*

Linda Cordell was more than a supporter of the Robert S. Peabody Museum of Archaeology in Andover, Massachusetts; she was one of the museum's most eager hands-on partners. Linda's passion to support student learning and her enthusiastic guidance influenced several educational programs at the Museum. Pecos Pathways, one of the Peabody's signature educational programs, brings together students from Phillips Academy, Jemez Pueblo, and Pecos, New Mexico to learn about ancestral and contemporary native communities. This program allows students personal interactions with tribal elders and archaeological experts. Among the professional archaeologists, Linda stood out to the students as the most relevant and accessible. Students enjoyed her expertise and supportive nature, but also her sincere desire to listen to and learn from them. Linda's passion for teaching young adults also extended into the Phillips Academy classroom. Linda championed the integration of experts and real world experiences into the classroom to enhance student knowledge and understanding. Linda Cordell was an unparalleled mentor and educational resource for the Peabody Museum, and helped to positively shape not only students, museum educators, but the Peabody Museum as a whole.

Randall, Asa (University of Oklahoma)

[213] *Migrating Mounds Unsettled by Climate Change: Insights from Archaic Period (ca. 7400-3500 B.P.) Communities of Florida*

Movement defines hunter-gatherer lifeways. Ecological approaches have foregrounded the necessity of seasonal mobility between patches for successful resource acquisition. In contrast, a consideration of hunter-gatherer social landscapes highlights the centrality of movement to ongoing community identity construction and social memory work. Landscapes emerge from pathways and itineraries that connect places, times, and persons. In this relational view, movement between and experiences within places are naturalized as social and mythic histories such that moving between place is also movement in time. In this paper I consider how social landscapes are reconstituted when histories are unsettled by climate change. In particular, I focus on the culture history of Archaic period (ca. 7400-3500 B.P.) communities of the St. Johns River valley in Northeast Florida. A prominent component of Archaic landscapes was the creation and management of a network shell mounds. These places had various lives as residences, ceremonial platforms for aggregations, or burial mounds. Although physically enduring, the social and ecological conditions that sustained them varied historically. Site biographies reveal that shell mounds - as socially significant places - migrated as old mounds were displaced and new ones were incorporated into the social geography of the St. Johns.

Ranhorn, Kathryn (The George Washington University), David Braun (The George Washington University) and Alison Brooks (The George Washington University)

[26] *What Is Levallois? Re-Evaluating Criteria for identifying Levallois Cores Using Photogrammetry*

The Levallois reduction strategy is often considered a key component of Middle and Later Pleistocene industries. It has been linked to derived degrees of planning and forethought associated with "prepared core" techniques. However, unambiguous quantitative methods for identifying Levallois reduction in the archaeological record remain problematic. The debitage products of Levallois reduction are often employed to identify Levallois technology but these flakes may be obtained through other knapping strategies. Instead, Levallois cores are likely to preserve a better understanding of the reduction strategy, especially if refitting is possible. Boëda defined diagnostic criteria of Levallois reduction, yet identifying

these criteria remains subjective. Here we develop a quantitative technique for identifying Levallois reduction guided by principles in Boëda's definition, namely the presence of two asymmetric, hierarchical faces with opposing convexities. To test the validity of these criteria we employ photogrammetric methods to capture three-dimensional form of cores from various archaeological sites across Southwest Asia, Europe, and Africa. Core forms were captured as high-resolution 3D models. This enabled the visualization and shape quantification of portions of cores (e.g. hemispheres) that would otherwise be unattainable with conventional measurements. This research lends new perspectives on the quantitative identification of Levallois technology in the archaeological record.

Rasmussen, Amanda [304] see Jaijlet-Wentling, Angela

Rasskazov, Sergei [287] see Suda, Yoshimitsu

Rathgaber, Michelle [30] see Payne, Claudine

Rauch, Rebecca (The University of Utah Press)
[314] *Discussant*

Rauscher, Erika (Wagner College), Shevan Wilkin (University of West Florida) and Danielle Kurin (University of California Santa Barbara)

[103] *Trauma and Trepanation in Highland Peru*

This paper evaluates whether increasing violence during the Andean Late Intermediate Period ([LIP], ca. A.D. 1000-1400) is associated with an increase in trepanation (ancient cranial surgery). Crania ($n = 113$) excavated from cave burials at two LIP settlements, called Sonhuayo and Ranracancha, located in the Chanka heartland of Andahuaylas, Peru, were evaluated for evidence of trauma and concomitant trepanation. The total number of wounds and total number of trepanations were calculated for these two contemporaneous communities. Results demonstrate that over 60% of observed individuals possessed at least one cranial injury, with several displaying numerous wounds. Trepanations were present on several crania with trauma. Social factors also structured trepanations as all affected individuals in this sample had modified crania. Evidence for multiple surgical techniques including scraping and circular grooving show definite signs of healing, and signal attempts to ensure the survival of wounded patients.

Rauscher, Taylor [103] see Wilkin, Shevan

Rautman, Alison (Michigan State University)

[246] *Theorizing Archaeological Cultural Landscapes: Local Knowledge and Archaeological Practice*

Archaeological study of cultural landscapes considers both natural and constructed places that were inhabited and also imagined by particular human communities in the past. Archaeologists of the deep past such as the European Mesolithic thus commonly engage with theory from human ecology, phenomenology, material culture studies, and other fields. Notably absent (by definition) is the significant input provided by collaboration or connection with indigenous perspectives, or by partnership with people who trace a direct historical, biological, and/or cultural connection to the past inhabitants of a region. Thus, archaeologists who can engage with a well-defined local descendant community might seem to have a much easier time in understanding the varied interactions between humans and their natural, social, and cultural setting. However, a brief review of the literature in cultural anthropology and in the philosophy of social science reminds archaeologists of some of the more ambiguous political, ethical, and theoretical issues involved in integrating local knowledge (sometimes called indigenous knowledge) into diverse research contexts. This cautionary note highlights archaeologists' shared problems of describing, interpreting, and understanding the past, regardless the time depth involved.

Ray, Erin (University of California, Merced), Hector Neff (California State University, Long Beach) and Holley Moyes (University of California, Merced)

[277] *Ritual Cave Use at Las Cuevas, Belize: Preliminary Results of Geochemical Analysis*

The cave at Las Cuevas located in Belize, C.A. is unique as it features an extensively modified entrance chamber. To date 64 platforms, 7 staircases, and 2 sets of terraces have been mapped and recorded. Most of the architecture has been plastered and some of the plaster is still intact. Our research aims to

discover the function of the platforms in the cave entrance. We hypothesize these platforms were used for rituals that may have included burned offerings, dancing, and bloodletting. To test this we have used morphological and geochemical analyses. We have used high resolution mapping to examine minute differences in topography. Geochemical analyses were conducted in the field using portable XRF (pXRF). Additional samples were collected for laboratory analysis including Inductively Coupled Plasma Mass Spectrometry (ICP-MS) and Fourier Transform Infrared Spectrometry (FTIR). In this paper we will present our preliminary results and discuss possible ritual practices.

Ray, Jack (Missouri State University) and Neal Lopinot (Missouri State University) [280] *Calf Creek on the Eastern Horizon*

The eastern distribution of Calf Creek appears to terminate in the western Ozarks region. Although Calf Creek artifacts are found in this region, they are not as common as other contemporaneous point types. The presence of Calf Creek in this area is viewed as an expansion of the Calf Creek manifestation into the western portion of the Eastern Woodlands during terminal Middle Archaic times. This expansion involved an adaptation toward the exploitation of forest and stream resources. The Calf Creek expression in the western Ozarks is discussed in terms of settlement distribution, chert resource procurement, technology, and subsistence.

Raymond, Tiffany (Mississippi State University)

[260] *Exploring Freshwater Mussel Shell Ring Sites in the Mississippi Delta: Preliminary Results from 22YZ605 and 22YZ513.*

In recent years, research has been focused on shell ring sites along the Atlantic and Gulf Coasts. These sites have been demonstrated to represent sedentary, hunter-gatherer populations during the Archaic (Russo 2006). Relatively unknown to the archaeological community are the numerous freshwater mussel shell rings located in the Yazoo Basin of the Lower Mississippi Valley. Dozens of these sites recently have been identified using aerial photographs (Peacock et al. 2011). These freshwater shell ring sites are mainly documented in gray literature reports, where a very limited amount of information is available. This paper will present preliminary results from excavations at two freshwater shell ring sites in Yazoo County, Mississippi. These results will include a comparison of LiDAR data and aerial images of the sites, as well as the age as determined from surface collection and excavation.

Raymond, J. Scott (University of Calgary) [281] *Discussant*

Raynal, Jean-Paul [299] see Wragg Sykes, Rebecca

Rayson, Gary [330] see Bianco, Briana

Rebellato, Lillian [75] see Isendahl, Christian

Redmond, Brian (Cleveland Museum of Natural History)

[48] *Hilltop Enclosures and Changing Uses of Ritual-ceremonial Space in Woodland Northern Ohio*
Debate over the builders and users of hilltop enclosures in northern Ohio has gone on for more than a century. Originally viewed as "Moundbuilder" fortifications, these important sites are now seen as multi-component habitations of local Woodland and Late Prehistoric-era societies. Questions concerning the relationships between ritual, domestic, and defensive activities at these sites remain. Recent study of the Heckelman site in north-central Ohio provides evidence for Early Woodland (cal. 600 to 100 B.C.) construction of two parallel ditches (and presumably embankments) to enclose a 0.60 ha section of riverine promontory. In addition, a ritual/ceremonial precinct demarcated by a 0.13 ha oval (ditch) enclosure was constructed within the larger enclosed space. Activities here focused on the erection and removal of large (ceremonial) poles and limited domestic-residential functions. The succeeding Middle Woodland, Hopewellian, occupation (cal. A.D. 235 to 435) significantly altered this ceremonial landscape and established a domestic presence marked by discrete household clusters, which were in part focused on the production of mica artifacts, cache blade/preforms, and possibly mound ceremonialism. This Ohio Hopewell-inspired occupation is currently undocumented at any other hilltop enclosure in the region and marks a distinct shift in the perception and use of ritual space.

[48] *Chair*

Redmond, Brian [172] see Nolan, Kevin

Reed, Paul (Archaeology Southwest)

[56] *Puebloan Occupation of the Middle San Juan and the Chaco Frontier*

Research completed over the last dozen years has clarified and enhanced our understanding of the area between Chaco Canyon and Mesa Verde. Ancient Pueblo people in this Middle San Juan region blended characteristics of both areas north and south but nevertheless created their own unique manifestation. Chacoan migration into and colonization of the area in the late eleventh century brought substantial change and lasting but diverse hegemony for 200 years. Despite Chacoan influence and minor presence in the greater Mesa Verde region to the north, the northern limits of the Middle San Juan (roughly the current New Mexico-Colorado state line) arguably represent the beginnings of the northern Chacoan frontier. Manifestations of Chacoan hegemony north of this line were much weaker than those south of the line. In this paper, I explore this apparent boundary and its implications for our understanding of the dynamic Chacoan and post-Chacoan periods.

[18] Discussant

Reed, Lori (Aztec Ruins National Monument), Linda Wheelbarger (San Juan College) and David Witt (SUNY Buffalo)

[56] *Ancestral Great Houses in the Northern Borderlands: Chacoan Hegemony at Aztec North and Point Pueblo*

As Chacoan hegemony expanded into the Middle San Juan region, the great house communities at Aztec North and Point Pueblo were local representations of a growing frontier. Point Pueblo and its surrounding community were established as early as the mid to late A.D. 900s and may represent one of the earliest and longest lived great houses along the San Juan River. Aztec North and its community along the terrace north of the Animas River was established during the late 1000s, but eventually was transformed by the monumental built-environment of Aztec West and East. These two great house communities developed along different trajectories representing the dynamic cultural landscape characteristic of the Middle San Juan river valleys prior to the expansion of Chacoan colonies at Salmon and Aztec West. Point Pueblo and Aztec North were engaged in regional networks and power structures, which necessarily reacted to the evolving nature of political, religious, and economic boundaries. Through an examination of site layout, architecture, and ceramics, among other material items, this paper investigates how local Middle San Juan folks negotiated the shifting centers of power as Chacoan hegemony was established.

Reeder-Myers, Leslie (Smithsonian Institution)

[77] *Climate Change and the Archaeological Record of North America's Coasts*

Twenty-first-century global warming poses a significant threat to the archaeological record of coastal regions, but the effects of sea level rise and changing weather patterns will not be evenly distributed. This study compares the vulnerability of cultural resources in three parts of North America--the mountainous coast of southern California, the sandy shores of the Texas Gulf coast, and the tidal reaches of the Chesapeake Bay estuary. All of these areas have already seen sites submerged under rising tides or lost to storm erosion, but variability in coastal geomorphology, rates of relative sea level rise, and the structure of prehistoric settlement systems produce different patterns of vulnerability. Spatial modeling using geographic information systems allows survey and testing to target the areas that are most threatened. Results suggest that the archaeological records of all three areas will be impacted by global warming, but that the Texas Gulf coast faces the greatest double threat from sea level rise and erosion. The rich cultural heritage of North America's coasts is likely to be severely damaged, along with the record of how ancient people adapted to similar problems.

Reedy, Chelsea (Chelsea Aurelea Reedy)

[208] *Experimental Spiral Fractures Based on Butchering Analysis at the Bull Creek Site*

Bull Creek is a 9,000 year old campsite in the Oklahoma panhandle affiliated with the late Paleoindian Plainview culture. Excavations uncovered bison bones with strong indication of human manipulation. Based on the argument that experimental butchering can provide evidence that the manipulation of the bison bones at the Bull Creek site was the result of human activity, an archaeological experiment was set up which focused on creating "green bone" spiral fractures seen on the Bull Creek specimens. The experiment successfully replicated the breakage patterns observed at Bull Creek suggesting that the bone modification was the result of human activities rather than trampling by animals.

Reese, Ashante (American University) and Rachel Watkins (American University)

[64] *Ancestry in Progress: The Construction of a Descendant Community for a Cadaver Skeletal Collection*

This paper reflects upon past attempts to identify a living descendant community for the W. Montague Cobb skeletal collection, a cadaver skeletal collection based in Washington, D.C. The paper moves on to highlight current strategies being employed for this purpose. In doing so, it explores the construction of descendant community as a political and research strategy that enhances the skeletal biological study of 'communities' of people whose remains are housed in research institutions. The paper argues that the construction of a descendant community is an integral part of understanding the shared past connectedness of the people whose remains we study, as well as understanding longitudinal connections between these persons and those living in the present. This includes a critical examination of our relationship to these collections as part of a community of researchers situating the individuals therein as both agents and subjects. As such, this discussion also presents an opportunity to explore issues of accountability that are associated with how of researchers' work linking communities together in the past and present is perceived.

Reese, Kelsey (Washington State University)

[289] *Letting the Data Define the Terms: Mapping Community Size and Expanse in Mesa Verde Proper*
Producing a succinct and accurate definition for a "community" has been a challenge for scholars of Southwestern archaeology. Quantitative definitions consider temporal, geographic, demographic, and social dimensions to produce a definitive region in which individuals are expected to interact on a regular, if not daily, basis. Conversely, qualitative definitions are concerned with the presence or absence of kin members within the sphere of interaction, or the use of kinship as an organizational strategy. Regardless of the approach, the researcher is hindered by the limitations of the data set—Incomplete survey data, lack of excavation to support observations made during survey, etc. The dataset available in Mesa Verde National Park provides a unique opportunity to explore the periods of aggregation and disaggregation that occurred between A.D. 600–1280. The analysis is done by calculating the least cost paths among all contemporaneous habitation sites on Mesa Verde proper and determining the likely degree of aggregation and expanse of community through time. This paper offers a means of defining "community" based on empirical data, taking into account temporal fluctuations of aggregation, and addresses the difficulties of manipulating and analyzing large data sets.

[289] *Chair*

Reese, Kelsey [289] see Kohler, Tim

Reese-Taylor, Kathryn

[61] *The Preclassic Landscape of Yaxnohcah*

The Preclassic landscapes of the lowland Maya reflected their understanding of cosmic and social order. E-groups are situated at the heart of these landscapes and are among the first constructions people create upon colonizing an area. However, in many cases, they are not the only, or even the initial, complex established within early communities. At Yaxnohcah, the Brisa complex, an early E-group, lies in the center of a vast dispersed settlement comprised of voluminous platforms. Recent excavations have revealed that the Fidelia complex was initially constructed during the early Middle Preclassic, prior to the earliest E-group platform. During the later Middle Preclassic and again during the Late Preclassic, the site was enlarged and the architecture amplified and elaborated. Ramps and sacbes lead out from several platforms. One sacbe links the Alba complex, a large triadic group, to a ballcourt and establishes a strong north-south orientation to the civic precinct. Therefore, within this paper, I consider the corpus of architectural forms at Yaxnohcah. These architectural constructs, the E-group, the triadic group, the ballcourt, and sacbes are essential elements of a founding landscape and work in concert to embody the evolving cosmological and social worldview of the lowlands Maya during the Preclassic.

[123] *Discussant*

Reeves, Matthew (James Madison's Montpelier)

[152] *Transforming Metal Detectorists into Citizen Scientists*

In 2012, the Archaeology Department at James Madison's Montpelier began an experimental program with Minelab Americas to encourage metal detectorists to become more involved in the scientific process

of archaeological research. Specifically, the program was designed to be a week-long experience where archaeologists and metal detectorists would work together to identify and preserve archaeological sites at the 2700-acre Montpelier property. In the process, the metal detector participants were taught the importance of site preservation through background lectures and detailed information on how the survey methods they employ during the week with their metal detectors ensure minimal disturbance of the site while identifying enough information regarding the site to ensure its preservation. Participants learned how gridded metal detector surveys were conducted and the importance of proper context and curation of recovered objects. In turn, participants provided feedback on what would enhance the experience to inspire continuing learning and interaction with archaeology in the future. The success of this program led to a new public-set of programs that are held three times per year and are open to the public. Having previous participants recommend this program to their friends and community members has been integral to the success of the programs.

Regnier, Amanda (University of Oklahoma)**[240] Ceramic Studies and Feminism in the Southeast**

Throughout my career, my research has been focused on the analysis of styles of ceramic production and decoration, and how both reflect social practices across communities in the prehistoric Southeast. While my studies are focused on an aspect of material culture generally attributed to women, I have been reluctant to identify my research as explicitly centered on the activities of and relationships between women. In this paper, I explore possible reasons why, as women have gained a greater foothold in the archaeological community, I have downplayed the extent to which my own research is focused on the activities of women in the past.

Regnier, Amanda [327] see Hammerstedt, Scott

Rehren, Thilo [211] see Maldonado, Blanca

Reichel, Clemens [329] see Gopnik, Hilary

Reid, Jefferson (University of Arizona)**[32] Discussant**

Reid, Chardé [77] see Trocolli, Ruth

Reid, Elizabeth**[138] Ceramic Thin-Section Analysis and Early Postclassic to Middle Postclassic Discontinuity at Colha**

Petrographic and Type:variety analyses of Colha ceramics are used to investigate changes in ceramic production technology and organization during the Early and Middle Postclassic. Postclassic sherds from Colha are grouped by petrofabric, surface treatment, and modes. This dissertation focuses on the petrofabric analysis of the ceramic sherds. The groupings are then compared to locally available raw materials. Changes in technological homogeneity, production specialization, and origin will be examined and related to the general economy of Postclassic Colha.

Reilly, Frank (Texas State University)**[251] Sacred Languages of the Southeast: Writing Without Words in the Memory Theaters of Mississippian Ritualism**

Despite notable efforts over the past twenty years, visual systems of communication in Pre-Columbian America remain largely unrecognized by the scholarly community. In eastern North America, certain hide paintings from the Great Plains and the sacred scrolls of the southern Ojibwa have been interpreted as carrying specific information including ritual spaces and even music. In this presentation, I suggest that certain Mississippian objects bore symbols that when organized in patterns functioned in ways similar to other New World pictorial systems, in that they were not dependent on spoken language, and in that they served an important function in Native American ritualized theaters of memory.

[251] Chair

Reindel, Markus [154] see Richards-Rissetto, Heather

Reindel, Markus (German Archaeological Institute, Bonn, Germany)

[154] *New Discoveries from 3D-Modeling of the Paracas site of Collanco, Peru*

In our research project on the Paracas culture in southern Peru we discovered hitherto unknown settlement structures in the highland regions of the Andes. The size (up to 3 km²) and complexity (densely packed settlement clusters) of these settlements constitute a serious challenge for archaeological documentation. In cooperation with the German Archaeological Institute and the ArcTron3D company, the latest methodologies and techniques of remote sensing and 3D-modelling were employed in order to achieve a satisfactory documentation of the settlement structures. In our contribution we present the ongoing work for the documentation of the settlement of Collanco.

The 3D documentation of Collanco in 2013 took four days on site and produced a three-dimensional record of a 4.5 km² area—including archaeological terrace structures on about 2.5 km². The airborne image documentation (SFM - Structure from Motion) was carried out from a paraglider. Additionally, a high-resolution landscape model including the terrace structures was recorded using a long-range terrestrial 3D laser scanner (Riegl VZ-400). Photogrammetry and laser scanning were deployed in combination as well for a detailed record of a selected small settlement area with subcentimeter accuracy. All 3D models were brought together in the archaeological 3D information system aSPECT 3D.

[154] Chair

Reiser, Marcy (University of Arizona) and Lawrence Todd (University of Texas, Austin)

[265] *When Trees Won't Talk: Authenticating Potential Modified Trees with an Unknown Past*

Dendroarchaeology can be an exceptional scientific tool for chronicling past human land use. The scars left on culturally peeled trees, injury caused by ancient harvesting and bark removal activities, are often distinct and recognizable. They are symmetrical and ovate in shape, located well above the ground with a midsection at roughly breast height, and, with any luck, the indisputable presence of cut marks. But what to do when scarred trees display few or none of the tell-tale signs of human modification? Trees in the Caldwell Basin of northwestern Wyoming are a case in point. Ravaged by the 2011 Norton Point Fire, these trees no longer retain conclusive evidence of cultural modification—if, indeed, they ever did. The trees themselves are mere shadows of their former existence and even the scar morphology—when it can still be detected—has been irretrievably altered by the fire and any potential cut marks obliterated. With no archetypal cultural indicators, a broader set of criteria must be used to identify and authenticate potential culturally peeled trees including: fire history and ecology, estimations of scar morphology, spatial and temporal distribution of scars, and the archaeology of the area.

Reiser Robbins, Christine (Texas A&M University-Kingsville)

[168] *Examining Nostalgia in the Old Town Square: The South Texas Urban Parks Public Archaeology Project*

The South Texas Urban Parks Public Archaeology Project (STUPPA) is a multi-site, multi-year community archaeology program which examines the long histories of iconic civic spaces in South Texas. Combining archaeology and oral history on site, the project brings together university faculty, museums, local governments, students, and more than 600 community members to investigate the nostalgic narratives and contested histories of sacred 19th century public parks in Corpus Christi and Victoria, Texas. We discuss the research potential and limitations of "parkaeology," including preserved space and long depositional histories, as well as the particular contributions the public archaeology, mixed methodology framework can make to urban historical archaeologies of the Old Southwest.

Reitz, Elizabeth (University of Georgia), Daniel Sandweiss (University of Maine) and Dolores Piperno (Smithsonian National Museum of Natural History)

[250] *Cultural Responses to Mid-Holocene Environmental Changes along the Pacific Coast of Peru*

Sitio Siches (PV 7-19) is a preceramic site located at 40° 24' S on the Pacific coast of Peru. The occupation is divided into three cultural phases: Honda (5150-4550 14C B.P.), Siches (6000-7100 14C B.P.), and Amotape (9000-9500 14C B.P.). The vertebrate assemblage is dominated by marine vertebrates; 57% of which are warm-water individuals and 37% are typical of cool-water settings. Warm-water vertebrates increase from half of the individuals in the Amotape and Siches collections to over 80% in the Honda collection, suggesting a change in marine conditions.. This is accompanied by an increase in mean trophic level and a decline in diversity. At the same time, invertebrate remains from Amotape and Siches levels are warm-water, while the Honda invertebrate assemblage is mixed warm- and cool-water species. These trends likely reflect cultural responses to mid-Holocene environmental changes

occurring between 6000 and 5000 B.P. Due to preservation, plant remains are more poorly represented than faunal remains. The plant assemblage includes phytoliths of *Cucurbita* spp. from the Early Holocene Amotape assemblage identified by Dolores Piperno. Siches and Honda deposits include *Lagenaria* sp. The early presence of plant domesticates at Siches may reflect, in part, the site's location above a permanent seep.

Reitze, William [43] see Erickson, Katrina

Reitze, William (University of Arizona)

[166] *The Kinchloe Site: Agate Basin Occupation in Central New Mexico*

The Kinchloe site is a Late Paleoindian (Agate Basin) site in the Estancia Basin, New Mexico. The Estancia Basin contained the eastern most pluvial lake in the Southwest, presenting a unique opportunity for Paleoindian foraging groups during the Pleistocene/Holocene transition. The Late Paleoindian occupation, however, postdates the final desiccation of the lake. Drawing comparisons between Kinchloe and Early Paleoindian occupation in the basin allows for the reassessment of models of Paleoindian mobility, landscape use, and site distributions as they shift during the Pleistocene/Holocene transition. This paper presents a reinterpretation of the Kinchloe site in the context of an ongoing full reassessment of the extant Paleoindian and Archaic surface collections from the Estancia Basin.

Remondino, Fabio [154] see Richards-Rissetto, Heather

Rendu, William (CIRHUS)

[16] *Neandertal Mobilities in Southwestern France: A Zooarchaeological Perspective.*

Recent works on the late Middle Paleolithic from Southwestern France have identified the existence of diverse populations characterized by distinct cultural features, attesting that several Mousterian societies succeeded one another through time. These societies evolved under different paleoclimatic contexts, adopting original strategies to exploit their biotope. However, the majority of the zooarchaeological approaches focusing on the spatial distribution of the activities within the territory has considered the Neanderthal populations as a unique entity and few studies have really discuss the diversity of the mobility pattern developed by the Mousterian societies in Southwestern Europe.

We propose here to tackle this issue through the study of two distinct groups from this region: the Quina Mousterian and the Mousterian of Acheulean Tradition. By taking into account several zooarchaeological criteria—faunal spectra, game selection, selective transport, hunting seasonality—we highlight the choices made by these populations, leading them to major modifications in the spatial organization of their subsistence activities. Indeed, we advance that have developed different hunting behaviors that might have for consequence the adoption of two distinct mobility patterns and therefore two different social organizations.

Reneau, Brittany (Florida Atlantic University) and Valentina Martinez (Florida Atlantic University)

[104] *Phosphate Analysis of Prehistoric Structures in Rio Blanco, Manabí, Ecuador*

Archaeologists have identified many prehistoric structures affiliated with the Manteño culture (500 C.E. to 1532 C.E.) of coastal Ecuador, but the function of those constructions is rarely understood. A few are associated with U-shaped seats, suggesting elite or ritual use, but the majority of the buildings have not yet yielded clear evidence of their function. As part of an ongoing project to explore the function of these buildings by Florida Atlantic University, I conducted systematic soil phosphate testing in and around two archaeological structures and, for ethnoarchaeological comparison, four contemporary households. I collected the samples in a grid pattern at 2-m intervals both inside and outside the structures. I measured the concentration of soil phosphates using a modification of the Melich II method developed by Richard Terry and his colleagues. I found clear spatial patterning in phosphate concentrations in and around the archaeological structures. The concentrations were higher inside the structures, while outside they decreased with distance from the structure. Also, the patterns associated with the two archaeological structures are different, implying different functions for the constructions. Comparison with the modern households suggests one structure was a storage area for organics and the other structure was a habitation.

Renette, Steve (University of Pennsylvania)

[84] *Islands in the Mountains: Insularity and Socio-Political Developments of Societies in a*

Mountainous Landscape

The Zagros Mountains in western Iran consist of countless valleys in between intimidating mountain ranges. Studies of this region have focused mostly on major trade routes crossing the Zagros Mountains. Site-specific research in the Zagros Mountains usually attempts to fit each site within a supraregional framework of long distance interaction, both chronologically and culturally. As a result, current scholarship presents the communities that occupied the Zagros as peripheral to the major political and cultural developments of the ancient Near East, thereby modeling this mountainous region as a borderland passively absorbing outside influences. Drawing on robust models of intra- and inter-regional interaction developed to understand the archipelago of the Aegean world, I demonstrate that Zagros valleys can best be understood as islands delimited not by a body of water but by mountain chains which put restraints on patterns of communication. I show that a model which includes concepts of insularity and a multiscale network approach can be a productive way to describe modes of communication and the formation of complex societies in mountainous regions.

This model can be applied to socio-cultural developments in mountainous regions generally, thereby offering a methodology to move beyond standard approaches that emphasize their peripheral nature.

Renfrew, A

[249] *Discussant*

Renfrew, Colin [249] see Cann, Johnson

Renninger, Sasha [273] see Daniels, Brian

Renouf, M.A.P [325] see Miszaniec, Jason

Reunert, Toke [33] see Nielsen, Jesper

Revay, Zsolt [13] see Wagner, Ursel

Reveles, Javier [21] see Liot, Catherine

Reyes, Omar [69] see Méndez Melgar, César

Reyes, Antonio, Bridget Zavala (Universidad Juarez del Estado de Durango) and María del Roble Ríos Ortega (Universidad Autónoma de San Luis Potosí)

[200] *Landscapes in the Making in the Sextín valley of Durango, Mexico*

In this paper we present the results of recent investigations along the Sextín river valley in Durango, Mexico. Specifically we consider how the inhabitants built and resignified the spaces they inhabited, focusing on architecture and material culture. We take into account the centuries of occupation in the valley as we reevaluate models proposed by previous studies in the region and analyze the relationships between diverse actors as reflected in objects and architecture through time.

Reynolds, Richard, Barbara Roth (Department of Anthropology, UNLV), Darrell Creel (University of Texas, Austin) and Roger Anyon (Pima County)

[32] *Communal Structures and Village Integration at the Harris Site*

When Emil Haury excavated at the Harris site in the 1930s, he excavated three sequentially used communal structures that surround a large central plaza. During current work at Harris, we have excavated a fourth communal structure and a small portion of the plaza. In this paper we look at the role of both the communal structures and plaza in village integration. We discuss the important role that both played within the village and within this portion of the Mimbres Valley.

Reynolds, Cerisa (Aims Community College), Meredith Wismer-Lanoë (University of Iowa), Robert Brunswig (University of Northern Colorado) and Frédéric Sellet (University of Kansas)

[206] *Fragmentation of Late Prehistoric Faunal Remains in Northeastern Colorado*

Site 5JA421 is located in North Park, Colorado and represents a Late Prehistoric processing camp. Our

analysis of faunal specimens recovered from this site revealed that the assemblage is highly fragmented, with 86.54% of the specimens measuring less than 5 cm at their maximum length. This intense fragmentation has generally been interpreted by archaeologists working in northeastern Colorado as evidence for grease and marrow processing. With minimal evidence for severe damage to the assemblage by other taphonomic forces, it is likely that much of the fragmentation of the site's faunal remains can be attributed to processing by humans. Human processing could also account for the low frequency with which specimens appear to have been directly burned, as fat, grease, and various nutrients are acquired through the boiling of fragmentary faunal remains. As subsistence data from prehistoric sites across northeastern Colorado are relatively sparse, the evidence provided by the faunal remains at 5JA421 represents an important component toward creating more complete reconstructions of Late Prehistoric site use, prey choice, and processing decisions across northeastern Colorado and beyond.

Rheaume, Ernie [18] see Tuomey, Joseph

Rhode, David [23] see Scharf, Elizabeth

Rhode, David (Desert Research Institute), Lisbeth Louderback (University of Washington), Anna Camp (University of Nevada-Reno), Jonathan Grant (University of Nevada-Reno) and Anita Sapula (WCRM, Inc.)

[148] Re-assessing Paleoarchaic Plant Use at Bonneville Estates Rockshelter

Preliminary analyses of botanical materials from features dating older than ~10,000 years cal B.P. at Bonneville Estates Rockshelter (BER) and Danger Cave have suggested dietary use of certain plants (particularly cactus pads, and possibly some seed plants; Rhode and Louderback 2007). Now that archaeobotanical analyses of the early Holocene BER record is completed, a reassessment of those preliminary results can be made, including comparisons with possible dietary plant usage derived from other Paleoindian sites in the Great Basin and western North America.

Rhodes, Jill [140] see Leriche, Christina

Rhodes, Jill, Barbara Omay (Drew University), Christina Leriche (Drew University) and Joseph Mountjoy (Universidad de Guadalajara)

[189] The People of the Shaft and Chamber Tombs: An Examination of the Human Skeletal Remains from the Middle Formative Period El Embocadero II Shaft and Chamber Tomb

Funerary rituals and human remains, in their death, provide evidence of life. By examining population demographics, biological markers of status and identity, and skeletal pathologies within the funerary context, it is possible to get a better understanding of past lives. This contribution examines the Middle Formative period shaft and chamber tomb site of El Embocadero II. This cemetery includes textile wrapped burials and traditional interments with variation in grave goods, providing the opportunity to examine differences in identity, status, and health. Biological markers examined include enamel hypoplastic defects, oral health, cranial modification, and skeletal pathologies. There are 25 individuals from 14 tombs. 40% are subadults with most dying between 2-12 yrs. Adult age at death is variable with some living beyond 50 yrs, but most dying between 35-50 yrs. There are twice as many females as males. There is little biologically distinctive in those tombs or interments with the greatest number of offerings. Those interred in the wrapped burial style show more signs of physiological stress and do not appear to be higher status. The children display the most severe pathological changes while adults primarily display degenerative joint disease. Cranial modification is seen in a variety of interments.

Rice, Prudence (Southern Illinois University)

[147] Contact- and Colonial-Period Pottery in the Western Lake Petén Itza Basin

The western basin of Lake Petén Itza was continuously occupied from the Late Postclassic through the Contact and Colonial periods. Excavations at the sites of Nixtun-Ch'ich' and Tayasal have yielded several kinds of pottery specific to these centuries. Some demonstrate long continuities with indigenous Maya types and wares and extend into modern times. Other material, for which we borrow the term "colono- ware" from the Southeastern U.S., exhibits a mixture of Maya and introduced (presumably European) characteristics. A third category of pottery is European-manufactured or -inspired, such as rare fragments of botijas (olive jars) and tin-enamelled ware (majolica; loza) from primarily Guatemalan and Mexican sources. These ceramics provide insights into the changing interactions of the Itza Mayas in

this isolated region.

[21] *Discussant*

[147] *Chair*

Rice, Erin (University of Illinois at Chicago)

[84] *Obsidian in the Southern Levant: A Comparative Analysis Using pXRF*

The importation of obsidian artifacts in the Southern Levant from Anatolian sources illustrates the importance of long-distance exchange networks during the prehistoric period. The vast distances over which this material is moving combined with its relative scarcity within archaeological assemblages in the Southern Levant allows for a unique perspective of the economic and social interactions in this region. This study provides a comparative view of the importation, distribution, and use of obsidian within and between several Pre-Pottery, Pottery, and Chalcolithic sites located in central and northern Israel. The primary method of sourcing the obsidian was conducted using portable X-Ray Fluorescence (pXRF) analysis on several hundred pieces of obsidian from six archaeological sites. In combination with pXRF, macro-analysis of obsidian artifacts was conducted to determine form, use-wear, and potential function. The two main goals of the study are to understand (1) the networks of trade and exchange both on a micro- and macro-regional scale, and (2) the production and use of obsidian objects within and between neighboring archaeological sites through time. This analysis of the distribution and use of an exotic prestige item such as obsidian allows for a more detailed assessment of social and economic interaction within the region.

Rice, Sarah

[166] *Paleoindian Land Use and Mobility in the Carson Desert, Western Nevada*

The Paleoarchaic record is poorly represented in the southern Lahontan Basin and this is in part because of avocational artifact collecting, incomplete survey coverage, and restricted land access. In the winter of 2011, Far Western Anthropological Research Group, Inc. located a unique upland Paleoarchaic site, 26CH3413, (The Seal Beach Overlook Site) while conducting pedestrian survey on Naval Air Station, Fallon, in Churchill County, Nevada. The site is a large lithic scatter located atop a promontory on the east side of the Dead Camel Mountains and the north end of the Desert Mountains. The surface assemblage contains numerous lithic tools and more than 1,000 pieces of debitage. Formal tools are noticeably denser in two areas of the site, indicating the surface assemblage retains a degree of spatial patterning. The site's central sand sheet contains abundant artifacts, suggesting subsurface cultural deposits that may preserve buried features. Here I present the results of fieldwork at the site and preliminary analysis of the tools.

Rice, Jennifer [265] see Mauldin, Raymond

Richard, Andrew (University of Arizona)

[166] *A Comparison of Fluted and Stemmed Projectile Point Strength Using Porcelain as a Medium*

Projectile point breakage provides researchers with valuable information on hafting style, projectile point strengths and weaknesses and other valuable data. This study compares the different types of breakage between PaleoIndian fluted and stemmed projectile points to determine their strengths and weaknesses. The goal of this study is to ascertain the breakage characteristics of each style of point, the frequency of breakage, type of breakage and consistencies in the area of the break to determine which projectile point is stronger. Comparisons of fluted and stemmed traditions could shed light on transitions in projectile point morphology. To answer these questions a procedure was developed using porcelain to cast projectile points consistently, in large quantities, that mimic the characteristics of stone while increasing experimental control. Stone has inherent problems involving production time, production numbers, consistent morphology and expense when attempting to flintknap large quantities of projectile points. In this study, fluted and stemmed points will be cast in porcelain, hafted to foreshafts, and then broken from different angles in order to quantify variation in fracture patterns.

Richard, Francois (University of Chicago)

[194] *"Excessive Economies": Genealogies of Wealth, Labor, and Social Power in Precolonial Senegal*
Elite control over property, production, economic surplus, and long-distance trade is centrally featured in

archaeological scenarios of political complexity. As Susan McIntosh remarks, however, such was not the case in many parts of pre-colonial West Africa, where the widespread availability of land, combined with relatively small, mobile populations, pose material headaches for would-be rulers. Here, conventional notions of dispossession, scarcity, and accumulation by themselves fall short of capturing the subtleties of political economy; rather, mechanisms rooted in a broad ethos of abundance – collective ownership, horizontal redistribution, wealth in people/knowledge, compositional forms of consumption – subtended the economic strategies of peasants and aristocrats alike. Using elements of Bataille's 'general economy,' which draws on ideas of excess, dissipation, waste, and sacrifice, I examine broad trends in the relationship between labor, wealth, and social power in northern Senegal during the past millennium, and how these relationships were materialized in archaeological landscapes.

Richards, Michael [175] see Diaz, Alejandra

Richards, Patricia (University of Wisconsin-Milwaukee) and Thomas J. Zych (University of Wisconsin-Milwaukee)

[270] *"All Lie Down Together and Are Soon Forgotten": The 2013 Milwaukee County Poor Farm Cemetery Project*

Excavations at the Milwaukee County Institutional Grounds (MCIG) in Wauwatosa, Wisconsin in 1991 and 1992 recovered 1649 individuals associated with Milwaukee County's practice from the mid-1800s through 1974 of providing burial for institutional residents, unidentified or unclaimed individuals sent from the Coroner's Office, and community poor. In 2013, Historic Resource Management Services of the University of Wisconsin-Milwaukee recovered an additional 650 individual coffin burials from the MCIG. Burials recovered during the earlier excavations are predominantly single interments with an occasional extraneous body part representing incidental amputation or autopsy. However, the 2013 excavations include a high proportion of multiple interments composed of complete individual skeletons as well as body parts likely reflective of autopsy and medical school cadaver use. In addition, many graves contained debris consisting of general refuse and/or medical waste. This shift is likely associated with dramatic land-use changes resulting from the development of the MCIG property from a general county facility to its current use as home to the Milwaukee Regional Medical Center and the Medical College of Wisconsin. This paper presents the results of a land-use history of the MCIG site in order to contextualize differences in burial practices observed in different parts of the cemetery.

Richardson, Leesha [209] see Wilkins, Jayne

Richards-Rissetto, Heather (Middlebury College)

[154] *LiDAR Applications for Landscape Archaeology: A Case Study from Copan, Honduras*

Airborne LiDAR opens up new research avenues, particularly in landscape archaeology where the rapid acquisition of high-resolution 3D data across vast landscapes and in impenetrable terrain allows archaeologists to contextualize larger (often already known) sites and perform regional analyses. This paper presents LiDAR data from Copan, Honduras flown for the MayaArch3D Project in May 2013 and the results of a ground-truthing campaign in January-March 2014. By comparing settlement maps and a Digital Terrain Model (DTM) derived from a 1980s pedestrian survey with new settlement maps and a DTM based on the LiDAR data, this project can contribute new accurate data to the existing topographic plans and terrain models, enabling the researchers to perform analyses with requirements for high accuracy like visibility and orientation studies. To assess the impact of increased mapping accuracy for archaeological research, we perform a sample visibility analysis among a sub-set of settlements. While LiDAR data expands the ways in which archaeologists study how past peoples constructed, shaped, and made use of their environment, we emphasize the value of and need for pedestrian survey as a critical component of landscape archaeology.

[154] *Chair*

Richards-Rissetto, Heather [154] see Von Schwerin, Jennifer

Richter, Kim (Getty Research Institute)

[62] *The Iconography of Postclassic Huastec Sculptures*

The most frequent subject matter of Postclassic Huastec sculptures is the human form. Male and female figures, probably nobles, are represented in a standardized way: standing either in the standard-bearer pose or with the hands on the abdomen and wearing elaborate costumes. Those with the greatest artistic

merit are masterfully elaborated with surface details, drawing attention to the bodily adornments, in particular the headdress. The analysis of Huastec sculptures reveals iconographic links to Postclassic artworks from other regions, such as other artistic traditions along the Gulf Coast and the painted codices from Central Mexico. These links confirm that the sculptures date to the Postclassic (A.D. 950–1521) period. Inscribed with a regional variant of the visual vocabulary shared throughout the Postclassic elite interregional network, Huastec sculptures legitimized local rulership by advertising external cultural ties. These remarkable sculptures provide insight to how the Huasteca fit into the cultural fabric of the Postclassic Mesoamerica world system.

Richter, Tobias [149] see Jones, Matthew

Rick, John (Stanford University)

[27] *Evidence for the Role of Plazas at Chavin de Huantar, Peru*

The Formative site of Chavin de Huantar, Peru, has long been recognized for its iconic plazas, thought to be the ritual focus of successive architectural arrangements at the site. Plaza-like areas are more varied at Chavin than previously thought, and the evidence for their use is similarly complex. The evidence for ritual use of these spaces is discussed, including that for the number of people involved, the nature of the activities performed there, and change over time in plaza function.

[154] *Discussant*

Rick, Torben (Smithsonian Institution)

[286] *Oysters, Foxes, and Everything in Between: Reasserting the Importance of Chronology Building in Zooarchaeology*

Zooarchaeologists have increasingly focused on issues of taphonomy and preservation as we have asked more sophisticated questions about human animal relationships and changes in faunal assemblages. An important aspect of this research is the reliability of the age estimates for a given faunal assemblage or individual bone or shell. In this paper, I draw on recent research focused on the translocation of mammals to the California Islands and the harvest of shellfish along the Chesapeake Bay where chronology building has been a core component of each project. Radiocarbon dating of bones and shells from a variety of different sites and contexts revealed evidence for stratigraphic mixing and other disturbances not recognized during excavation or previous chronology building and helped raise questions about the reliability of some of our interpretations. While archaeologists have long recognized the importance of having reliable radiocarbon chronologies, the growth of historical ecology and applied zooarchaeology place new emphasis on the need to devote greater resources to this important issue.

Rick, Torben [316] see Hofman, Courtney

Riddle, Andrew (Archaeological Services Inc.) and Amy Fox (University at Albany, SUNY)

[228] *Wiki Technology in Service of Archaeology*

Our discipline has entered the digital age and is beginning to take advantage of new resources at our disposal. Wiki technology is one such resource that can be effectively leveraged to disseminate key information about the discipline, facilitating collaborative learning and research. The wiki framework is well-suited to archaeology because the discipline's subject matter - method, theory, material culture - is readily organized into interrelated 'articles.' Content is searchable via user-defined attributes such as temporal period, geographic location, and cultural affiliation. This aspect of wiki technology uniquely facilitates an understanding of topic interconnection, and the platform has great potential as a peer-driven forum for information dissemination and discussion that is accessible to all interested parties. To this end, the ArchaeoWiki Project has been designed to test this medium and is structured to accommodate an ever-growing body of archaeological knowledge. ArchaeoWiki moves beyond traditional wiki functionality in order to address the needs of the scholarly community, incorporating a robust, queryable reference database and dynamically-generated content into its existing framework. With this structure in mind, it is argued that wikis can be forums for sharing knowledge and, most importantly, become destinations for engagement with others interested in the discipline of archaeology.

Rideout, Jennifer (Missouri State University)

[232] *A New Method of Ceramic Economic Indexing in Historical Archaeology: A Case Study from Springfield, Missouri*

The goals of this research are to develop an empirical method of quantifying post-Civil War household ceramic expenditure patterns based on archaeological remains, and apply this new method to a case study from historic Springfield, Missouri, to investigate socioeconomic inequality and consumerism in the Ozarks and broader Midwest at the turn of the twentieth century. I used historic mail order catalogs to develop economic indices of ceramics sold between the 1880s and 1920s. These indices were applied to historic ceramic assemblages from Springfield, to calculate the mean ceramic expenditure of households in several racially, ethnically, and economically distinct neighborhoods. In this poster, I present these new indices, show results of the archaeological application, and interpret the archaeological results in light of other, archival-based, socioeconomic status indicators.

Ridky, Jaroslav [299] see Kvetina, Petr

Riebe, Danielle (University of Illinois at Chicago) and Paul Duffy (University of Toronto)

[222] *Baroque by Whose Hand? Detailing the Regional Production of Finewares in Middle Bronze Age Hungary*

The Early to Middle Bronze Age transition (2000-1500 B.C.) in Eastern Europe is characterized by a tremendous expansion in the trade of horses, ores, and finished metals. During the same time, finewares with a great number of new ceramic stylistic elements emerged in the middle of this trade nexus. Some scholars suggest the style on the Plain was the result of specialized products moving with a new mobile class of warrior elites. Others argue the distribution of these finewares was produced by a re-orientation of trade networks, but not by a smaller number of specialized producers. This paper presents the results of a recent study that uses Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS) to compositionally analyze ceramic and clay materials from five Bronze Age sites across the Great Hungarian Plain. By ascertaining local clay signatures for each site, the primary goal of the project is to determine if local and imported ceramics can be identified. In doing so, we discuss the current evidence that Middle Bronze Age finewares were the product of a small number of specialized workshops controlled by a new minority class.

Riegert, Dorothy (University of Texas at Austin), Colene Knaub (Toledo University), Molly Roffers (University of Wisconsin- Oshkosh), Andre Gonciar (ArchaeoTek) and Zsolt Nyaradi (Haaz Rezso Museum)

[102] *A Biocultural Analysis of Infant Burials Interred at Telekfalva*

The prevalence of perinatal individuals excavated from the Reform Church in the village of Telekfalva presents a rare opportunity to explore juvenile identity and the social role of infant burial in 17th century Transylvania, Romania. The assemblage of 49 infant burials recovered from the Reform Church fosters a discussion of why perinatal individuals, who were possibly unbaptized, were buried in sacred, consecrated space. Via the biocultural model we explore spatial burial data to recreate the dynamic relationship among these infants. We explore the role of this church as a designated space for infant interments and deviant burials while utilizing life-course analysis to examine the performed solidification of memory through mortuary practice as a possible means of baptism after death. We investigate the spatial relationship of burial position, the use or disuse of coffins, the inclusion of grave goods, and age-at-death data in order to extrapolate any relevant patterns. Following this analysis, we conclude that it is necessary to contextualize bioarchaeological data within a medieval historical framework in order to best investigate the pattern of infant burials observed at Telekfalva.

Riel-Salvatore, Julien (University of Colorado Denver)

[71] *The Uluzzian and the Epistemology of the Middle-Upper Paleolithic Transition*

Long thought to have been manufactured by Neanderthals, the Uluzzian has recently been argued to be the earliest modern human technocomplex in Western Europe. While this recent reevaluation of its authorship has been questioned, the current revisions of what the Uluzzian might have 'meant' for the end of the Neanderthals opens up an interesting opportunity to examine what makes certain scenarios about the nature of transitional industries a priori more or less plausible. The question of 'how we know what we know in the Paleolithic' has been a recurring focus of Prof. Geoff Clark's work, and the current supercharged state of Uluzzian research lends itself to an epistemological assessment to contextualize where our interpretations of that particular Paleolithic 'culture' come from, and to highlight potential tensions among them. This study presents a historical review of the Uluzzian, followed by a critical perspective on the 'Uluzzian question' that identifies a series of factors that may have biased to various degrees how this industry has been interpreted over the past 50 years or so.

[71] *Chair*

Riel-Salvatore, Julien [71] see Barton, C. Michael

Riel-Salvatore , Julien [209] see Michael, Daniel

Rieth, Christina (New York State Museum)

[74] *William A. Ritchie: New York Archaeologist and Explorer 1949-1972*

William A. Ritchie began his career as a curator and archaeologist at the Rochester Museum. In 1949, he accepted a position as State Archaeologist at the New York State Museum in Albany. He held this position until his retirement in 1972. During his tenure as State Archaeologist, he furthered New York archaeology through the excavation of more than 100 sites and published more than 150 papers in journals, books, and other scholarly publications. These excavations not only contributed to our understanding of regional settlement patterns but also helped to refine the chronology of the state's earliest occupants. In addition, Ritchie also helped develop early laws for the protection of archaeological remains on state owned land, oversaw one of the earliest cultural resource management programs in the state, and worked with state agencies to advocate for the preservation of archaeological sites. His contributions continue to be visible today and his publications continue to be cited in studies of the past. This paper will highlight the many contributions made by Ritchie to the discipline between 1949 and 1970 and their impact on archaeology.

Rieth, Christina [172] see Nadeau, Jaclyn

Rieth, Timothy (IARII), Ethan E. Cochrane (University of Auckland) and Alex E. Morrison (University of Auckland)

[242] *Variation and Similarities in Vertebrate Faunal Exploitation in Early Deposits from Fiji and Samoa*
The prey choice model of optimal foraging theory (OFT) provides a means for measuring diet breadth and foraging efficiency, which can be used to examine variation in prey capture relating to resource exploitation/depression and/or environmental change. Using this model, we track temporal changes in vertebrate faunal collections (overwhelmingly bony fish) from early deposits in Fiji (-2700-2300 cal. B.P.) and Samoa (2550-2195 to 2260-1876 cal. B.P.). The Fijian collection from Tavua Island, Mamanuca Group, includes Lapita and post-Lapita remains, while the Samoa collection comes from an early Polynesian Plainware deposit from Tula Village, Tutuila Island. Both collections document exploitation of pristine, or near-pristine, marine and terrestrial ecosystems. Whereas geographical variation has been noted in specific fish taxa present in Fijian Lapita deposits with an increased number of taxa captured in later centuries, previous analyses of Samoan material documents temporospatial stability in marine predation. Our results, therefore, are relevant for examining local and regional variation and commonalities in human predation of vertebrate prey, and how these activities interacted with, and adjusted to, dynamically changing environments.

Riggs, Casey (Texas A&M University)

[14] *Seasonal Plant Community Use by Late Prehistoric Hunter-Gatherers in the Eastern Trans-Pecos Archaeological Region of Texas*

The Eastern Trans-Pecos archaeological region of Texas is an area of unique prehistoric cultural assemblages and high ecological variability, yet few analytically quantitative studies investigating human-environmental relationships have been undertaken. Research described in this paper augments the quantitative literature for the region. This analysis focuses on the Late Prehistoric (A.D. 1000—1535) period of the region to determine prehistoric seasonal plant community use. Using geographic information systems (GIS), United States Department of Agriculture—Natural Resource Conservation Service (USDA- NRCS) plant community descriptions were ranked by seasonally available native plant foods based upon recorded Mescalero Apache native plant diet. These data were then compared to published paleoethnobotanical dietary information from archaeological sites in the Eastern Trans-Pecos coupled with accessed plant communities determined by reconstructed foraging radii. Results indicate that plant community use by Late Prehistoric hunter-gatherers fluctuated seasonally and that use of USDA-NRCS plant community descriptions is well suited for examining human-environmental interactions in recent prehistory.

Riley, Jenny (Indiana University) and Mathew Maus (Indiana University)

[139] An Exploration of Marks on Extinct Sloth Bones and Lithics from a Flooded Cavern in the Dominican Republic

In June 2010, a dive team from the Indiana University Office of Underwater Science recovered numerous sloth remains from Padre Nuestro, a flooded cavern in southeastern Hispaniola. Due to the deteriorating condition of the remains, the assemblage was treated with PEG 4000 for preservation purposes. Previously identified sloth remains from this cavern include the extinct species *Acratocnus ye* and *Paracnus serus*. Attempts to date the bones have been unsuccessful. Casimiroid lithics and Chican ostionoid ceramics, also found in the cavern, indicate utilization of Padre Nuestro by the first peoples of the Caribbean and the late pre-contact Taíno. Faunal elements, including humeri, vertebrae, femurs, ulnas, and innominate, rib, sacrum, and scapula fragments present possible cutmarks. It is assumed that prehistoric inhabitants of the Caribbean hunted sloths into extinction; however, no direct evidence has been identified. This poster will show a comparison between macroscopic, microscopic, and SEM photographs of the markings in order to explore their origins.

Riley, Tim (USU Eastern Prehistoric Museum)**[334] Incised Stones and Unsecured Localities: Authenticating Private Collections**

The Prehistoric Museum at Utah State University Eastern has a collection of sixty-three incised stones donated by private individuals in the early 1990s. These artifacts, collected during the 1960s and 1970s, supposedly came from a rockshelter located near Fish Springs National Wildlife Refuge along the southern edge of the Great Salt Lake desert. The donated collection also includes an associated projectile point, basketry fragment and several other perishable objects. This presentation will focus on the problems associated with conducting research on museum collections with limited provenience data. Many of these stones have very precise, uniform walking or "rocker" lines. Attempts to replicate these lines with a variety of traditional and modern methods will be compared. Additionally, element analysis of the broad variety of designs in the collection may shed light on the claim that this is a single, authentic assemblage. The results of the design analysis and manufacturing experiment will be compared with excavated incised stone assemblages from three sites in neighboring Tooele and Millard counties. Further examination of the associated projectile point and perishable materials may expand our incomplete understanding of this assemblage.

Rinck, Brandy [125] see Hughes, Susan

Rincon Mautner, Carlos**[83] The Struggle for the Indian Soul: Zoological and Botanical Imagery in the Conversion to Christianity of the Native Peoples of the Mixteca Alta of Oaxaca.**

This paper focuses on the belief system and ideological underpinnings upon which Post-Classic native polities in the Mixteca Alta of Oaxaca were organized. Beginning in the 1530's, the vice-regal religious authority was charged with the extirpation of native religious practices. This effort would challenge the existing worldview and social order and as new technologies were introduced and adopted, the outbreak of pandemics and the forced relocation of the population into nucleated pueblos transformed the culture and the land. The manipulation of beliefs, by selecting indigenous zoological/botanical representations as metaphors for behavior, served to further the causes of the invaders while providing cognitive consonance and stability for the local inhabitants during a time of great stress in their transition to a Christian, colonial experience.

Ringberg, Jennifer (California State University - Stanislaus)**[219] Daily Life and Highland Identity in a Gallinazo-Early Moche Phase Community in the Moche Valley, Peru**

Sociopolitical change during the Early Intermediate period led to development of the Moche polity centered at the Huacas de Moche on the coast, yet settlement patterns inland indicate a strong highland presence prior to and possibly overlapping with the Moche emergence on the coast. Previous explanations focus on trade or migration to account for the predominance of a highland-style pottery assemblage at many middle valley Gallinazo and Early Moche phase sites. I evaluate questions of cultural identity and social dynamics in three middle Moche valley households at Cerro León (C.E. 1 to 400). My study of the pottery assemblage, including vessel function, petrography and raw materials analysis, demonstrates that migration and multi-generation settlement is a plausible explanation. Highland pottery was integral to particular activities, especially feasting, spinning, and certain daily food processing and storage activities. The majority of the vessel assemblage consists of highland pottery fabrics and distinct vessel forms that lead to the conclusion that Cerro León residents were of highland

origin and chose familiar products for daily and feasting activities.

Ringelstein, Austin [142] see Lerman, Melanie

Ringelstein, Austin

[142] *Galleons, Temples, and Beads: Early Euro-Native Cultural Interactions at Two Harbors (CA-SCAI-39)*

Diary accounts from Sebastian Vizcaino's sojourn at Santa Catalina Island in 1602 presents a rare glimpse into one of the few documented ship landings on California shores during the Protohistoric Period. The narratives consist of vivid accounts of the Spaniards' interactions with natives at the large Village of Nájquqar (Archeological Site CA-SCAI-39) known today as Two Harbors. The Spaniards mention visiting a temple and exchanging glass beads and "other trinkets" with the natives. In 1875 Paul Schumacher of the Smithsonian Institute excavated numerous Spanish artifacts from burials at Najquqar, including glass beads, Catholic medals, Spanish bowls, and a sword, all of which are still in excellent preservation today. Salvage excavations by UCLA in 1969 still provide new insights about the significance of Nájquqar. Current research delves into the substantial amount of Native American trade items and European artifacts to look at the nature and duration of this relationship. Many of the artifacts in these excavations may represent well documented historic ship visits to Two Harbors by the crews of such ships as the Lelia Byrd in 1805. This presentation will discuss ongoing research on these early Euro-Native cultural exchanges during a dramatic and important period of American history.

Ringenbach, Paul [119] see Snow, Susan

Ringle, William (Davidson College), George Bey (Millsaps College) and Tomas Gallareta Negron (INAH/Centro de Yucatan)

[31] *The Genesis of Social Complexity in the Puuc Hills of Northern Yucatan, Mexico*

Narratives concerning the origins of Maya civilization, whether interpreted as the appearance of the earliest agriculture communities or the initiation of monumental construction, have tended to privilege the southern lowlands. Framed in this fashion, such narratives also imply the genesis of a common ethnicity in conjunction with these material manifestations, particularly the spread of the Mamom ceramic sphere during the Middle Formative period. This paper reviews recent evidence for Middle Formative settlement in the eastern Puuc Hills recovered by the Bolonchen Regional Archaeological Project. Formerly considered nearly uninhabited during the Preclassic, the Puuc Hills must now be viewed as yet another region of the northern lowlands undergoing dramatic social transformations very early in the Middle Formative, if not earlier. The implications of this evidence for questions of identity formation are then assessed in light of ceramic and architectural affinities to other Early-Middle Formative traditions.

[305] *Discussant*

Rios, Jorge (Centro INAH Oaxaca)

[238] *Las grecas dentro del marco arquitectónico de la arqueología de los valles centrales de oaxaca*
Dentro de la arquitectura de los basamentos prehispánicos en la arqueología de los Valles Centrales de Oaxaca, elementos de piedra tallada insertos en tableros con figuras o diseños cognitivos, son especialmente valorados para los períodos más tardíos. Sin embargo, estos elementos se van mostrando con diferentes técnicas y antigüedades dentro del contexto histórico oaxaqueño. Esta trabajo consiste en presentar diferentes sitios donde se puede ver el desarrollo de técnicas y materiales que nos permiten mostrar diversas aseveraciones para el tema.

Rios Ortega, Maria del Roble [200] see Reyes, Antonio

Rissolo, Dominique (Waitt Institute), Fabio Esteban Amador (National Geographic Society), Bil Phillips (Speleotech) and Robert Schmittner (Xibalba Dive Center)

[33] *Visualizing Cave Architecture along the Central Coast of Quintana Roo, Mexico*

Innovative imaging and visualization techniques allow for the capture and display of features or objects within their broader spatial contexts. With respect to Maya cave architecture, high-resolution panoramic visualization can be a powerful analytical tool, enabling the evaluation of potentially meaningful relationships between natural features – be they entrances, pools of water, or speleothems – and

constructed features within a cave. Given their remarkable stylistic correspondence to Postclassic temple architecture, cave shrines and altars provide compelling and unambiguous evidence for religious practice in the cave environment. Initial comparative and multiscalar analyses across terrestrial and subterranean environments – facilitated, in part, by specific visualization techniques – provide insight into the form, function, and meaning of Postclassic cave architecture in the northeastern Maya lowlands.

Rissolo, Dominique [85] see Glover, Jeffrey

Ritchison, Brandon (University of Georgia)

[263] *Investigating Community Organization: Spatial Distributions over 4000 Years on Sapelo Island, GA*

The Native American occupation of the Kenan Field site (9MC67) spans nearly 4000 years. Kenan Field is located on Sapelo Island along the Georgia Coast, and pottery from every major time period from the Late Archaic to the Mission period is present. Using shovel test survey, excavation, and geophysical data collected in 2013 by the University of Georgia, I offer a preliminary discussion of its implications for understanding activity areas and monumental architecture at the site. This work forms the basis of a long-term study designed to investigate the changing nature of political systems and strategies on the Georgia Coast.

Ritenhouse, Jessica (Beloit College) and Kylie Quave (Beloit College)

[231] *Faunal Remains from Two Heartland Inka Sites*

In the highland region of Peru, the Inka employed diverse strategies of domination over neighboring groups. At Cheqoq, in Maras, the Inka forced the Ayarmaka to abandon their land and replaced them with resettled provincial laborers. At Ak'awillay, the Inka allied with the Anta and treated them as Inkas-by-Privilege. Recent test excavations (2012) at Ak'awillay allow us to look at site subsistence practices before and after Inka rule through faunal analysis. We examined taxonomic frequencies as well as meat yield and herd management patterns. We compare and contrast Ak'awillay and Cheqoq to see subsistence patterns and possible ritual use of fauna at two heartland sites. Both the Cheqoq and Ak'awillay sites show diets that were primarily made up of camelids and guinea pigs, with less frequent occurrences of wild and exotic fauna. This comparison was done in order to determine the differences between the domestic economies of households serving the nobility as retainer laborers (Cheqoq) and a group who had more freedom within the heartland (Ak'awillay) as allies of the state. Cheqoq shows differences in diet between households, while our data from Ak'awillay are not yet as clearly distinguishable.

Rivera, Angel (INAH)

[8] *Una introducción al estudio de los monumentos grabados de Cerro de la Tortuga, costa de Oaxaca.*

Este estudio presenta diversos monumentos registrados en el reconocimiento de superficie del sitio Cerro Tortuga, ubicado en la región chatina del estado de Oaxaca. El análisis compara la tradición de escritura existente en la región durante el periodo Clásico (400 a 800 d.C.) entre las diferentes estelas, piedras grabadas y esculturas del sitio, además de una comparación con los registros epigráficos conocidos en otras comunidades prehispánicas cercanas.

Rivera, Mario (Universidad De Magallanes, Chile), Juan Carlos Tonko and Oscar Acuna

[57] *Chile and the XIX Century European Human Zoos*

During XIX century members of different ethnic groups from Southern Chile were taken to Europe in order to be exhibited in "human zoos". They could not be considered as kidnappers because the Chilean government consented to the operation. Several cases are presented, among them, that of Calafate, a young Selknam boy that was taken in 1889 (along with a group of nine other people) and only survivor who returned to his homeland, and the repatriation of remains of five Kaweskar people from Switzerland who were part of a group of eleven members that were taken from Patagonia in 1881 by Carl Hagenbeck. The presentation will introduce one of the last descendants of the Kaweskar ethnic group who speaks the language and who witnesses the tragedy of the Fueguian people.

Rivera-Collazo, Isabel (University of Puerto Rico, Rio Piedras) and Amos Winter (University of Puerto Rico, Mayaguez)

[17] *Human Adaptation Strategies of Abrupt Climate Change ca. 3.8 kya*

Then Archaic period in the Caribbean (ca. 5ky -1.5ky BP) presents an intriguing case study for the understanding of the socioenvironmental dynamics surrounding initial human occupations of tropical islands. The climate record of the end of the Mid-Holocene and the beginning of the Late Holocene in the Caribbean shows high variability and intense hurricane activity. So far, the archaeological record of the period suggests social continuity throughout the period. However, much of the information is coarse grained and large scale. Little research has been conducted on the local effect of climate variability or on the adaptation strategies or social responses to change at smaller scales. This study explores how people responded to climate change at the microscale and what adaptation strategies were implemented, if any. To these ends, we articulate high resolution speleothem data of abrupt climatic variability within the hydrological basin of the site of Angostura, one of the earliest archaeological sites in Puerto Rico, with archaeomalacological and geoarchaeological data from the site and its surrounding landscape. The study emphasizes the importance of considering scale when evaluating environmental data, and the possible existence of multiple coeval social adaptation strategies within individual occupation periods.

Rizzo, Florencia [90] see Scheinsohn, Vivian

Robb, John (Cambridge University)

[126] Rethorizing Inequality and the Body

We cannot write a history of the body without considering inequality or a history of inequality without considering the body. Archaeologists usually argue that political inequality is visited upon the body through differential health, nutrition, stress or violence. This reproduces a theoretical divide between a “biological” body and a “social” body by treating the body as a blank canvas for society to write upon. This paper draws upon feminist theory, concepts of the body as social capital and examples from later European prehistory to show how the different bodies produced by inequality become social agents generating social relations and history.

Robbins Schug, Gwen (Appalachian State University)

[67] A Hierarchy of Values: Order, Complexity, and Agency at Harappa

In the third millennium B.C., the Indus Civilization flourished in northwest India and Pakistan. Part of the Persian Gulf interaction sphere, Indus cities exerted cultural and economic influence over 1,000,000 square kilometers of territory. Shifts in these economic relationships occurred at the end of the second millennium with increasing aridity, a weakened monsoon system, and increasingly high levels of hydro-climatic stress in the Indus River system (1900-1700 B.C.). I examined the biological consequences of climate change and socio-economic disruption, and a weakened state in the post-urban period at Harappa, one of the largest urban centers of the Indus Civilization. Bioarchaeological evidence demonstrates the prevalence of violent injury, infection, and infectious diseases increased through time. Furthermore, mortuary analysis supports the inference that the risk for infection and disease was uneven among burial communities. Socially and economically marginalized communities were most vulnerable in the context of climate uncertainty at Harappa. Our data suggest a growing pathology of power in the post-urban period of this increasingly incoherent state. Observations of the intersection between climate change, social processes, and pathology in this proto-historic city is interpreted in the larger context of vulnerability, insecurity, and state power in the face of climate change.

[67] Chair

Roberson, Joanna (Far Western Anthropological Research Group) and Ryan Byerly (Far Western Anthropological Research Group)

[316] Prehistoric Felsite Procurement and Use in the Twentynine Palms Region: Perspectives from Recent Site Evaluations at the Marine Corps Air Ground Combat Center and in Upper Johnson Valley, California

Early-Middle Holocene hunter-gatherers throughout the Great Basin and Mojave Desert preferred durable fine-grained volcanic (FGV) raw materials to manufacture a variety of tools. Archaeological investigations conducted over the last 15 years in the southwestern quadrant of the Marine Corps Air Ground Combat Center (MCAGCC) and adjacent portions of Upper Johnson Valley near Twentynine Palms, California, indicate that plutonic felsite quarried from local sources in the Hartwell Hills was also preferentially utilized by Early-Middle Holocene hunter-gatherers. This poster presents a summary of currently available data regarding felsite procurement and use at MCAGCC and in Upper Johnson Valley, highlighting recent test excavations of quarry sites conducted by Far Western, and provides an assessment of these data within the broader context of early FGV procurement and use throughout the Great Basin.

Roberts, Charlotte [67] see Caine, Alyson

Roberts, Heidi (HRA Inc., Conservation Archaeology)

[151] Recording Pull-Tabs and Barbie Dolls: Have Our CRM Methods Become Artifacts?

Thirty-five years ago when I began my career in contract archaeology the artifacts I recorded seemed old, or at least they looked like something I might see in my grandmother's attic. Today, I am required to save GPS coordinates for all pull-tabs from beverage cans and Barbie doll parts, and in some states one of each, if located less than 30 m apart, is an archaeological site worthy of documentation. Can these data shed new light on the past and provide information important to history? Was this the intent of CRM laws and regulations? In this paper I examine the development of CRM in the Western U.S. from the perspective of an aging "New" archaeologist who in the 1980s enthusiastically helped create the system, and has been forced to use it—virtually unchanged—ever since.

[314] Discussant

Roberts, Theodore (PaleoWest)

[304] Changes in Consultant Archaeology

Archaeological compliance has changed dramatically in recent years. Archaeologists adapting to these changes require training unavailable in most graduate programs. Advanced knowledge of GIS and other digital data proficiencies is now required to operate in this professional environment. Northern Arizona University (NAU) is well known for its terminal Master's program aimed at preparing students for the rigors of careers in cultural resource management (CRM). This paper discusses the changing face of compliance archaeology and the ways that the graduate program at NAU prepares (or does not prepare) students to become successful CRM professionals.

Robertshaw, Peter (CSU San Bernardino)

[288] African Perspectives on Pathways to Social Complexity: Ritual Authority, Public Healing and Knowledge Networks

Colonial ethnography in Africa played a key role in the establishment of political anthropology, but subsequent global archaeological emphasis on the study of pristine states relegated African archaeology to the periphery of debates on the development of social complexity. McIntosh's edited volume, Beyond Chiefdoms (1999), revived global interest in Africa, while Blanton's Collective Action Theory has also provided a new framework for thinking about complexity in Africa. Lately African archaeologists have embraced ethnographic, ethnohistorical, and historical linguistic evidence to construct more anthropologically informed interpretations of the development of complexity. One result of this has been the recognition of the centrality of creative (ritual) power in African political systems. The challenge has been to identify this type of power in the archaeological record. I briefly present three case studies from different parts of Africa where archaeologists have been able to recognize the role of ritual power, but I focus mostly on Uganda where exploration of ideas of networks of public healing and knowledge reveal the complexity of social complexity. In particular such networks could at various times be used to either develop or inhibit attempts at establishing hierarchical political systems.

Robertson, Ian (Stanford University), Oralia Cabrera Cortés (Arizona State University), Rubén Cabrera Castro (Zona Arqueológica de Teotihuacan-INAH, Mexico), Marisol Correa Ascencio (School of Chemistry, University of Bristol) and Richard Evershed (School of Chemistry, University of Bristol)

[63] Ceramic Evidence for Urban Subsistence Practices at Teotihuacan

As in most other pre-industrial cities, urban life at Teotihuacan was deeply entangled with ceramic technology, perhaps nowhere more strikingly than in the realm of food-ways. In this paper, we consider information from two different sources--ceramic residues and intra-site distributional patterns of potsherds--in an attempt to shed new light on the city's subsistence economy. We consider various forms of domestic pottery thought to be important in food storage and cooking practices, including distinct types of San Martín Orange, a ware manufactured in a large potters' barrio on the southern edge of the city. Absorbed organic residue analyses aimed at identifying animal and plant remains in sherds derived from recent excavations in a range of contexts are used to evaluate both functional and social differences associated with these types. Spatial autocorrelation measures distilled from the surface collections of the Teotihuacan Mapping Project address similar kinds of differences at broader spatial scales.

Robertson, Elizabeth [117] see Gilliland, Krista

Robertson, Robin (University of Texas, San Antonio)

[123] Cerro Maya Ceramics Revisited

The Late Preclassic ceramics from Cerro Maya in northern Belize were initially analyzed as dissertation research in 1978-80. Thirty years later, the increase in the amount and quality of the comparative material from sites throughout Belize, Guatemala and Mexico necessitated a revision of the typology and the sequence. In this work the unusually high frequency of primary deposition events has shaped the chronology, but, more importantly, made possible a focus on the role of function and context in the classification of the ceramic material. That focus has been enhanced by the digitization of the records and catalogs from the site undertaken by Debra Walker. Her work has enabled the integration of various data bases with the ceramics, all of which were excavated in an environment without electricity and recorded and analyzed with paper and pencil. The resulting model has implications for our understanding and documentation of the Late Preclassic Maya ceramic system of production, use and disposal of pottery, illuminating the private and public domestic and civic activities that were essential to the economic, political and sacred world order as the Maya elite consolidated their authority and status.

Robin, Guillaume (University of Cambridge)

[248] How Recording Techniques Impact Our Knowledge of Neolithic Tomb Art: The Example of Sardinian Rock-Cut Tombs

The aim of this paper is to show how new recordings using diverse photographic techniques can significantly change our empirical knowledge of Sardinian decorated tombs. As for many rock art sites around the world, such standard modern techniques, never used before on the island, allow to reevaluate already known motifs and to discover unknown motifs that are not visible with the naked eyes. Two case studies from recent fieldwork will be presented to illustrate this. The rock-cut tomb of Pubusattile 4 in Villanova Monteleone, where DStretch processing of photographs has shown new details of a painted panels and helped producing a much more accurate recording than the one published in the early 1990s. The second example is Tomba Maggiore in the S'Adde 'e Asile necropolis in Ossi, where a recent photographic survey of the art using the VeDPOL technique has resulted in the discovery of 8 carved bull-head motifs that were unsuspected before despite frequent visits on the site. A generalization of such photographic surveys and recordings has a big potential in Sardinia where about 250 decorated tombs are known, including 65 that have never been visually recorded.

Robinson, David R. [36] see Wienhold, Michelle

Robinson, Kenneth and Stephen Whittington (Wake Forest University)

[152] The Road Goes Ever On and On: Public Archaeology at Teozacoalco

Co-creation in public archaeology can be challenging outside of the United States, particularly when a project provides the first opportunity people have to meet an archaeologist, or even to hear of archaeology. The staff of the Teozacoalco Archaeological Project has been working since 2002 with citizens and authorities of San Pedro Teozacoalco and other small communities to undertake the first archaeological research in a remote part of the Mixteca Alta in Oaxaca. The project is attempting to collect data and respond to the desires of rural communities while negotiating regulations and politics at local, national, and international levels.

Robinson, Erick (Ghent University) and Philippe Crombé (Ghent University)

[246] Exchange Networks and Early Holocene Ecological Change in the Southern North Sea Basin

This presentation honors Mike Jochim's contribution to our understanding of the relationships between diachronic changes in ecology, land use, and exchange in the European Mesolithic. It focuses specifically on the long distance exchange of quartz arenites between the Paris and North Sea basins throughout the Mesolithic. During the Early Mesolithic period two distinct quartz arenite types were procured from the same outcrop region in central Belgium and distributed to different geographical regions where they were differentially utilized within different technological systems. The Middle Mesolithic witnessed the consolidation of these different industries, the disappearance of one variety from the archaeological record, and the increase in the distribution of the other variety to 80,000 km². These changes occurred between two abrupt climate change events and the final inundation phases of the southernmost North Sea basin. This presentation proposes the hypothesis that these changes facilitated the development of a

social network that enabled hunter-gatherers to cope with a period of considerable inter-regional environmental variability and uncertainty.

Robinson, David (Texas Archeological Research Lab, UT-Austin)

- [261] *Geoarcheology and Ceramic Petrography: Summary and Prospectus for Ceramic Petrographic Research in Eastern Texas and Neighboring Regions*

Petrographic data from East Texas ceramics and from surrounding regions has been produced on a project basis controlled by the needs of cultural resource management, since the early 1970s. Syntheses of the data employed few quantitative comparisons, but remained on a summary discussion, or previous work review, basis. Comparative syntheses of greater validity have slowly emerged, since 2000. Research goals have been directed to cultural issues of locality of manufacture, cultural interaction, postmanufacture function, and trade in raw materials and finished ceramics. Greater attention to sedimentology and petrology of the East Texas geological zone can give more precision to research findings in these study areas, particularly with regard to particle sorting and detrital minerals. New research findings support this position. Additional combined research in tandem with Instrumental Neutron Activation Analysis (INAA) provides a valuable research direction for the future.

Robinson, Mark (Louisiana State University)

- [277] *Building Identity at Las Cuevas: Architectural Excavations in Plaza B*

The site of Las Cuevas located in the Chiquibul reserve centers around a large cave system with a small to medium sized site core positioned directly above the cave. The architectural layout is closely linked to the natural landscape, incorporating elements that reveal the function and identity of the site, including a ballcourt as well as two plazas, surrounded by temples, range structures, and low linear platforms. In this paper excavations in Plaza B, at the ballcourt and a series of linear structures that ring the lip of the sinkhole, are discussed in terms of form, function, landscape and identity.

Robles Garcia, Nelly (Instituto Nacional de Antropología e Historia)

- [238] *Arquitectura del poder: expresiones en Atzompa, Oaxaca.*

El conjunto monumental de Atzompa ha revelado diversas expresiones de la poderosa élite del estado zapoteco en su momento de mayor esplendor. Entre sus componentes se encuentra la arquitectura de sus palacios, tumbas, juegos de pelota, plazas ceremoniales, terrazas y conjuntos residenciales. Este trabajo aborda una aproximación a interpretar la interrelación entre los componentes arquitectónicos monumentales de la ciudad, abordando sus particularidades, para contribuir a dilucidar cómo funcionó este sector de Monte Albán en la Época IIIB-IV

- [83] *Discussant*

Robrahn-González, Erika Marion [6] see Lazzaris, Gerson Levi

Rocek, Thomas (University of Delaware)

- [321] *Hardware with no Software: The Rapid Late Adoption of Ceramics in the Highland Jornada Mogollon of Southeastern New Mexico.*

This paper considers from a comparative perspective the spread of ceramics and the widespread but highly variable pattern of a two stage adoption of pottery: an initial sparse "software horizon" followed by a transition to intensified production of more durable pottery. It first illustrates this multi-step pattern not just as an issue in the initial invention of pottery technology but as relevant particularly to later cases of the adoption of ceramic production. Second, it summarizes a set of examples from the U.S. Southwest and adjoining areas to demonstrate variation in the software horizon pattern as well as highlight some of the implications of that variation for archaeological detection of ceramic use. Finally, it suggests that the multivariate nature of pottery technology and the low visibility of the software horizon has implications regarding variation in early Southwestern farming adaptations, and applies this observation to argue for a shift in settlement patterns--but not necessarily agricultural investment--associated with the mid sixth century A.D. appearance of pottery at Jornada Mogollon settlements in the highlands of the Southeastern/Central New Mexico.

Roche, Hélène [255] see Lewis, Jason

Rochette, Erick (Indiana University of Pennsylvania)

[31] "Of Very Great Value, and Held in the Greatest Esteem": Norman Hammond's Contributions to Preclassic Jade Research

Throughout his career investigating the origins and organization of Maya civilization, Norman Hammond continually revisited the changing role of jade in ancient Maya societies. Hammond's research at Cuello, Nohmul, and in northern Belize contributed greatly to our understanding of the role of jade as a symbolic representation of Preclassic Maya cosmological beliefs and social distinction, as well as the evolving systems of ancient Maya political, economic, and social structure. Just as importantly, his role in early efforts to characterize mineralogical signatures of jade from the Motagua Valley source region proved foundational to our current understanding of ancient Maya economic systems. The present paper examines our current understanding of the role of jade in Preclassic Maya society and the ways in which new archaeological, geochemical and other data have grown from the foundational contributions made by Norman Hammond.

Rockman, Marcy [87] see Yu, Pei-Lin

Rockwell, Heather (University of Wyoming)

[133] A Functional Perspective on the Organization of Mobile Toolkits during the Paleoindian Period Considerable attention has been paid to the organization of the mobile toolkit. Tool kit design, diversity, raw material choice, and the role of curation have all been major areas of discussion. What is often left out of this discussion, or inferred strictly from morphology, is the actual use of tools within a technology. This paper will explore the relationship between mobility and technology using a sample of artifacts from thirteen Paleoindian sites in New England and the Canadian Maritimes. The artifacts were examined using microwear analysis to assess their use. Particular attention is paid to the role of expedient technology within the toolkit, an area that has often been ignored in other technology discussions. This study sheds light on the relationship between technological use and mobility, especially the role of expedient technologies within the mobile toolkit.

Rockwell, Rae Ann (Missouri State University) and Billie Follensbee (Missouri State University)**[192]** Fishing-Related Imagery and Ritual among the Gulf Coast Olmec

Considerable research has been conducted on the practical and ritual importance of maize among Gulf Coast Olmec cultures, but much less attention has been paid to the importance of aquatic resources. Organic Formative Period artifacts are usually poorly preserved, but fragmentary stingray spines and jade effigies of shellfish have been found at La Venta; Gulf Coast Olmec sculptures depicting nets and fish-like creatures also provide evidence for analysis. Further evidence is found in enigmatic artifacts from Olmec sites and caches; while numerous interpretations have been suggested for these objects, systematic examination and replication studies reveal that these most likely functioned as luxury versions of everyday tools, such as net weights. Together, analysis of these data indicates that aquatic resources held considerable practical and ritual importance for these Formative period cultures.

Roddick, Andrew (McMaster University)**[243]** "Legitimate Practice": Time, Space, and Power within Communities of Practice

In this introductory paper I explore the relationship between spatial scales, power and the situated learning scholarship. I begin with a summary of Jean Lave and Etienne Wenger's (1991) work "Situated Learning: Legitimate Peripheral Participation" and its impact on archaeological research. Like others, I have found the situated learning literature as an ideal way to consider not just artifact patterning, but also the reproduction of culture, the emergence of shared skillful bodily practices and networks of relational communities. Yet archaeologists considering learning and material patterning must do so with an awareness of larger spatial scales (what Wenger has called "constellations of practice"), and the potential power differentials inherent in learning communities. Lave and Wenger remind us that power relations both enable and constrain the process of "peripheral participation," and the movement into a particular community of practice may also include the "truncation" of particular possibilities. I explore these issues in my ongoing archaeological work on Formative Period settlements in the Lake Titicaca Basin, and ethnographic work in a specialized potting community in this same region of highland Bolivia. I use these case studies to specifically consider how "non-elite" actors produce political landscapes within contexts of everyday learning.

[243] Chair

Rodgers, Jackie (University of West Florida)

[232] *Crossing the Line: Reanalyzing Archaeological Investigations of Pensacola's Red Light District*

At the turn of the 20th century Pensacola, Florida boasted of three things: a deep harbor, booming industry, and one of the most infamous red light districts on the Gulf Coast. One block within the district was excavated in 1975 and 2000 to document its earlier colonial deposits. Items in these collections dating from the late 19th and early 20th century will be reanalyzed to demonstrate how residents of the district interacted with their community and went about their daily lives.

Rodning, Christopher (Tulane University), David Moore (Warren Wilson College) and Robin Beck (University of Michigan)

[276] *Material Culture on the Northern Frontier of La Florida*

Between 1566 and 1568, expeditions led by Juan Pardo established six forts and related settlements in the Carolinas and eastern Tennessee, as part of an effort to establish permanent settlements along an overland route connecting the Spanish colonial province of La Florida with New Spain and the silver mines near Zacatecas, Mexico. Pardo's principal outpost was composed of Fort San Juan and the associated town of Cuenca, both built at the Native American town of Joara, at the northern edge of La Florida. The remnants of Joara, Cuenca, and Fort San Juan are located at the Berry site, in the upper Catawba River Valley of western North Carolina. This paper discusses the assemblage of sixteenth-century Spanish goods found at the Berry site; and it compares those finds with artifacts found at Santa Elena, the origin point of the Pardo expeditions in coastal South Carolina, and itemized lists of provisions issued to the Pardo expeditions and the forts they built. Sixteenth-century Spanish goods from the Berry site demonstrate innovation, improvisation, and impoverishment, and they contribute to our knowledge of life on the frontier of La Florida at the end of the period of Spanish entradas in the Southeast.

Rodrigues, Antonia [160] see Moss, Madonna

Rodriguez, Daniel (Texas State University-San Marcos)

[199] *Ongoing Investigations at Two Dry Rockshelters in Eagle Nest Canyon*

Investigations of two adjacent rockshelters in the Lower Pecos Canyonlands, Skiles Shelter (41VV165) and Kelley Cave (41VV164), seek to evaluate and tap their research potential. Both shelters have Pecos River style rock art and additional indications of contemporaneous use. The talus slopes of both shelters are strewn with fire-cracked rocks, obvious evidence that they served as earth oven facilities for baking desert succulents. Small-scale excavations in Skiles Shelter revealed disturbed upper cultural deposits resting atop a thick flood-deposited alluvium from the nearby Rio Grande. Beneath this were relatively homogenous midden deposits containing large amounts of charred fuel wood and food plants. Small-scale excavations at Kelley Cave encountered intact layers of ash and earth oven refuse. Numerous artifacts were recovered including Late Prehistoric to Middle Archaic points, scrapers, and flakes with traces of red pigment. Investigations also uncovered a modified surface, consisting of burned and cut leaves and other fibers covered by a smooth layer of fine-grain sediment. The numerous bedrock grinding features in Skiles Shelter and the extensive fiber materials found in Kelley Cave may reflect differential shelter use by hunter-gatherer populations. Radiocarbon dating and analysis of the materials recovered from both shelters is in progress.

Rodríguez, Bernardo [63] see Sugiyama, Nawa

Rodríguez Ramos, Reniel [269] see Pestle, William

Rodríguez Zariñán, Nora [200] see Torvinen, Andrea

Rodríguez Zariñán, Nora (Universidad Nacional Autónoma de México)

[200] *Archaeology and Ethnology, Different Paths toward the Same End: Approaching the Huichol deity Águila Joven through Material Culture*

In archaeology we rarely have the opportunity to verify the truthfulness of our interpretations, especially when they involve the cosmovision of extinct populations. Yet we know that the study of material culture is not limited to these populations: it applies to societies of any time and place. Making use of this idea, this study contrasts ethnographic and archaeological data, in this case concerning the interpretation of a

Huichol deity known as Aguila Joven identified in the context of Chalchihuites, Zacatecas (A.D. 650-800). The objective of this comparison is to verify the accuracy of archaeological interpretations regarding the cosmovision of Prehispanic societies. First I discuss the material culture with the image of Aguila Joven and the interpretation that archaeology could gather from it. I then compare it with data from Huichol ethnography performed by others and by me. In this respect, it is remarkable that both methods offer similar conclusions. This is important because it is seen as an example that validates archaeological interpretation even when oral or written sources are lacking. In summary, both archaeology and ethnography show that Aguila Joven is not limited to the celestial realm as traditionally described; rather, it is closely linked to the earth and to maize.

[200] *Chair*

Rodríguez-Alegría, Enrique [291] see Mata-Miguez, Jaime

Roepe, Kelsey (East Carolina University) and Megan Perry (East Carolina University)

[13] *A Bayesian Approach to Investigating Age-at-Death of Subadult Archaeological Samples*

Mortality profiles of children from archaeological contexts provide a sensitive indicator of overall population success. Estimating the age that subadults perished is the first step in this assessment, with dental formation remaining the most accurate aging indicator for children due to minimal environmental impact. Even the most accurate method, however, is affected by "mimicry bias", where the age profile of the target (ancient) population "mimics" the age profile of the reference population used to develop the age estimation method. Bayesian statistics and transition analysis can control for this bias in archaeological samples through calculating the average age that transition from one phase of development to another occurs, and then estimating the probability that someone of a certain age has a given phase of development based on a sample of individuals of known age. Here, robust age ranges related to the dental formation phases of Moorrees et al. (1963) were generated using a sample 1377 children of known age (Orthodontics Case File System, Maxwell Museum of Anthropology). These ranges can be used by bioarchaeologists and forensic anthropologists wishing to control for "mimicry bias" in their mortality profiles that rely on age estimation via dental formation.

Roffers, Molly [102] see Riegert, Dorothy

Rogers, Jerry

[151] *Honor Roll to Planning Process*

Federal preservation of significant places originally focused on places of outstanding national significance. After WWII, federally sponsored development projects threatening the historical, architectural, and archaeological heritage of the United States led to the National Historic Preservation Act of 1966 and a network of State Historic Preservation Officers. Practical problems implementing the Act led to Executive Order 11593, requiring federal agencies to identify and plan for properties affected by their undertakings that met National Register criteria. This necessitated appointment of preservation officers and development of professional capabilities in federal agencies that had not previously needed them. Eventually the network of preservation officers grew to include tribes and local governments. Increased contracting for archaeological surveys, data recovery, and ethnographic studies, together with tax incentives to rehabilitate historic buildings significantly broadened private sector participation in the partnership. Statutory requirements for the National Park Service and the Advisory Council on Historic Preservation to "provide leadership" to this large and complex mix led to participatory approaches within general planning systems. The dual nature of the program as honor roll and planning system was inherent in the 1966 Act and it likely to continue indefinitely.

Rogers, Alexander (Maturango Museum) and Christopher Stevenson (Virginia Commonwealth University)

[287] *Obsidian Hydration as "Diffusion-Relaxation": A Polymer Model for the Hydration Process*

A generally accepted physical model of obsidian hydration is currently lacking. We propose a model based on capillary action, describe the physical basis of the model, and show its applicability to obsidian hydration. We demonstrate that the model reproduces the observed time-dependence for water uptake in obsidian quite well. The model also provides a first-order fit to the sigmoid form of the concentration curve, but fine structure is not correctly represented, indicating a need for refinement. These initial data show that "diffusion-relaxation" models of obsidian hydration hold promise, and hydration models based

on polymer science are worth pursuing further.

Rogoff, David (University of Pennsylvania)

[49] Using Meta-Data as a Basis for Analyzing Communities Archaeologically

Archaeological investigations of social groups are common, but they have often lacked the strength of analogical thread needed to successfully connect past communities to material culture in the archaeological record. This paper aims to do just that. First, I systematically analyze meta-data about variables of archaeological interest to establish patterns of how archaeologists have previously related material culture to group identity and social differentiation. Then, I develop a frame of reference for a GIS-based analysis of the Classic-period civic-ceremonial site of El Coyote, Honduras, and future work on similar topics.

Rojas Vega, Carol [245] see VanValkenburgh, Parker

Roksandic, Ivan (University of Winnipeg)

[269] Pre-Columbian Toponymy in the Greater Antilles

Toponyms—or place names—are very important for examining past events as they provide us with a wealth of useful information. They often remain in place, as a type of fossil, centuries after the language they belonged to died and its speakers disappeared, indicating the actual presence, at some point in the past, of a specific linguistic / ethnic group. Even in cases when it is impossible to successfully interpret the meaning of a toponym, its structure—phonological and morphological—can give us clues as to its linguistic affiliation. Given that the precolumbian circum-Caribbean formed an intricate and multi-directional network of trade and cultural influences whose complexity is not at this point completely understood, a methodical investigation of the toponyms in the region can help us make the distinction between cultural influences or trade, on one hand, and actual population movements, on the other, and thus elucidate some of the problems of successive migrations into the Greater Antilles. This study proposes a systematic presentation and analysis of the possible linguistic parallels between Caribbean toponyms and indigenous language families spoken in the contiguous continental regions, as well as their evaluation as possible sources of the incoming migrants.

Roman Ramos, Israel

[8] The Beginning of a Long Journey: Archaeology and Cultural Heritage Promotion along the Southeast Coast of Guerrero, Mexico

In this paper, I present the results of the Coasts of Guerrero Archaeological Atlas Project (2009-2011 seasons). I focus on an unexplored region along the Pacific coast of southern Mexico: the southeast coast of Guerrero extending from the Acapulco Bay to the Oaxaca boundary. The main objective of this project is to gain perspective on the archaeological remains in this region. Issues of cultural heritage conservation are essential for the local people as well as for the development of the project.

Notwithstanding limited time and resources, I expose a set of problems and solutions concerning the initial systematizing of information from governmental databases, and decision-making in selecting potential sites or areas. Then, we use systematic explorations as an efficient means of site recording at a regional scale to generate repositories of significant information, not only for this research itself, but also for further cultural management work. Systematic explorations encompass a wide range of archaeological evidence from different periods and of different natures (Pre-Columbian sites with monumental architecture and rock art, for example). Work also included recording historical monuments, private collections of artifacts, and old manuscripts from a parish archive.

[8] Chair

Roman-Lacayo, Manuel (UAM-CUSE)

[197] Is That All You've Got? Social Complexity in Tisma, Central Pacific Nicaragua

The pursuit of a better understanding of the development of social complexity, with a focus on the Pacific Nicaragua chiefdoms documented in contact-period chronicles leads to less than spectacular monumental and ornamental remains. Data from the Masaya region indicates that there are clear differences among neighboring communities in terms of regional settlement patterns, development trajectories and artifact distributions from early on in the local sequence. It will be argued that chiefdom-level societies are possible even in the absence of monumental architecture and abundant fancy goods, though further exploration of how such chiefdoms functioned is warranted.

Roman-Ramirez, Edwin (The University of Texas at Austin)

- [227] *The Buried Palace: The Process of a Planned and Slow Abandonment of the Early Classic Group of El Diablo at the Maya site of El Zotz, Petén Guatemala*

The majority of researchers who consider the process of abandonment at Maya sites concentrate on catastrophic events, such as natural disasters or warfare. However, Maya studies often overlook the slow and planned abandonment of ancient cities. This paper explores the Early Classic compound called El Diablo, located at the site of El Zotz. After being inhabited for almost two hundred years, El Diablo, the seat of the royal lineage, was abandoned and intentionally buried. This paper will propose three ways in which slow and planned abandonment is demonstrated through the archaeological record and materials recovered. First, El Diablo is surrounded by ravines that make it difficult to extend the boundaries of the city. Second, the altitude, 190 m above the Valley of Buena Vista, make it difficult for the inhabitants to access water and farm the land. And third, this paper will propose that slow abandonment at El Diablo might be related to a period of peace in the Central Petén following the arrival of the foreigner Siyah K'ak, which created a perfect atmosphere for the ruler at El Zotz to move the city to the valley of the valley of Buena Vista.

Romero, Susagna [22] see Pique, Raquel

Romero, Danielle (University of Nevada, Las Vegas)

- [32] *Corrugated Wares and Their Potential Use as Identity Markers at the Harris Site*

The original typological system of corrugated wares that Emil Haury used based on his collection of sherds from the Harris site excavations in the 1930s did not incorporate much of the variability seen today. Excavation and curation techniques only allowed for a very small percentage of the corrugated wares to be collected and analyzed. Present techniques provide a much larger database, which can be used to expand current typologies through the variability seen in the corrugated wares recovered at a given site. This research focuses on corrugated wares recovered in various contexts from 20 pithouses and their associated features at the Harris Site, which have been excavated under the direction of Dr. Barbara Roth during the 2008-2013 field seasons. Numerous partially reconstructed corrugated vessels and a large corrugated sherd assemblage have been retrieved and are the basis of this study. A combination of hands-on and statistical analysis of these wares was used to examine the wide variability seen in current typologies and to determine if differences in corrugated wares from this site can provide information regarding identity in terms of how households may have varied the wares they produced.

Roney, John R. [47] see Hard, Robert

Rooney, Clete (National Park Service)

- [213] *Diaspora, Displacement and Social Reconstruction: Reconceptualizing Diasporic Archaeology*

This paper critically examines archaeological approaches to diasporic populations, integrating archaeology with contemporary cultural anthropology on social transformation, migration, and displacement. Historical diasporic studies follow models of population movements in antiquity "based on migration myths and ...population flows" (Cohen 1995:1, Reis 2004:45). This classical model conflates diaspora with migration, a voluntary movement of a community (Guggenheim and Cernea 1993:3). This model, however, does not adequately address waves of displacement that accompanied European economic development of the New World. This development entailed one of the largest involuntary migrations in history. Enslavement and the African Diaspora more closely resemble modern development induced displacement than the classical diasporas of old. The theoretical orientation to the study of slavery, however, has often been focused on chronology and events, with an interpretive focus drawn from history. In this paper I contextualize how slavery in the southern United States was studied in archaeology and anthropology. I then review concepts of displacement and social reconstruction. I argue that slavery and its practice can be more clearly articulated as a process, with parallels to contemporary development, disaster and conflict induced displacement. These parallels provide a theoretical framework to better understand the social processes that existed in historic displacements.

[213] Chair

Roos, Christopher (Southern Methodist University)

- [149] *Identifying Human Impacts on Fire-Prone Landscapes*

Using traditional paleoecological methods, it has proven surprisingly difficult to identify human impacts on natural fire regimes. This is particularly true for semi-arid fire-prone environments. Correlations between

changes in paleofire records and archaeological evidence or paleoclimate records can be ambiguous or misleading because human activities can amplify or suppress climate impacts on fire regimes. Traditional paleofire research has often focused on sedimentary locations and contexts that are ideal for preserving long, continuous microbotanical records regardless of the spatial relationship of the sampling locale to the ancient human landscape. Selecting sampling locales based on the location and distribution of archaeological evidence for human activities, however, offers scientists an opportunity to pair spatial comparisons with time-series comparisons of archaeological, paleofire, and paleoclimate datasets. Such a spatially explicit sampling approach offers distinct benefits for investigating fire-climate-society dynamics over long time-scales.

Roos, Christopher [242] see Field, Julie

Roosevelt, Anna (Univ. Illinois, Chicago) and Christopher Davis (Univ. Illinois, Chicago)

[282] *Monte Alegre, Brazil: Remote in Time, Space, Scholarly Culture, and Culture History*

Contrasting perceptions and experiences of remoteness arise in the minds of both ancient people and anthropologists. In the case of the Paleoindian culture of the Monte Alegre Serras in the mainstream Brazilian Amazon, people sought out rocky crags, caves, and rockshelters above the main floodplains and lakes for camping, foraging, stone-tool-shaping, rock-painting, and observations of heavenly bodies. Though western scholars long considered their tropical forest riverine habitat a wilderness remote from centers of human development, forest fruits and fish actually attracted migrants very early. Though physically remote from the probable first entry point of people into the Americas, the locality is in the center of a wide region where people of similar lithic culture roamed. And though remote from the best known Paleoindian cultures of western North America and South America, the Monte Alegre people were nearly contemporaneous. But the descendants of these early Amazonians did, in fact, keep their distance from some of the bio-cultural biological changes people experienced in other regions, thereby preserving more closeness to their ancestors than those in some other regions deemed more central, or nuclear, by anthropologists.

Roosmarie, Vlaskamp [153] see Geurds, Alexander

Root-Garey, Emily (The University of Texas at Austin)

[119] *The Intersections of Men and Power at the Alta California Missions*

Contemporary discourse about men and masculinity in the Spanish colonial world is often connected to concepts such as machismo and linked to themes of sexual and social domination of European men over Indigenous Americans. Without denying the presence and effects of colonial Spanish patriarchy, I suggest that to be male in the colonial New World was a category of being shaped not only by one's anatomy, but also by variety of factors, including known ethnic affiliation, marital status, and age. In mission-period California, the predominant male figure tends to be either the Spanish missionary or the Hispanic vaquero, despite being outnumbered by Indigenous men. My dissertation work at Mission San Antonio de Padua in Monterey County compares household labor practices in domestic quarters occupied, respectively, by single neophyte men, neophyte nuclear families, and mission soldiers and their families. Through the archaeological and documentary records and oral histories, I examine how different ideas about being male were enacted through daily life and illustrate how privilege and oppression could operate simultaneously for male members of mission communities.

Roper, Donna (Kansas State University) and Richard Josephs

[220] *Ceramic Production on the Late Prehistoric Central Plains*

Analysis of vessel form, descriptive and technological characteristics, and petrographic data for late prehistoric Central Plains pottery is allowing us to address how pottery production was organized and the material manufactured. We argue for local manufacture and household production, probably on an as-needed basis. Pottery clay was procured from alluvial sources near the household location, tempering material from unidentified sources that nevertheless are consistent with local lithologies. Processing of both clay and temper material was minimal and may have consisted of little more than removal of large clasts. Paste recipe and vessel design reflect a reengineering compared to earlier designs and are clearly affected by functional and performance considerations under conditions of increased use of cultigens and preparation of a diverse suite of foodstuffs. Vessel diversity was moderately high, and several of the functional classes were made in multiple sizes, probably for both utilitarian reasons and in

consideration of the social contexts of food presentation. A certain uniformity of manufacturing outcome but by no means standardization is evident. This may have begun to change by early protohistoric times as previously-dispersed people were aggregating into true villages.

[220] Chair

Rorabaugh, Adam (Washington State University)

[173] *Biederbost (45SN100) Re-examined: A Marpole Aged (2500-1500 B.P.) House Structure in Puget Sound*

The development of large plank houses in the Salish Sea during the Marpole period (2500-1500 BP) has been central to theorizing issues of social inequality and resource use among complex foraging societies. In Puget Sound, two structures are known to date to this period of fundamental social transformations, Tualdad Altu and Biederbost. The Biederbost site, excavated by Astrida Blukis-Onat through Seattle Community College and the Washington Archaeological Conservancy in the 1960s and 1970s, has a wet and dry component. The wet site portion of the site has features interpreted as a fish trap while the dry site has post holes and hearth features that suggest a large house structure. However, the single date of 1940 ± 80 B.P. had an unclear association with these two components. As part of a larger dissertation, eight new radiocarbon dates associated with hearths and post-hole features confirm that both components date to Marpole. An exhaustive re-examination of field records also supports interpretations of a large, likely household, structure. Despite recent re-evaluations of the temporal and spatial scope of Marpole in the Fraser Delta and Gulf Islands, it is apparent that large houses and their associated social transformations are also present in Puget Sound during Marpole.

Roscoe, Paul (University of Maine)

[288] *Military Strength, Material Distribution, and Monument Construction: Status Pursuits in Contact-Era New Guinea*

Ethnographic reports suggest that status competition is either universal in human society or very nearly so, and social-scientists have devoted a lot of attention to probing its forms (e.g., reputation, dominance, prestige, fame) and understanding why humans pursue them. Currently, though, hardly any empirical or analytical attention has been paid to a further issue. Why is status competition refracted into different forms – headhunting, say, as opposed to pig production, religious purity as opposed to consumerism? Evidence indicates that, in any one community, humans may accrue status through a range of channels, but a subset of these invariably receives particular cultural emphasis. Material distributions and warriorhood, for instance, seem to be especially prominent modes of status pursuit in small-scale societies, whereas consumerism is the favored channel in Anglo-American nations. Why do different communities emphasize different avenues to status? Within a community, moreover, what determines an individual's pursuit of one mode rather than another? This paper presents data on status drawn from about 150 New Guinea communities, and suggests several factors to account for the differences.

Rose, Jeffrey and Anthony Marks (Southern Methodist University)

[26] *The Origin of the Emiran and Implications for Modern Human Dispersal into the Levant*

The origin of the Emiran industry is entangled with the question of modern human emergence. The Out of Africa paradigm predicts a population replacement in the Levant coinciding with the appearance of the Emiran around 50 ka B.P. There is debate, however, whether its root(s) were autochthonous or exogenous. Emiran core technology employs a distinct method of bidirectional Levallois point production that is regionally traceable. While some of these technological features appear in the preceding Levantine Mousterian, they are far more prevalent within the Afro-Arabian Nubian Technocomplex. The Emiran exhibits affinities with the late Nubian (~85 – 70 ka B.P.) and Taramsan (~70 – 50 ka B.P.) of Middle Egypt, as well as the Classic Dhofar Nubian (~100 ka B.P.) and the Mudayyan industries of southern Oman. Elongation is consistent with the Dhofar Nubian and Levantine Mousterian, but not the Nilotic assemblages. Cresting appears in the late Nubian of Egypt and Dhofar, but not within the derived Taramsan or Mudayyan. Thus, the Emiran combines indigenous Levantine Mousterian elements with the Afro-Arabian Nubian Technocomplex. A hybridization model is parsimonious with the archaeogenetic proposition for interbreeding between humans and Neanderthals in the Near East between 100 and 50 ka B.P.

Rosen, Arlene (University of Texas at Austin)

[17] *Geoarchaeology at the Edge: Measuring the Pulse of Process and Human Agency at the Interface of Landscape and Site in Neolithic through Iron Age China*

In much of his research, Karl Butzer has inspired generations of geoarchaeologists to investigate the

human and social aspects of landscapes and societies. This endeavor is often physically manifested at an archaeological site by sediments representing the halo of human activity just beyond the residential area, where the “site proper” meets the edge of a managed landscape. It is here that landscape processes driven by natural hydrological changes in an alluvial system dovetail with socially-motivated processes. The social processes link landscape management or mismanagement to consequent stability or degradation. Human agency is also detectable at these interfaces in the form of agricultural fields, terraces, canals, and other distinct features at the periphery of the residential portion of the site at any given time. Investigations of these “geoarchaeological ecotones” in Henan and Shandong Provinces in China illustrate small-scale agency in the management or ‘taming’ of floodplains during the Neolithic Period by the physical evidence of sediments linking paddy fields and farm houses. ‘Processes’ in the form of cycles of landscape stability and disruption are also evident at these interfaces by periods of soil formation versus episodes of uncontrolled flooding, induced by Han imperial land-use policies.

[17] Chair

Rosen, Steven (Ben-Gurion University)

[17] *Basic Instabilities? Climate and Culture in the Negev over the Long Term*

Settlement systems in the Negev, Israel's southern desert, over the past 15,000 years show cycles of demographic rise and decline. Examined at different geographic scales, these demographic cycles should be tied to patterns of geographic expansions and contractions deriving from different culture-geographic sources. Together this variability suggests instabilities in basic social geographic structures, undoubtedly to be tied at some fundamental level to the difficulties of subsistence in the environmentally harsh desert. On the other hand, if the general pattern of cycles or fluctuations should be tied to some essential property of desert adaptation, the specific incidents of expansion and florescence, followed by contraction and decline, should be tied to historically particularistic episodes of climatic fluctuation, cumulative technological change, internal social and demographic trends, and to input for societies on the desert periphery, ostensibly the sedentary core zones. Finally, if these patterns are examined at larger chronological and geographical scales, clear patterns of long term continuity emerge, belying the idea of essential cultural instability.

Rosen, Arlene [236] see Nicolaides Ramsey, Monica

Rosenberg, Dani [65] see Filin, Sagi

Rosenberg, J. Shoshana (Portland State University) and Virginia L. Butler (Portland State University)

[173] *A Study of Social Rank and Resource Control Using Ichthyofaunal Remains from the Cathlapotle Plankhouse Village Site*

Social inequality and inherited rank are trademarks of the social organization of Northwest Coast Native Peoples, and faunal remains are one potential path for examining this. My thesis work tests the relationship between prestige differentials and subsistence patterns through the analysis of fish remains from the Cathlapotle plankhouse village site (45CL1) on the Lower Columbia River. Using models from optimal foraging theory to develop a ranking system for fish taxa based primarily on size, I examine the degree to which social rank designations of households and house compartments are reflected in the spatial distribution of ichthyofaunal remains relative to their taxonomic rankings. Analyses based on NISP comparing compartments within a household show a higher proportion of salmon relative to lower-ranked minnows/suckers in the compartment where elite village members likely lived, indicating possible post-harvesting control of preferred resources by the elite. Comparing between households, more of the large chinook salmon species relative to smaller non-chinook salmon are found in the more highly-ranked household, indicating possible household-level ownership of fish harvesting sites or runs. My research informs on the nature of resource control in the region as well as the efficacy of drawing conclusions about social rank through faunal remains.

Rosenwig, Robert (University at Albany)

[118] *Tributary Mode of Production and Justifying Ideologies*

In his definition of the tributary mode of production, Eric Wolf proposes that those societies that extract economic surplus through political means generate religious models of the cosmos where supernatural beings provide a metaphor of tribute relations in the human world. As Wolf (2001:349) puts it, "...public power is thus transformed into a problem of private morality." This is a classic Marxist assertion that

religion creates false consciousness and motivates people to act against their material interests. Rather than simply assuming this proposition is correct, anthropological data can quantitatively evaluate it. Using a broad sample of societies, this paper evaluates whether mode of production determines beliefs about the structure of the cosmos. Do all societies where tribute is extracted by political means have similar justifying ideologies? Conversely, do societies where surplus extraction occurs through kin relations lack such justifying ideologies? My goal is to evaluate Wolf's intuitively logical proposition with anthropological data. The implications of this evaluation are at the heart of a materialist understanding of causation by empirically evaluating whether material conditions generate consistent ideational beliefs.

[118] *Chair*

Rosenwig, Robert [197] see Vázquez, Ricardo

Rosenthal, Jeff [125] see Ugan, Andrew

Rospigliosi-Campos, Cristina (Southern Illinois University)

[150] *Sociopolitical Organization during the Late Intermediate Period in the Peruvian North Coast: Excavations at the site of Luya*

This paper presents results from excavations carried out at the Late Intermediate Period site of Luya located in the Middle Lambayeque Valley. I will discuss data obtained from excavations and preliminary pottery analysis of Late Sican period monumental architecture, public spaces and metal production areas. Following models based on the ethnohistorical record rather than neo-evolutionary approaches, I examine the regional political organization as revolving around local centers or curacazgos, rather than managed by a macro regional state apparatus. I will address how the Sican people at the site of Luya managed economically and politically this part of the valley through public meeting spaces, metalworking activities, and agricultural production areas. Finally, I will briefly describe the interaction of previous technologies from the Middle Horizon (i.e. arsenical copper production), with ancient political practices such as the consumption of alcohol (chicha) in public meetings.

Rossen, Jack (Ithaca College)

[342] *Revisiting Myers Farm: The 2013 Excavations at a 15th Century Cayuga Farmstead, Central New York*

The second field season at the Myers Farm site, east of Cayuga Lake in central New York, was conducted during the summer of 2013. The new excavations add to the previous understanding of the site as a 15th century farmstead where communal feasting occurred. Newly revealed are a cookhouse and elaborate storage pit system. The new excavations also emphasize the presence and material culture of children. In general, this small site encourages new ways of analyzing site structure and artifact assemblages like ceramics and limestone hoe blades.

Rossi, Franco (Boston University)

[3] *All About Xanab: Understanding Ancient Maya footwear*

Footwear is an oft-overlooked detail of Maya dress, though like any bodily adornment, it followed its own particular set of conventions, which in turn governed manufacture, use and decoration. In ancient Maya art, vivid glimpses of elaborate sandals and other footwear can be seen on various stela monuments, ceramic vessels and murals depicting high-ranking lords in costume. Many other artistic works display the simpler side of footwear, showing more basic sandals in a variety of contexts. This paper utilizes these historical representations and artistic depictions as a primary means of exploring ancient Maya footwear—first identifying various “fashionable” trends cross-regionally and through time and then fleshing out the particulars regarding manufacture and use through archaeological examples, ethnography and ethnohistory. As the guardians of individuals’ primary means of movement, footwear was as vital piece of adornment in antiquity as it is today, and would have been a key medium for signaling aspects of individual identity and status. By understanding how items of dress like footwear, were created, used, and represented by ancient societies, archaeologists can not only explore technologies of production and consumption, but can also access subtle windows into social hierarchies, gender dynamics and politics of display in ancient societies.

Rostoker, Arthur (Proyecto Ipíamais)

[281] *Chair*

Roth, Barbara (UNLV)**[32] Overview of Current Research at the Harris Site, Mimbres River Valley, New Mexico**

This paper summarizes the results of recent research at the Harris Site. The primary goals of this fieldwork have been to examine household organization during the Pithouse period in the Mimbres River Valley and to explore the interplay between sedentism, subsistence practices, and social structure in village organization. Here I highlight some of the findings from pithouse, extramural feature, burial, and kiva excavations that have helped us reconstruct village life at Harris. I discuss the implications that these results have for our understanding of social dynamics during the Pithouse period and their role in the pithouse-to-pueblo transition.

[32] Chair

Roth, Barbara [32] see Lauzon, Ashley

Roth, Aaron (New Mexico Highlands University), Warren Lail (New Mexico Highlands University) and Victoria Evans (New Mexico Highlands University)**[79] The Life and Death of Urraca Man**

During the summer of 1970, ancient human skeletal remains were discovered in an open-air rock enclosure high on Urraca Mesa, Colfax County, NM. The individual, now known as "Urraca Man," was found with over 18,000 glass trade beads, metal tools, knives, copper bracelets, and butchered animal bones. The artifacts place the date of death somewhere between about 1860 and 1890. Early researchers speculated that he was a "mountain man" or trapper of European descent. More than a decade later, another anthropologist concluded that the remains were those of a Native American, now making them subject to NAGPRA (25 U.S.C. 3001 et seq. 1990). However, a complete reanalysis of the skeleton using modern methods, including platymeric index and CT cross-sections of the subtrochanteric area of the femur, together with a complete reanalysis of the artifacts and re-excavation of the location of the original find, suggests that he was in fact a trader on the Taos/Rayado Trail, likely of Caucasian descent with some African admixture. Moreover, our analysis details the first assessment of the cause and manner of death. Pending ancient DNA (aDNA) results, provided DNA can be extracted and amplified, will support or refute our ancestral assessment.

Rothaus, Richard [328] see Caraher, William

Rothhammer, Francisco [23] see Capriles, Jose

Rothschild, Nan (Barnard College/Columbia University) and Heather Atherton (Columbia University)**[168] The Women of San Jose de las Huertas, NM**

Accounts of colonial interactions in the American southwest privilege the colonized (Native Americans) and the colonizers (Spanish). However, almost immediately after the Entrada a new and highly significant third group was formed. Called variously mestizo(a), hispano(a), or classified in a number of castas, this group has not received the archaeological attention it merits in the region. The roles of women are also particularly neglected in colonial situations. We will specifically consider the women who lived at San Jose de las Huertas from around 1765-1826, and their children who subsequently founded Placitas, NM. Our information comes from excavation, historical research and oral history with some descendants; a rich trove of data comes from the WPA records created in the 1930's. We will focus on women's roles, their important activities centering the community and in the network of kin relations. Although not highly visible through the archaeological research, the oral accounts demonstrate their agency and power.

Rouse, Lynne (Washington University in St. Louis)**[20] Leaving Empires in the Dust: Why Core-Periphery Relationships Aren't Helpful for Understanding Prehistoric Central Asia**

The discovery of the Bactria-Margiana Archaeological Complex (BMAC) in modern Turkmenistan and Afghanistan revitalized study of ancient interaction networks in greater Central Asia, placing the BMAC alongside other 3rd millennium 'core' areas in Mesopotamia and the Indus Valley, as agrarian urban heartlands whose power was drawn from resources and populations exploited in a 'peripheral' hinterland. However, new archaeological research highlights the activities of 'peripheral' nomadic populations in their own right, revealing that the interpretation of prehistoric Central Asia as characterized by dependent core-

periphery relationships sets up fundamentally flawed notions of power, reflected in the conceptual dichotomy between urban farming communities and mobile pastoralist groups. I review the growing body of archaeological evidence, including my own work in the Murghab delta, that can contribute to a revamped conceptualization of prehistoric relationships in the region. By envisioning a socially-based network of urban/nomadic nodes and flowing connections between them, we neutralize the deterministic view of power as rooted in economic relationships and introduce multiple layers of interaction, thereby doing more justice to the reality of both prehistory and the modern era, where all types and sizes of communities actively negotiate their social, political, and economic worlds through their engagements with one another.

Roush, Cody C. [269] see Nold, Kathryn

Rousseau, Vincent (Université Laval), Kenneth Kelly (University of South Carolina) and Kelly Goldberg (University of South Carolina)

[58] Sanya Paulia's Rock Shelter: Prehistoric Contexts in coastal Guinea

While investigating around a 19th century slave trading post called Sanya Paulia, on the Rio Pongo, Guinea, local villagers told Kelly about a cave where people could hide if attacked. We didn't really know what to expect but the cave's soil deposition looked extensive and some historic ceramic fragments were visible on the surface. Hypothesizing that we might recover a collection of prehistoric ceramics that could be compared to 19th century local ceramics we established a test pit in this cave. This small rock shelter turned out to be much more than just a safe retreat for the villagers.

Between the 14th and the 17th of March 2013, Kelly and Rousseau, helped by Guinean students, supervised the excavation of the 1 sq. m. test pit near the main entrance, where available digging space was best and where multiple prehistoric activities usually take place. Each arbitrary 10cm layer was richer than the last and we dug until it was no longer safe, approximately at a 1.8m depth. The results: thousands of lithic flakes and ceramics sherds in an occupation that might span more than 5000 years of history. This paper presents the preliminary results of Sanya Paulia's rock shelter excavation.

Rowe, Sarah [57] see McAnany, Patricia

Rowe, Marvin (Texas A&M University)

[156] Discussant

Rowe, Robert

[166] The Geomorphology of the Four Sites area along the South Platte in Northern Colorado

The excavation and installation of a natural gas liquids pipeline allowed for opportunistic investigations to be conducted along the middle South Platte River near the Cache la Poudre delta to better define the geomorphic contexts of several Paleoindian sites (Frazier, Jurgens, Klein, Powars and further to the west, Dent) within the local area. These Paleoindian sites are located on the Kersey terrace, alluvium of which was deposited during Clovis occupation and stabilized by 10,000 B.P. The alluvium of this area is the results of flooding from both rivers creating a complex soil column. Post-Clovis sites post-date aggradation and steam down-cutting may have started as early as 10,500 B.P. Subsequent floodplain development shaped by both rivers and down-cutting later formed the Kuner terrace (3000 B.P.) and the Hardin terrace (1000 B.P.), both of which limit the locations of the earlier sites. Aeolian sands began accumulating in the region by 10,000 B.P. but most are probably late Holocene deposits and are indicative of a drier post-Pleistocene climate. Understanding of the late-Quaternary geomorphic history of this portion of the South Platte could aid future archaeological research and complement geomorphic research in other reaches of the South Platte.

[166] Chair

Rowland, Joanne and Judith Bunbury (University of Cambridge)

[17] Environmental Change in the Western Nile Delta from the Middle Paleolithic into the Neolithic: New Considerations Regarding the Mobile and Settled Communities in the Vicinity of Merimde Beni Salama

By the Neolithic, Merimde Beni Salama became part of the shore of a lake or lagoon. The mud deposits suggest that this was relatively extensive with at least 4 km² body of water, 4 m deep, that would have been well-suited to species such as the hippopotamus, for which Merimde is well-known. The settlement at the site seems to be located around the fan and flanking terrace sediments from the mouth of the Wadi

Gamal. With time, the fresh water would have dried up as the distributary system of the Delta became more strongly channelized and the climate became drier. However, the next main event that we have evidence for is an influx of sand (that is bleached of its desert pellicle) which may indicate that it was deposited into water. Following this, the action moved away from Merimde as we see now. Earlier Pleistocene finds are probably part of earlier cycles of this type of which there were at least six during the Pleistocene. From a better understanding of environmental change in this area, we can explore further the climate cycles in the region and how this affected the habitation patterns in the Mid to Late Pleistocene.

Roy, Natasha [29] see Woollett, Jim

Royall, Travis [44] see Van Pool, Todd

Royle, Thomas (Simon Fraser University), George P. Nicholas (Simon Fraser University) and Dongya Y. Yang (Simon Fraser University)

[206] *Investigating Long-Term Patterns of Fish Use in the Interior Plateau through the Ancient DNA Analysis of Fishbone*

EeRb-144 is a large Early to Late Holocene archaeological site located in the Interior Plateau of southcentral British Columbia, Canada. A multi-year excavation of the site conducted as part of the Secwepemc Cultural Education Society-Simon Fraser University Archaeological Field School has produced a large amount of heavily fragmented fishbone. This fragmentation has generally precluded the classification of these remains through traditional zooarchaeological analysis to a taxonomic level lower than class. However, ancient DNA (aDNA) analysis can be used to assign species-level identifications to even extremely fragmented archaeological fishbone. In this study, aDNA analysis was employed to assign species identifications to a sample of Middle and Late Holocene fishbone from EeRb-144. These identifications were used to investigate temporal trends in the taxonomic composition of the site's fisheries, and the fishing strategies used by its inhabitants. The character of these trends provides insights into long-term patterns of fish use in the Interior Plateau, and the nature of large-scale cultural processes in the region.

Rubenstein, Meghan (University of Texas at Austin)

[195] *The Hieroglyphic Platform at Kabah*

In front of the western façade of the Codz Pop at Kabah is a low, four-sided platform, once faced with at least two levels of stones carved with hieroglyphs. Today, only about half of the blocks remain on the monument; the rest lie scattered in the rubble. The current placement of the stones on the platform dates to the early 1950s, when Raúl Pavón Abreu reset the loose blocks with the hope that it would preserve them for future scholars. However, due to the condition of the stones, and the disorder of the inscription, decipherment of the hieroglyphic monument has been challenging. Research in 2013 resulted in a complete catalog of the hieroglyphic blocks, enabling a new understanding of these previously enigmatic inscriptions. In this paper, we present our findings, placing the hieroglyphic monument at Kabah within the larger corpus of Terminal Classic inscriptions from the Northern Lowlands and offering a new interpretation and reconstruction of the structure.

[195] *Chair*

Rubertone, Patricia

[338] *Archaeologies of Native Production and Marketing in 19th Century New England*

Research on Native Americans' acquisition of European goods has challenged ideas about the naïveté of their consumption choices as well as assertions that they perceived the foreigners' things as technologically superior and readily substituted them for their own. By drawing attention to Native people's agency in the selection and redefinition of material goods in diverse Indigenous contexts, these studies have transformed the ways archaeologists think about Indigenous consumption during early colonial encounters and in later colonialism. Consequently, few today would interpret Native families' increasing reliance on store-bought, manufactured goods in recent centuries merely as evidence of cultural loss and assimilation, or would ignore the interpretive possibilities presented by assemblages of incongruous things to confront stereotypical expectations about Native Americans' impoverishment, incompetence with modern technology, and gullibility as consumers. However, Native peoples were not just consumers of "non-Native" goods: they also made things for European-American consumption. This paper explores Native Americans' production and marketing of baskets and natural medicines in urban New England during the 19th century. Reversing the interpretive angle to Indigenous peoples' tactics as

producers and sellers further contributes to destabilizing pervasive ideologies that situate them mostly at the receiving and often dependency end of consumer culture.

Rubin, Julio [6] see Silva, Rosicler

Rubio Mora, Albert [156] see Ruiz, Juan

Ruby, Allika (Far Western Anthropological Research Group) and Adrian Whitaker (Far Western Anthropological Research Group, Inc.)

[282] Lonesome Landscapes as Post-Contact Refugia

The society-altering effects of Euro-American contact on Native peoples throughout North America are well documented. Native people endured devastating population losses through disease and disruption of their traditional economies. Many Native people were incorporated into new economies and their material culture reflects the incorporation of new tools and foods. There are also some documented instances of resistance and rejection of the imposed new systems in which Native people fled to remote areas. Here we present two southern California examples of likely Native refuge sites in what were then considered remote areas by the incoming Euro-American groups. The sites, located on San Clemente Island, and in the Coso Mountains of the Mojave Desert, were occupied by groups with highly distinct economies and cultures and subjected to different historical stresses by the incoming groups. Common to the two examples, however, were locations that were not desirable to Euro-American settlers until relatively late in time. Using the Ideal Free Distribution as a theoretical framework, this paper argues that the very things that made these locations "Lonesome Landscapes" allowed Native cultures to continue in traditional ways until the 1850s on the Channel Islands and the 1870s in the Coso Mountains.

Rucker, Daniel [18] see Fehrenbach, Shawn

Rucker, Collin

[343] Swamp Tools: Late Paleocene to Early Eocene Tropical Forests and Archaeology

During the Late Paleocene and Early Eocene a tropic/sub-tropic forest in east-central Colorado was enveloped by volcanic eruptions causing the creation of the Paleosol-Dawson Arkose formation. The primary area of this geological formation is located in Elbert County, between Colorado Springs and the small town of Kiowa. Large stands of tropical wood became silicified as a result of the deposition of volcanic ejecta creating distinctly colored petrified wood. Due to erosion and uplifts of the formation, large areas of surface exposed petrified wood became an easily accessible lithic source for native populations to exploit. The distinct color of the petrified wood allows archaeologists to trace tools made with that material to the Paleosol – Dawson Arkose formation. Phase 1 surveys in support of the excavation and installation of a natural gas pipeline across the study area allowed a unique opportunity for archaeologists to map through the deposition of the silicified wood to determine the extent and type of exploitation that was taking place within the native populations.

Ruiz, Juan (Universidad de Castilla La Mancha), Ramon Viñas Vallverdú (Institut de Paleoecología Humana i Evolució Social), Albert Rubio Mora (Universitat de Barcelona) and Antonio Hernanz (Universidad Nacional de Educación a Distancia)

[156] Scientific Dating Program of Post-Glacial Open-Air Rock Art of Iberian Peninsula, 2004-2014

The chronology of the different styles of open-air rock art of Iberian Peninsula has been an open question since the discovery of Levantine art 100 years ago. This naturalistic style is the cornerstone of the complex relations among the rest of styles of the area: Paleolithic, Schematic and Macroschematic. Levantine art has some formal traits of Paleolithic style, and at the same time it has a complex stratigraphic seriation with Macroschematic and Schematic styles, both of them considered of Neolithic age or younger. Our research group began a scientific dating program ten years ago trying to get the first scientific dates of Levantine art. A multidisciplinary research team has contributed since then with several AMS ^{14}C datings of oxalate crusts in six shelters from two distinct geographical areas. M.W. Rowe and his collaborators have been in charge of processing these samples by plasma-chemical extraction or acid treatment. The results suggest that at least a part of Levantine art was of pre-Neolithic age. Some of these results suggest that oxalate datings may produce reliable maximum and minimum ages for a group of pictographs under certain conditions. We expect to go further in this research line in the near future.

Runggaldier, Astrid (University of Texas at Austin)

[61] From Village to City: Contributions from San Bartolo's Architecture, Art, and Writing in Revealing the Development of Preclassic Lowland Maya Culture.

Over the last few decades we have come to understand the Preclassic Maya Lowlands as a complex landscape, replete not only with agricultural villages, but also with towns and cities of different sizes. At the relatively small settlement of San Bartolo in northeastern Guatemala, architecture, art, and writing coexist in cohesive programs of formal design at the scale of individual structures and up to entire groups, demonstrating that specialized architectural configurations have a deep history of development evident in codified arrangements by the start of the Late Preclassic period. E-Groups, ballcourts, triadic arrangements, and palace complexes have established forms and symbolic values, connecting small and large sites in patterns of shared meaning. In this presentation we explore the Maya center of San Bartolo from the perspective of built environments and visual programs of painting and writing that created the appropriate urban space for the early traditions of Maya kingship and statehood.

[31] Chair

Rush, Haley (Cox|McLain Environmental Consulting)

[14] The Rowe Valley Site (41WM437): A Study of Toyah Period Subsistence Strategies in Central Texas

In the latter half of the Late Prehistoric Period in Central Texas, the Toyah period, a drastic cultural change occurred, marked by the appearance of a unique artifact assemblage often recovered in association with bison remains. Bison remains are virtually unknown in the period that precedes the Toyah period. The change in material culture has often been linked to the reappearance of bison and the development of the Toyah people adjusting their economic strategy to one that specialized on hunting bison. Deposits at the Rowe Valley site, a large Toyah campsite, contained extensive faunal remains which included deer, antelope, and bison. The presence of a considerable amount of faunal materials along with the sites' location in the core of the Toyah area, made Rowe Valley an ideal site for study. Analyses of the archaeological materials combined with experimental studies demonstrated that the economic focus at the Rowe Valley site was not on bison. It is clear that a drastic change in material culture did occur at this time however, this study suggests the economic strategies utilized were still generalized and adapted to unique local environments.

Rushton, Elizabeth [158] see Mock, Cary

Russ, Jon (Rhodes College), Karen Steelman (University of Central Arkansas), Mary Pohl (Florida State University), Chris von Nagy (University of Nevada, Reno) and Heather Hurst (Skidmore College)

[156] Radiocarbon Ages of Oxtotitlan Murals

Rock art murals at Oxtotitlán Cave in southern Mexico contain iconographic elements similar to Olmec monuments on the Gulf Coast. To investigate whether the rock art could be associated with the Olmec, we conducted a study of the pigments with the goal of establishing the age of the artifacts. Paint pigments in the site were first analyzed using a portable X-ray fluorescence which showed that most of the black pigments did not contain manganese, and thus likely carbon-based. Samples from two murals were collected, one from a large, bi-chrome shield motif and another from the polychromatic C-1 mural that has elements similar to other Olmec artifacts. Adjacent samples were also collected to provide information on the substrate and rock coatings. Chemical studies in the laboratory demonstrated that the black pigments were made from soot, and that the natural rock coatings are primarily calcium oxalate. We extracted the carbon in the pigment using a low-temperature oxygen plasma, and the resulting CO₂ was sent for radiocarbon analysis. The oxalate coatings on the paint and off-paint samples were treated using dilute phosphoric acid to remove carbonates and also sent for C-14 dating.

Russell, Will (Arizona State University)

[43] Diachronic, Nonlocal Influence at the Mimbres Site of Galaz

Archaeological evidence from the Mimbres area has generated inferences of homogeneity in material assemblages and inter-societal interaction. New data and recent research suggest a more diverse social landscape wherein Mimbres households and villages negotiated differential access to nonlocal communities. This analysis employs data from the multi-component Mimbres site of Galaz to examine the ways in which nonlocal interaction impacted Mimbres cultural trajectories at an intra-site scale. Did households have equal access to nonlocal goods? Did the intensity, manner, or constituents of connectivity change over time? To approach these questions, I synthesize evidence of Mimbres

interaction with Hohokam and Mesoamerican sources during the Late Pithouse, Classic, and post-Classic occupations at Galaz Ruin. Evidence includes nonlocal artifacts, features, practices, and iconography. Analyses compare the relative frequencies of such indicies, over time and at different scales, ultimately presenting new evidence for asymmetrical and persistent access to nonlocal communities.

Russell, Bradley (State University of New York At Albany and College of St. Rose), Carlos Peraza (INAH Centro Yucatan), Enice Uc (INAH Centro Yucatan) and Marilyn Masson (State University of New York At Albany)

[52] Preliminary Underwater Exploration of Cenote Sac Uayum, Mayapán, Mexico

In the summer of 2013, with support from The Waitt Foundation for Exploration and The National Geographic Society, the Mayapán Periphery Project concluded its first season of exploration at Cenote Sac Uayum, a sacred, water-bearing sinkhole located at the Postclassic Maya political capital of Mayapán, Yucatan, Mexico (1100-1450 A.D.). The study yielded significant new insights into the cenote that many modern inhabitants consider "alive" and believe to be guarded by a large serpent that some say has plumage and the head of a horse. The feature has drawn the attention of researchers working at the site since the first archaeological work began based on its conspicuous and apparently intentional exclusion from the city by the large city wall surrounding the bulk of the settlement. The modern belief in a feathered serpent guardian only heightened that interest. Before dive work began, we conducted a Jeets' Lu'um or "calming of the earth" ceremony which provided new data on modern Maya cave ritual and beliefs. Our team focused on detailed underwater mapping and photography of the cenote and its contents. We recorded 15 human crania, a large number of other bones and ceramics attesting to the use of the site as a burial location.

Russell, Will [66] see Hegmon, Michelle

Rutecki, Dawn (Indiana University Bloomington)

[240] The Future of the Past: Feminist Archaeology in the 21st Century

This paper discusses the alterations, innovations, and changing foci of feminist inspired education and scholarship in archaeology. Legacies of previous feminist scholars continue to influence how we incorporate these new directions into our research, but also provide the means to expand how we think and teach archaeology. Diversification of agendas has led to new approaches for integrating feminist thought into the discipline. Community building and engagement, stemming from feminist and post-colonial scholarship, extends not only to the communities with which we work, but the students and colleagues that we encounter on a daily basis. These fluid communities form sites of possibility and transformation concerning what feminist archaeologies means, how they are enacted, and the future effects they can have on the discipline.

[240] Chair

Rutherford, Allen (Tulane University)

[38] Maintaining Community in a Sociopolitical Frontier: Recent Data from Cerro Colorado de Huacho, Huaura Valley, Peru

The Chimu empire began expanding along the north and central coast of Peru during the latter part of the Late Intermediate Period (ca. A.D. 1300-1476). Preexisting social and political boundaries were reinforced and often redrawn after the Chimu successfully conquered regions. The fluctuation of these sociopolitical frontiers profoundly affected the development and maintenance of unconquered regions by creating an unstable social, political, and economic environment. The Huaura Valley, located on the southern edge of the Norte Chico geographical region, represents one example of a sociopolitical frontier in the LIP. This research is designed to address the ways in which an individual community developed and maintained itself within a frontier context at the site of Cerro Colorado de Huacho. The site consists of three large architectural features dating to the LIP and Late Horizon including a fortification, public administrative complex, and Inka tampus. Excavations in 2012 focused on the fortified walls as well as test units in areas identified as domestic zones. Site development, social interaction, and culture contact will be examined in light of new data drawn from recent excavations and artifact analysis of materials from Cerro Colorado de Huacho.

[38] Chair

Ruuska, Alex (Northern Michigan University)

[248] Rock Writing Performances in the Great Basin: Ghost Dancing and the New Animism

A recent theoretical emphasis on the New Animism raises important issues for the study of pictographs and petroglyphs in the interpretation of the archaeological record. This paper explores how the animistic ontologies of the Numic-speaking communities of the Great Basin and Colorado Plateau are expressed vis-à-vis ritual activities within cultural landscapes that include manifestations of volcanism such as hot springs, craters, and caves. Comparing three archaeological sites including Toquima Cave, Darrough's Hot Spring, and Tinemaha that are inscribed with rock images and used for Ghost Dancing activities during the late nineteenth century, repeating and unique uses of animated ritual landscapes are investigated.

Ruvalcaba, Jose Luis [253] see Lopez, Xulieta

Ruvalcaba Sil, José Luis [253] see Lowe, Lynneth

Ruzicka, Denise (University of Nevada, Las Vegas)

[32] *Architecture, Alignments, and Astronomy at the Harris Site in the Mimbres Valley*

Many Pueblo sites in the American Southwest have demonstrated architectural alignments to astronomical phenomena. However, few pithouse sites, in particular in the Mimbres-Mogollon area, have been investigated for similar alignments. This study attempts to change that trend by researching architectural alignments and solar events at the well-known Harris Site in the upper Mimbres Valley. The study found that many entryways were oriented to the sunrise and sunset positions on key astronomical dates (i.e., solstices and equinoxes). There were even important solar alignments between communal structures on site. These results show that the Mimbres-Mogollon were keen observers of solar movements during the Late Pithouse Period and incorporated some of their observations into their architecture.

Ryan, Philippa (The British Museum)

[22] *Perspectives on Near Eastern Neolithic Basketry from the Phytolith Traces at Çatalhöyük (Central Anatolia)*

Basketry found at Çatalhöyük East (7,400–6,000 cal B.C.) is mostly preserved as silica-skeleton (phytolith) traces, and more occasionally as impressions in clay or through partial charring. This paper discusses their preservation, appropriate sampling methods and some of the types of plants exploited for basketry. Traces of coiled basketry, matting and cordage are often found in well-defined domestic and burial contexts. Some of the potential uses of these objects, such as for storage, will also be considered. There is also possible evidence for changes in the use of some categories of basketry over time. The numerous silica skeleton remains at Çatalhöyük highlight the importance of basketry as an artifactual class during the Near Eastern Neolithic.

[39] *Discussant*

Ryan, Susan (Crow Canyon Archaeological Center)

[333] *Kiva Production and Community Integration in the Northern Southwest*

This paper analyzes the vernacular architecture of ancestral Pueblo kivas dating from the Pueblo II (A.D. 900-1150) and Pueblo III (A.D. 1150-1300) periods in the northern, middle, and southern San Juan regions in the northern Southwest in order to shed light on communities of practice and their social, temporal, and spatial production practices. This research specifically examines kivas—or round rooms used for public and domestic activities—to address how architecture emphasized the ways in which features were actively mediated by communities of practice and how their semiotic signatures can illuminate how architecture was developed to create and maintain social structure, social identity, and community integration.

[333] *Chair*

Saage, Ragnar (University of Tartu, Department of Archaeology)

[225] *Photogrammetry as a Documentation Tool during fieldwork: Research and Result Presentation Phase*

Photogrammetry has been one of the rapidly advancing documentation methods in archaeology. While studies have been made on the topic of the method's cost efficiency and precision, I believe that there are yet undiscovered (or unpublished) methods for using it in archaeology. With using the possibility of creating

orthophotos from a 3D model, we can greatly reduce the distortion from the camera lenses. At the same time we can make photos, that otherwise would require us to be 25 feet above the excavation trench. With using these features photogrammetry becomes a powerful, quick and therefore cost efficient method for capturing the texture and elevation of different surfaces. I would like to share our experience, namely with Agisoft PhotoScan, in the University of Tartu and show how photogrammetry could be used during fieldwork, research and result presentation phases. Fieldwork use would be shown with the example of the Haapsalu gallows hill, research phase with the smithy site of Kaku on the island of Saaremaa and presentation phase with two Egyptian mummies.

Saban, Chantel [148] see Dexter, Jaime

Sabo, George

[251] *Design and Style in Sacred Bundle Baskets from the Great Mortuary at Spiro*

Important components of the Great Mortuary cosmogram recently identified by James Brown at the late prehistoric Spiro mound site in eastern Oklahoma are sacred bundles composed of double-woven lidded baskets and associated sacra. Here we examine the interplay of basket-weave choices that contributed to the structural integrity of the baskets and “artistic” treatments made at the discretion of the weaver. We also compare basketry motifs and artistic motifs rendered on other media found in the Great Mortuary, including engraved shell and carved stone. These comparisons yield exciting new information on stylistic variation among the “communities of practice” who contributed items for inclusion within the cosmogram.

[30] *Discussant*

Sabo, George [327] see Hammerstedt, Scott

Sabol, Donald [13] see Buck, Paul

Sacks, Ben [320] see Brown, Sarah

Sadarangani, Freya [322] see Miracle, Rebekah

Sadvari, Joshua [28] see Haddow, Scott

Safi, Kristin (Washington State University) and Andrew Duff

[42] *Reconstructing a Great House: A Case Study from West-Central New Mexico*

Despite decades of focused research on Chacoan-style great houses, the impetus for their construction and the extent to which their users directly interacted across the Four Corners region remains poorly understood. A key research question is whether these structures represent an articulated system with the center of interaction at Chaco Canyon or whether they represent a regional conceptualization of community-based activities enacted on more localized scales. The range of variability evidenced by Chacoan-style great houses suggests that local social context played an important role in how each community constructed and utilized these structures, and also influenced the degree of interaction between great house communities.

Recent research in the southern Cibola region of west-central New Mexico has been directed at better understanding the role of Chacoan-style great houses within their local and broader social contexts. We present a case study of the Largo Gap great house in which we compare its construction and patterns of use to Pueblo II great houses across the Southwest, examine the nature of its use within the context of its associated support community, and evaluate its patterns of interaction with both local and more distant great houses.

Sagebiel, Kerry and James Aimers (State University of New York, Geneseo)

[302] *Betwixt and Between: The Ceramics of Ka'Kabish, Belize*

The site of Ka'Kabish is located in an area between the Booth's and La Lucha Escarpments of Northwestern Belize, which defines the Peten ecological boundary, and the coastal environment of

Belize. The site was initially occupied in the Middle Formative and had its heyday in the Late Formative and Early Classic periods. Current research suggests that the site center did not have significant occupation after the Early Classic, although the surrounding area was heavily occupied during the Terminal Classic through the Middle Postclassic. Ka'Kabish's ceramic affiliations, particularly in relation to other sites in Northern Belize and the Northeastern Peten, will be a primary focus. Because of the scarcity of later occupation, Ka'Kabish provides an opportunity to delve into some of the ceramic identification issues in the Formative period as well as an exploration of Early Classic ceramics.

Sagebiel, Kerry [302] see Haines, Helen

Sager, Rebecca

[336] Hair Today, Gone Tomorrow: The Degradation and Conservation of Archaeological Hair Fibers
This presentation describes the degradation and conservation of archaeological hair fibers. After researching the structure of hair fibers, and their physical and chemical attributes, research focused the degradation of hair fibers in different environments. Hair fibers were left in underwater, open air, burial, and arid environments. The samples were monitored for degree of degradation and brittleness before and after environmental exposure. The degradation of the fibers in different environmental conditions showed that burial in acidic sandy clay is the most detrimental to hair fibers, while hair fibers from arid, dry environments are brittle, but well preserved aesthetically. The hair fiber types used are four commonly found in archaeological context: coarse wool, fine wool, mohair, and human hair. After weathering, conservation using polymer passivation was tested on the degraded hair fibers. When the treatment proved to be a viable conservation method, the technique was then applied to two artifacts. The two artifacts used were a Victorian era watch fob made from human hair and hair fibers mixed with tar from the excavation of Kittern in Bulgaria. The polymer passivation treatments were shown to be viable treatment methods with positive results for all of the fibers tested, including the two artifacts.

Sagstetter, Kelcy [335] see Simon, Katie

Sahle, Yonatan (Human Evolution Research Center, University of California, Berkeley), David Braun (George Washington University, Center for the Advan), Katja Douze (Evolutionary Studies Institute, University of the Witwatersrand) and Judith Sealy (Department of Archaeology, University of Cape Town)

[26] Technological Behavior in the Middle Stone Age of the Gademotta Fm., Ethiopia: Insights from the Levallois Method

The Middle Stone Age (MSA) has attracted extensive research attention over the past few decades because of its association with complex behaviors. Notwithstanding, the debate on the timing and pace of behavioral changes, a common generalization is that MSA technologies become more sophisticated through time. Previous models have emphasized the stepwise increase in specific technologies. In the present study, we use MSA sites from multiple securely-dated contexts in the Gademotta Formation of the Main Ethiopian Rift to show that trajectories of technological evolution are complex. Specifically, we examine Levallois reduction method in six MSA sites representing three different periods: >279 ka, 260–185 ka, and ~105 ka. By holding contextual factors (such as access to and quality of raw materials) constant, we examine diachronic variability within the MSA. Results indicate that diagnostic characteristics of the Levallois method are shared across these sites spanning much of the MSA. However, certain temporal trends that pertain to the major focus of the Levallois method and its end products are also observed. The almost ubiquitous nature of the Levallois method in the MSA is used here as a convenient attribute in the investigation of hominin behavior.

Sahle, Yonatan [109] see Kay, Marvin

Sailors, Damion

[271] He Koko Pu'upu'u? (A Chiefly Gourd Net?) An Analysis of Recovered Fiber Arts from Makauwahi Cave, Kaua'i

In the summer of 2011, several well preserved pieces of a rare Hawaiian carrying net were recovered from Makauwahi cave during an archaeological field school hosted by the University of Hawai'i and the National Tropical Botanical Gardens on the south end of Kaua'i. The complexity and decorative aspects of the type of knot used for this net's construction suggest that this item may be a k6k6 pu'upu'u, or chiefly gourd net. Because of the perishable nature of common components used in customary cordage manufacture, Pacific Island rope work generally has poor representation in the archaeological record making this uncommon find appealing for detailed investigation. This paper addresses what can be learned

from examining and comparing the physical characteristics of this rare example of Polynesian netting and proposes further research that may show promise regarding Pacific Island fiber arts. A focus on the stylistic analyses of rope construction and knot work as it is demonstrated between and within Pacific Island communities is emphasized in this study.

Saint Charles, Juan Carlos [336] see Fenoglio, Fiorella

Saintenoy, Thibault (CIHDE (CONICYT, Chile), UMR8096 ARCHAM (CNRS, France)) and Romuald House (Université Paris 1 Panthéon Sorbonne, UMR8096)

- [60] *Hilltop Settlement in the Late Prehispanic Andes: A Global Review of the Pukara Phenomenon through Ethnohistory and Geomatics*

It is well known and widely documented through the Andes that settlement patterns shifted to higher altitudes during the last centuries preceding the Spanish conquest. While various reasons (climate change, territorial balkanization and sociopolitical conflict, etc.) have been proposed to explain this apparently global phenomenon in the Andes, a systematic cross-regional study on the topic does not exist so far. The Andean concept of "pukara"—generically a hilltop fortified settlement—was first documented in ethnohistorical sources and described and explained through European eyes. Thus, a critical review of ethnohistorical literature is necessary to counteract potential medieval misconceptions about the way of living uphill in the Andes. Second, hilltop settlements are very numerous in the late prehispanic Andes, and in fact a great deal of diversity exists in the architectural and locational patterns of settlements called "pukara" in the archaeological literature. For this reason we present here a comparative study of late prehispanic settlement patterns related to the pukara phenomenon across various study zones in the central Andes. Comparative analysis based on satellite imagery and 3D terrain modelling of architectural and locational characteristics offer new insights to apprehend the pukara phenomenon at an Andean scale.

Sakai, Sachiko (UC Santa Barbara)

- [10] *Luminescence Dating and Chronological Reconstructions in the Arizona Strip and Adjacent Areas in the American Southwest*

The Arizona Strip and adjacent areas have been the focus of archaeological studies to understand the prehistoric trading pattern due to their widely distributed olivine-tempered ceramics. To understand the changes in the production and distribution patterns of olivine-tempered ceramics, accurate reconstructions of ceramic and site chronologies are necessary in addition to the source study. For this purpose, optically stimulated luminescence (OSL) dating was conducted on 109 sherds from Mt. Trumbull, which is the source of the olivine and the lowland Virgin area, which is one of the distant areas where the olivine-tempered pots were found. This paper addresses three basic questions: (1) how these OSL dates correspond to the 14C dates available in the study area, (2) how the distributions of these OSL dates establish the site chronology in the Mt. Trumbull and lowland Virgin areas, and (3) how these OSL dates develop a ceramic chronology in these areas. This paper also examines how the trading patterns between Mt. Trumbull and the lowland Virgin area has changed over time by combining the LA-ICP-MS chemical compositional data of 1,069 sherds with these OSL dates.

Sakai, Sachiko [11] see Harlow, Jeanette

Salazar, Diego [211] see Maldonado, Blanca

Saldana, Melanie (California State University Los Angeles)

- [33] *Mesoamerican Cave Archaeology at Cal State L.A.: A History*

In 1999 Dr. James Brady came to California State University, Los Angeles as the first Mesoamerican archaeologist in the university's more than fifty year history. With no infrastructure for teaching Mesoamerican archaeology, Jim created foundational courses, established a dedicated laboratory, and expanded artifact and library collections making Mesoamerican Studies a vibrant focus in the Anthropology Department. Beginning in 2001, he took students from this predominately minority campus into the field with full financial support. Under Jim's mentorship, these students have parlayed their research experiences into an impressive list of awards and honors that made Anthropology one of the elite departments on campus. With few exceptions students participating in Jim's field projects have presented the results of their research in the annual SAA cave sessions becoming a vital part of our field's participation in this conference. Moreover, his students have found success beyond the Cal State

system by going on to Ph.D. programs, so that the Cal State L. A. program has become an important source of new cave archaeologists. This paper takes a historic look at Jim's contributions to Mesoamerican cave archaeology through his tenure at Cal State L.A.

Saldaña, Melanie [70] see Solano, Adam

Saldaña, Julio (Pontificia Universidad Católica del Perú), Luis Jaime Castillo (Pontificia Universidad Católica del Perú), Fernando Zvietcovich (Pontificia Universidad Católica del Perú) and Benjamin Castañeda (Pontificia Universidad Católica del Perú)

[104] *New Approaches in the Recording, Analysis and Interpretation of Large Ceramic Moche Vessels: 3D Techniques Applied in the Study of Ritual Practices on Peruvian North Coast*

Several tools and equipments have been available for years in order to acquire three-dimensional models from archaeological artifacts and sites. Previous to this study, we have worked on a 3D method for the acquisition and processing that improves the accuracy and precision of the recording procedure of ceramic fragments when compared with the traditional one of drawing. Also, we have proposed a 3D reconstruction technique of complete vessels based on the mentioned fragments which has been applied to a database of profile contours taken from 3D models of paicas, large ceramic containers for liquids from the Moche of the North Coast of Peru. Preliminary results provide good and accurate estimations. Now we plan on evaluating the advantages of the application of this method in terms of how it improves the archaeological record, essential for interpretation and conservation as well as how we can now calculate the volume of vessels in order to determine the scale of ritual practices that involve the consumption of ritual drinking at the site of San Jose de More, an elite and ceremonial site in Jequetepeque Valley, Peru.

Salgado, Silvia (Universidad de Costa Rica)

[197] *Interaction between the Atlantic Highlands and Lowlands in the Case of Two Chiefly Villages*

Since the 1970s, there has been a constant interest in the study of complex societies in Costa Rican archaeology, which are commonly typified as chiefdoms. This interest is not only theoretical but mainly historical due to the fact that ethnohistorical studies indicate that this type of sociopolitical organization was present across the Atlantic and other regions of Costa Rica. Archaeologists, therefore, see an opportunity to explore not only prehispanic sociopolitical processes but their continuity in the Colonial and even Republican periods, as shown also by ethnographic studies of indigenous populations in the 20th century. Herein we compare and discuss the developments of two chiefly villages, the Alto del Cardal situated at a 2600 masl on the slopes of the Irazú volcano, and the Nuevo Corinto settlement situated at a 230 masl. Both villages were connected by a pathway through which people, ideas and goods interacted. We discuss aspects of chronology, territoriality and the dynamics of interaction, to contrast the archaeological interpretation from those provided by ethnohistorians on the characteristics of the chiefdoms of the area.

[197] *Chair*

Salisbury, Roderick [222] see Duffy, Paul

Sall, Candace (University of Missouri) and Christine VanPool (University of Missouri)

[44] *Many Shades of Clay: Casas Grandes and Salado Polychrome Pottery at 76 Draw Site, New Mexico*

The 76 Draw site is at a crossroads of the Casas Grandes, Salado, Black Mountain, and Jornada Mogollon cultures. The level of interaction and integration between the various groups is of interest. We measured the chemical composition of the Casas Grandes and Salado Polychrome sherds from 76 Draw using NAA to examine interaction and integration among the cultures. Our sample of 100 sherds found distinct chemical groups of Ramos and Gila Polychromes, and interaction between the cultures is suggested based on the lack of compositional overlap between the polychromes.

Sallum, Marianne [76] see Cali, Plácido

Sallum, Marianne (SALLUM, M.) and Plácido Cali (CALI, P.)

[323] *Tupi Pre-Colonial and Colonial Pottery: Changes and Continuity (Southern Coast of São Paulo State/Brazil)*

The current work presents a study of the pottery technology related to the indigenous Tupi people that

lived in Peruíbe – at the southern coast of São Paulo State - Brazil, during two historical occupation periods: before and concurrent with a Franciscan hamlet in the 18th century. The archaeological site occupies about four hectares and it is situated between the sea and the Abarebebê ruins – an archaeological site where the São João Batista hamlet's old church is found. This work is focused on the Tupi's occupation path in this region, based on the premise that there is an historic continuity between the pre-colonial Tupi peoples and those mentioned in the historic documentation. Three campfires and around 4,000 pottery fragments were dug, including many mountable pieces of pot. The ornaments include engobe painted decorations as well as ungulate, corrugated and incised decorations, associated with remnants of vegetal macro-remains, bones, animal skulls and coal. In other areas, shell concentrations were found, associated to stoneware, porcelain, glass, pipes and indigenous pottery with colonial features. Thus, there are evidences in the material culture that certify a long term history and a confluence between Tupi people and the Europeans that arrived there.

Salomon Salazar, Maria Teresa

[60] *Entre los cerros del Epiclásico: el valle de Puebla-Tlaxcala*

En la literatura mesoamericana se habla frecuentemente que muchos de los sitios Epiclásico (600-900 d.C.) se pueden considerar defensivos debido a una tendencia a ubicarse en elevaciones naturales que estratégicamente los convierten en fortalezas. La definición de sitios del Epiclásico en el valle de Puebla-Tlaxcala ha seguido estos modelos de interpretación, asumiendo que para este periodo el descontrol económico que causa la caída de Teotihuacán provoca el surgimiento de asentamientos defensivos. En esta ponencia pretendo evaluar la evidencia que hay al respecto, y se señalan las fortalezas y/o debilidades del argumento. En esta ocasión se compararán la ubicación y las características consideradas defensivas de sitios como Cacaxtla, Cerro Zapotecas, Manzanilla, entre otros, con el fin de entender mucho mejor el muy polémico periodo Epiclásico en esta región.

[112] *Chair*

Salomón Salazar, Ma. Teresa [112] see Lopez Corral, Aurelio

Samei, Siavash [236] see Munro, Natalie

Samei, Siavash, Natalie Munro (University of Connecticut, Dep't. of Anthropology), Michael Kennerty (Independent Scholar), Maysoon al-Nahar (University of Jordan, Department of Archaeology) and Deborah Olszewski (University of Pennsylvania, Department of Anthropology)

[236] *Taphonomic and Zooarchaeological Analysis of the Early Epipaleolithic Site of Tor at-Tareeq (WHS-1065), Jordan*

We present the results of faunal and taphonomic analyses from the 2012 field season at the Early Epipaleolithic site of WHS 1065 (Tor at-Tareeq) in west-central Jordan. By combining the fauna with data from earlier field seasons, we are able to provide a more comprehensive view of human adaptations during the Last Glacial Maximum (25,000-18,000 cal. B.P.) at this site. We examine the subsistence adaptations of the site's occupants using the prey choice model, and prey mortality and carcass exploitation measures. The study reveals a low intensity subsistence strategy based primarily on hunting high-ranked game like gazelle and wild ass. Several taphonomic indices reveal significantly better preservation conditions in the deeper sediments. A layer of impermeable breccia that caps the deeper sediments, protected the ecofacts from exposure to climatic and seasonal elements that damaged the bones closer to the ground surface.

Sammeth, David [13] see Lail, Warren

Sampeck, Kathryn (Illinois State University)

[72] *An Archaeology of Indigo: Modernity and the Landscape of Obrajes in the Izalcos Region of Western El Salvador*

Mesoamericans used the Central American dye plant xiquilite (indigo) during the Late Postclassic period to dye cloth, and Spaniards were enamored of its relatively permanent, vibrant blue color. Colonial production of indigo is first documented in the sixteenth century in the Izalcos region of today's western El Salvador. Trade of indigo blossomed in the seventeenth century, with indigo cakes being used as a form of payment. Indigo was a part of the colonial economy well into the nineteenth century. The process of making indigo into dye profoundly changed from its pre-Columbian roots to the colonial period, ushering in many of the processes and social relations of modernity. Each step of indigo processing involved new technologies, including water wheels, canal and drainage systems, and large vats. This mechanized

process depended on laborers, often slaves, working in a factory setting. Archaeological examples of the built environment of indigo *obrages* illustrate the conditions of labor during the genesis of modernity.

Sampeck, Kathryn [128] see Earnest, Howard

Samuel, Haskell [265] see Burtt, Amanda

Sanchez, Carmen [11] see Martinez, Valentina

Sánchez, Carlos [147] see Pugh, Timothy

Sánchez, Maureen (Universidad de Costa Rica)

[197] *Spatial and Hierarchical Relations among Political Centers in the Intermediate Lands of South Pacific Costa Rica*

The intermediate lands in the South Pacific of Costa Rica have been the subject of several archaeological projects by the University of Costa Rica. Nucleated villages have been documented to have had different levels of complexity in architectural design and cultural elements that characterize them. A multiscalar approach has been used in order to understand and interpret the internal relationships of some of these villages, as well as to explore local and regional linkages that might have existed, particularly during the period ranging from A.D. 800 to 1500. Theoretical and methodological limitations that could have affected the results are mentioned and discussed, as well as multiple research questions that can be explored in the future to gain access to other levels of explanation about hierarchical relationships between the main villages in the South Pacific.

Sanchez Miranda, Guadalupe (Instituto de Geología-Unam) and Vance Holliday (University of Arizona)

[24] *Late Pleistocene Landscapes and the Clovis Occupation of Sonora, Mexico after Ten Years of Systematic Investigations*

In the last 10 years our knowledge of the Late Pleistocene occupation of Sonora, Mexico has increased exponentially, mostly due to systematic investigations carried out in the region with support of the Argonaut Archaeological Research Fund (AARF). A total of 114 Clovis points have been recorded in Sonora and twelve sites have been registered in the Plains of Sonora Landscape physiographic province; geoarchaeological investigations have been carried out in five of these sites. Encampments kill sites, hunting localities, and lithic quarry sites represent the Sonoran Clovis record. Probably the most important site that we have found is the El Fin del Mundo site that has been under study for the last six years. The site consists of at least 25 localities including; a buried stratified feature where Clovis peoples hunted Pleistocene elephants (*gomphotheres*), several camp areas, and two lithic quarries. Four Clovis points were found in situ at the gomphothere feature; in 2012 charcoal fragments were found associated to one flake and bone fragments at the western end of the gomphothere feature. A radiocarbon date was obtained from one of the charcoal fragments with a 14C-age B.P.: 11560 ± 140 (cal B.P.: 13454 ± 170).

Sanchez Santiago, Gonzalo [293] see Higelin, Ricardo

Sand, Christophe [242] see Lilley, Ian

Sanders, Donald (Institute for the Visualization of History, Inc.)

[107] *Beyond Pretty Pictures: The Benefits of Virtual Heritage*

Archaeology is tedious. The discipline demands exactitude, copious documentation, rigorous analyses, and prompt dissemination to peers. That rarely happens. Archaeology is also about understanding past cultures, and since the past happened in 3D, in color, and as a continuous set of actions, it would seem to make sense to study the remains of the past with similar parameters, rather than as the disconnected, 2D, black and white images that are still too common in the discipline's final excavation reports, teaching materials, and Websites. Plans, sections, and elevation drawings (the fundamental "sacred triad" of architectural documentation for millennia) have been central to archaeological visualization since the inception of the profession well over 200 years ago, and they persist despite the availability of more appropriate and more accurate alternative image types. After nearly two decades, the interactive computer

models of virtual heritage practitioners are now being used more widely than ever for hypothesis testing, fieldwork documentation, classroom exercises, museum displays, and augmented-reality-based tourism. This paper explores the benefits of virtual heritage for archaeologists and provides a glimpse into the future of archaeological visualizations.

Sandor, Jonathan [60] see Strawhacker, Colleen

Sandoval Mora, Cindy Cristina (Cindy Cristina Sandoval Mora), Cinthya Vidal Aldana (INAH-Sinaloa), José Luis Punzo Díaz (INAH-Michoacán) and Héctor Víctor Cabadas Báez (UAEM)

[140] *Back to Basics... Where Was the Pottery Made? A Petrographic Analysis of Chalchihuites and Aztatlán Pottery from Durango and Sinaloa, Mexico*

Decorated pottery has been the key in all archaeological investigations in the state of Durango. By categorizing it, several hypotheses have been made. To begin it has been said that Chalchihuites evidence is result of diffusion and interaction with Alta Vista inhabitants, but it has also been said that Aztatlán materials in Durango are consequence of the trade routes across the Sierra. Leaving behind those interpretations, by reassessing the archaeological data from an interdisciplinary point of view, we go back to basics and start with questions such as: Where was the pottery made? What are the social implications of their provenance? In this poster we present the methodology and results of applying a petrographic method to Chalchihuites and Aztatlán vessels, starting with a microscopic view, and going to its implications related to interaction of human agents

Sandrock, David (Texas Tech University) and Brett A. Houk (Texas Tech University)

[302] *Preliminary Results of the Gallon Jug-Laguna Seca Survey and Reconnaissance in Northwestern Belize*

This presentation discusses the findings of the Belize Estates Archaeological Survey Team (BEAST), an operation of the Chan Chich Archaeological Project, during the summer 2013 field season. Survey took place on cut seismic survey lines crossing the Gallon Jug and Laguna Seca property in northwestern Belize. During the 2013 season, BEAST investigated over 48 kilometers of linear survey, and conducted targeted opportunistic survey and reconnaissance, including revisits of previously recorded sites.

Although the lines available for survey had been established for seismic studies, without prior consideration to archaeological potential, specific lines were chosen due to their coverage of areas spanning several different vegetation types and topographic settings. Four new named sites were recorded along with over 140 individual structures, containing several areas of dense settlement with as-of-yet unidentified site core associations.

Sandrowicz, Daniel [230] see Cole, Michelle

Sandweiss, Daniel [69] see Rademaker, Kurt

Sandweiss, Daniel (University of Maine)

[85] *Negotiated Subjugation: The Incorporation of Chincha into the Inca Empire*

Maritime adaptations are as old as the human presence on the Peruvian coast—at least 13,000 years. Complexity began to emerge in this region before 4000 BP in a context in which marine resources played an important, if debated, role. The influence of coastal opportunities in hierarchical social organization did not end with the first complex societies, however, but continued through the entire prehistoric period up to and including the conquest of the coast by the Inca in the late fifteenth and early sixteenth centuries A.D. This paper discusses the archaeological and ethnohistoric data on the Inca incorporation of the south coast kingdom of Chincha. The Chincha apparently used their expertise in seafaring to negotiate a privileged role in the Empire, providing access to the sacred Spondylus shell and perhaps other high-status goods from as-yet unconquered coastal Ecuador by acting as raft-borne merchant/agents for the highland Inca landlubbers.

[245] *Discussant*

Sanft, Samantha [172] see Allen, Kathleen

Sanger, Matthew C. [10] see Valentinsson, Signe

Sanger, Matthew (American Museum of Natural History)

[159] New Perspectives on Human-Landscape Relations in Non-Agrarian Communities

A growing body of evidence from around the world shows that hunter-gatherer communities often invest far more energy into transforming their surroundings than traditionally thought. A particularly intriguing aspect of research is the investigation into “monumentalized” landscapes produced by non-agrarian peoples and how these findings challenge orthodox understandings of monuments as being intrinsically related to ownership and inequality. Drawing from published accounts, as well as recent fieldwork conducted on two large-scale sites in coastal Georgia, this paper suggests a return to the original meaning of monument as related to memory and history rather than power and grandeur. This interpretive shift suggests that monument creation is a particular method of inscribing events, both experienced and imagined, into the landscape and as such creates historically-charged places marked as separate and different than their surroundings. The social impact of creating and engaging with such monuments on hunter-gatherer communities is an important archaeological question that this paper will begin to address. Additionally, the traditional methodological focus on labor-hours and energy-expenditure associated with monument creation loses its applicability when monuments are interpreted as history inscription rather than materialized power. As such, new methods are required; a topic broached, although not concluded, within this paper.

[159] Chair

Santarelli, Brunella (Arizona State Museum, University of Arizona), Sheila Goff (History Colorado) and David Killick (University of Arizona, School of Anthropology)

[321] New Technological Studies of Pueblo I Glaze Paint

Although widely employed in prehistoric Eurasia, lead glazes were produced in only two small regions of the Americas prior to European contact, both in the Southwest. The first independent invention of glaze paints was in the Upper San Juan River drainage of southwestern Colorado during the early Pueblo I period (ca. 700-850 C.E.). Despite extensive research on the later Pueblo IV glaze paints of New Mexico (ca. 1275-1600/1700 C.E.), there have been no technological analyses of the Pueblo I glaze paints. This research project presents the first analysis and technological reconstruction of the Pueblo I glaze paints using x-ray fluorescence (XRF) spectroscopy, backscattered electron (BSE) imaging and wavelength dispersive spectroscopy (WDS). Our sample was selected from sherds with good provenience and chronological data excavated during the Animas-La Plata (ALP) Project. Previous research from the ALP Project suggests that during the Pueblo I period, people with different cultural histories came together in the first attempts at village formation in the Upper San Juan. Our technological reconstruction has the potential to provide important information regarding relationships and interactions of potters and their role in negotiating differences among the various groups who were living in the Upper San Juan at that time.

Santiago, Emilio, Matthew Sanger (Columbia University, American Museum of Natural Hi) and Emma Gilheany (Columbia University)

[214] Scaffolds and Links, or How to Trace Staged-Learning through a Productive Chain

While learning has recently become a prominent area of research within archaeology, tracing its history and character through objects has proven difficult. This is particularly true when learning is considered a staged event in which novice engagement with objects is intermittent rather than sustained. Learning to make pottery is often staged in that novices assist in particular aspects of the productive chain while more experienced individuals perform other tasks. As such, individual vessels often go through multiple hands, making assignment as “novice-wares” problematic. This paper offers a way forward through the application of a constellation of techniques; each of which provides information on a discrete link in the production sequence and assess the level of skill reflected in particular attributes. By applying these methods to two pottery assemblages from neighboring contemporaneous sites, the shortcomings and potential feasibility of these techniques are highlighted and new research directions are offered.

Santini, Lauren [295] see Kara, Alex

Santini, Lauren (Harvard University) [295] Chair

Santoro, Calogero [23] see Capriles, Jose

Santos Ramirez, Marco Antonio [200] see Turkon, Paula

Sappington, Robert Lee [343] see Longstaff, Laura

Sapula, Anitra [148] see Rhode, David

Sara Repetto, Cesar [19] see Marsh, Laura

Sarris, Apostolos [222] see Duffy, Paul

Sartori, Michael [337] see Fernandez Diaz, Juan

Sasaki, Ken-ichi (Meiji University)

[226] *State Formation in Eastern Peripheral Region of Japan*

In the process of state formation in Japan, highly-characteristic keyhole-shaped tumuli or burial mounds were distributed all over Japan. Many of them shared the "standard of mound construction," and the same construction plan was adopted to keyhole-shaped tumuli in different regions away from one another. It seems that the highest-ranking chief in the central polity distributed the construction plan to local elites. Looking into detail, however, some local polities acted independently from the central polity. This was particularly the case in eastern peripheral regions of Japan. For example, the construction of keyhole- shaped tumuli reached its peak in the sixth century in eastern Japan when the construction of keyhole- shaped tumuli declined in the central polity. In northeastern Japan a part of a keyhole-shaped tumulus was destroyed in the construction process of a circular tumulus in the sixth century, although a keyhole- shaped tumulus is considered as the symbol of the highest social status in the central polity, much higher than those buried in circular tumuli. These lines of evidence indicate that, while local elites also built keyhole-shaped tumuli, there was some room for the local elites to act independently from the central polity. Japan was not fully unified in the sixth century.

[226] *Chair*

Sassaman, Kenneth (University of Florida - Anthropology)

[243] *Landscape Learning in Cosmic Proportions*

About 3,500 years ago across the lower Southeast U.S., a community of practice coalesced around the shared experience of sea-level rise. Their forebears, over scores of generations, experienced transgressive seas that flooded ancestral homeland and pushed communities landward repeatedly. With its low gradient and sandy composition, the Gulf coastal setting of this shared history was especially vulnerable to shoreline erosion and inundation. Did living through centuries of constant change in such an environment make communities of practice capable of projecting futures far beyond the next generation? If so, the spatial, as well as temporal, scale of learning was virtually cosmic, transcendent of individual or small-scale community experience to encompass a multigenerational, translocal learning process. A variety of archaeological evidence from sites across the Gulf coast of the Southeast is marshaled to argue that futures planning was embedded in the material arrangement of both built and "natural" places, all with reference to celestial events, notably the solstices. With settlements, cemeteries, monuments, and caches positioned with reference to the movement of the sun, time was mapped onto space to anticipate, and thus cope with change—a lesson modern people might ponder in their own challenges with climate change.

[290] *Discussant*

Satterlee, Ashton (University of Idaho) and Andrew Duff (Washington State University)

[42] *Vessel Size and Feasting in three Chacoan Great House Communities*

Measuring rim sherds and identifying the size of vessels is one method used to identify feasting. Larger than normal vessels may indicate larger scale food preparation for larger groups of people than the normal household. Chacoan Great Houses are thought to be used as gathering places for local communities, and to be the locus of ritual and feasting activities. If true, Great House ceramic assemblages should differ from those of smaller household residences, especially in terms of size. Here, we report vessel size data from the smaller residences and Great Houses in the southern Cibolan communities of Cox Ranch Pueblo, Cerro Pomo and Largo Gap to assess ceramic evidence for feasting.

Sattler Jr., Richard [290] see Williams, Alexandra

Saturno, William [61] see Runggaldier, Astrid

Saturno, William and Benjamin Vining (Wellesley College, Department of Anthropology)

[295] More Than Meets the Eye: Examining the Spectral Response of Sugar Cane to Subsurface Features

While the application of remotely-sensed imaging to archaeology has grown dramatically in recent years, much of this work continues to rely on the qualitative identification of archaeological features as geometric anomalies in vegetated or arid regions. There are fewer analyses of the spectral responses of archaeological features, although recent studies in Near Eastern, Mediterranean, and Mesoamerican regions are important contributions. Here we describe spectral behavior of densely vegetated sugarcane fields in response to anthrosols and archaeological features in the Chicama Valley, Peru, from the Moche-Chimu periods (ca. AD 300–1400). The extensive sugarcane cultivation in Chicama affords the opportunity to analyze the expression of water- and salinity stress in relatively homogenous vegetation landcover, and at various life stages from emergence to senescence. Using extant archaeological survey data, we relate this to anthropogenic features, including soil alterations from prehispanic agricultural and settlement systems. Previously undocumented sites are also recorded. In addition to the obvious implications for archaeological analysis, these results help interpret the legacy-effects of prehispanic land use on modern agricultural potential, and can be used to plan mitigation efforts.

Saul, Frank and Julie Saul (Lucas County Coroner's Office)

[31] Cuello's Preclassic Burials: A Unique Life History of a People as Written in Their Bones

When we joined Norman Hammond's Cuello project in Belize in 1976, we had no inkling that we were about to encounter a veritable treasure trove of Preclassic skeletal remains. Poor skeletal preservation in the tropics may encourage an archaeologist to ignore skeletal remains or dispose of them hastily with only a cursory look. In the case of Cuello, the sample is unusually complete and well documented because Norman chose to extract every bit of information from every source (including skeletons) in every portion of the site, and he carefully excavated to bedrock. Although often eroded and fragmentary, careful excavation, reconstruction, and osteobiographic analysis of this unusually large and well documented collection of Preclassic skeletal remains yielded surprisingly good information about the people of Cuello. Population composition, disease, trauma, nutritional indicators, cranial shaping, dental decoration, activity markers, cultural behaviors - pictures gradually emerged of individuals, and later of the population as a whole.

Saul, Julie [31] see Saul, Frank

Saunalooma, Sanna [75] see Isendahl, Christian

Saunders, Michael (Tulane University)

[341] Archaeology, Long-Term Environmental Management and the Present-Day Maya: Ethnographic Insights into Archaeological and Ecological Issues

After completing research mapping of present-day Maya sacred site layout and documenting correlations to ideas of sacred geography known for ancient Maya, my work has concentrated on the (often crucial) ecological associations of modern sacred geography. This research uncovered not only important links to ecologically sensitive or critical areas (especially those related to water issues), but to archaeological locations as well (themselves often situated in key environmental settings). Although present sacred locations are not necessarily – and indeed are often not – archaeological sites, evidence gathered on the northern rim of Lake Atitlán, Guatemala, increasingly points to a relationship between contemporary sacred sites and archaeological remains. Such links offer insight for both archaeologists studying pre-Hispanic Maya as well as anthropologists examining modern Maya populations. Importantly, as well, recognition of the relationship between archaeological remains, local ecology, and current sacred site layout and utilization provides evidence of long-term environmental management. Demonstrating such lasting management through combining archaeological and ethnographic data can have important implications for current environmental issues. Moreover, such links indicate the novel possibility of locating archaeological remains through investigations of contemporary sacred geography.

Sauza, Maximiliano, Lourdes Budar (Universidad Veracruzana) and Sara Ladrón de Guevara

(Universidad Veracruzana)

- [62] *El Glifo "Ojo de Reptil" en el Sistema de Representación Mesoamericana. Un Problema de Enfoque Visual*

El glifo conocido como "Ojo de Reptil" es un elemento iconográfico mayormente utilizado en la plástica mesoamericana durante el periodo Clásico. El Ojo de Reptil es reconocido por muchos investigadores como de gran trascendencia debido a su asociación con Teotihuacan y ha sido interpretado la mayoría de las veces como un glifo de carácter calendárico. Sin embargo, pese a su importancia, no ha sido investigado de forma profunda. El nivel de abstracción que presenta su diseño, así como la variedad de estilos y contextos en los que fue representado, denotan que su importancia no sólo radica en la asociación al centro rector del altiplano, sino a su contenido y carga simbólica en su representación misma. En este trabajo se expondrán algunos elementos que sugieren que el Ojo de Reptil más que un glifo calendárico, es un símbolo multivalente mesoamericano.

Savory, Samantha

- [172] *Brook Farm: A Ceramic Analysis of a Short Lived Utopia*

This research focuses on the ceramics that were used by the members of the Brook Farm site. Brook Farm was a community in Massachusetts established in 1841 and ending in 1847. Brook Farm was an experiment in social reconstruction started by reuniting man and nature in a communal and agricultural community inspired by Transcendentalism. In 1844 Brook Farm officially adopted a new social reform theory, Fourierism, which incorporated the industrialization occurring in the New England at the time. The beliefs of the Brook Farm members and their communal living situation would have required a certain ceramic assemblage in order to accommodate the volume of people living in the community. Studying the ceramics from Brook Farm will determine if the members chose certain ceramics based on their needs and beliefs while living in the community. A comparison of the Brook Farm assemblage and other New England site assemblages will determine if the Brook Farm assemblage is unique. The comparison of Brook Farm with assemblages from sites in New England will also determine if the members were bringing their own ceramics or if Brook Farm was supplying the ceramics.

Sawchuk, Elizabeth [186] see Pfeiffer, Susan

Sawyer, Johann (University of South Carolina)

- [251] *Centered Pipes and Swirling Pots: The Cult of First Man and Ritual Iconography in the Mississippian Southeast*

A series of pipes known as Bowl-Giver pipes exhibit a male figure looking up while holding a clay pot with strap or loop handles. This ceramic pot also functions as the bowl of the pipe. These pipes represent a commonly understood visualization of the culture-hero known as First Man. Bowl-Giver pipes appear to be affiliated with very specific ritual practices and cult manifestations associated with First Man, the use of tobacco, and ceramic pots. Although stylistically dynamic, these pipes suggest they were linked to widespread and commonly understood rituals and an ideology concerned with centering.

Sayers, Daniel

- [118] *Modes of Production and the Resuscitation of Historical Praxis*

Praxis has (re)emerged as a powerful concept through which we can explore past human action without necessarily engaging the very ambiguous, and tired, notions of agency and identity. Political-economic conceptualizations of praxis compel foci on thoughtful and critical individual and group actions of the past, while also being highly congruent with Mode of Production frameworks. Such frameworks, long relegated to passé status it would seem, press historical researchers to think dialectically, while also inspiring attention to political-economic conditions at multiple scales. In this paper, I discuss how my Modes of Production-focused research in the Great Dismal Swamp of Virginia and North Carolina has sought to recover evidence of the historical social praxis of swamp-dwelling people, such as African American Maroons, between ca. 1600 and 1860. Additionally, I discuss how the contemporary resuscitation of past systems of praxis can impact our future.

Sayle, Kerry [89] see Hamilton, W.

Scarborough, Vernon (University of Cincinnati), Joel Gunn (University of North Carolina Greensboro), Lisa Lucero (University of Illinois Urbana Champaign), Arlen Chase (University of Central Florida) and Diane Chase (University of Central Florida)

- [75] *A Complex World at another Scale: Maya Hierarchy and Social Change*

To understand the impact of self-induced climate change on present-day society, there must be interpretive distance between what is climatically produced on a landscape or biosphere as opposed to what is a consequence of human modifications to that landscape. The ancient Maya constitute one of the best-studied, deep-time bellwethers for tropical society. Maya societies existed without our technological emphasis, but were institutionally and structurally organized as nested hierarchical states in parallel to modern world culture. Approaching human-nature couplings that existed between the Maya and their environment permits a transparent assessment of significant aspects of our current convoluted and nonlinear complexity, but reduced to a scale manageable for holistic assessment of long-term environmental and social change. The charge of IHOP-E-Maya is to: (i) examine regional climatic influence on the environment independently of human action or reaction; (ii) draw upon our work in identifying the controlled temporal development of the engineered landscape; and, (iii) assess the actual impact of climate on social change. Through this exercise, it is possible to identify past processes that have meaning for modern societies as we face geometrically increasing rates of environmental change.

Scarborough, Vernon [158] see Tankersley, Kenneth

Scarborough, Todd [42] see Patterson, Winona

Scarre, Chris

[122] *Cave Art Acoustics: The Role of Sound in the Painted Caves of Northern Spain*

The Upper Paleolithic painted caves of southwest France and northern Spain provide some of the earliest evidence for human symbolic behaviors, but the potential role of sound in the activities that were undertaken in these enclosed spaces has not hitherto been adequately explored. Some 25 years ago it was suggested that the placement of the images was related to the particular resonance acoustic of those locations. That relationship has been explored by our recent acoustical study of five painted caves in Asturias and Cantabria. The results of this new work are compared with the earlier claims, and set against the background of anthropological evidence for the importance of sound in the ritual practices and belief systems of traditional societies. It is concluded that while at a general level sound probably played a part in the activities associated with the images in Upper Paleolithic painted caves, a direct connection between acoustics and images remains difficult to establish. The special acoustics of the caves are nonetheless one of the most striking features of these underground systems and the sensory experience that they provide.

Schaafsma, Polly (Research Associate, MIAC\LOA)

[334] *Discussant*

Schaan, Denise

[331] *Local Knowledge, Local Voices: Many Ways for Decolonizing Archaeological Practice in Amazonia*

Amazonian peoples have long experience with colonization, both during the colonial period, in which most of the region was under the Portuguese rule, and in the last century, when the region has suffered the imposition of large infrastructural projects that are executed without taking into account local histories and rights. The state policy for the archaeological heritage protection implies the imposition of authoritarian laws without regard for local sociocultural diversity and autonomy. Very often, unfortunately, the western science practiced by archaeologists in the field does not acknowledge cultural diversity and the rights of culturally diverse people. Drawing from field experience, this paper proposes that archaeological research in Amazonia demands both an anthropological perspective, and field projects opened to different voices and knowledge. It is also discussed ways to establish less asymmetrical relations with local people, recognizing their right to sociocultural diversity, while producing an archaeological knowledge more committed to local realities.

Schachner, Gregson [202] see Peeples, Matt

Schaepe, David (Sto:lo Nation)

[290] *Crossing the Theoretical Contact Barrier in S'olh Temexw*

The period of contact between natives and newcomers establishes a barrier for the wholesale application of ethnographic models to archaeological practice within the Northwest Coast. Precontact patterns of

continuity and change among houses and settlements in S'6lh Temexw (the Lower Fraser River Watershed of southwestern B.C.) contrast with 'classic' ethnographic models of Coast Salish social organization developed by ethnographers including Suttles and Duff. Crossing the contact barrier, then, requires an examination of the theoretical frameworks and assumptions supporting commonly accepted ethnographic models and their deficiencies in accounting for archaeological findings on the 'other' side of the contact barrier. Alternative models - focusing on concepts of community - are explored in addressing archaeological findings representing nearly 3,000 years of St6:l6-Coast Salish settlement patterning and community organization. This discussion aims to advance developing interpretive frameworks and theory effectively crossing the contact barrier in this part of the Pacific Northwest, with repercussions elsewhere.

[134] Discussant

Schaepe, David [173] see Shankel, Sarah

Schaich, Martin

[154] Combined Airborne and Terrestrial 3D Scanning and Photogrammetry Surveys with 3D Database Support for Archaeology and Cultural Heritage

The German surveying company ArcTron 3D specializes in the digital documentation of archaeological objects and historical monuments. Over the past few years, some large-scale 3D documentations with combined scanning technologies have been realized on archaeological sites in South America (Bolivia, Peru). This talk will present a technical evaluation of these projects and their advance for archaeological research. One of the core processing tools is ArcTron's own 3D information system aSPECT3D. It can combine data from various sources (total stations, GPS, 3D scanners and photogrammetry) and is especially suited for use in cultural heritage. The intuitive user surface makes it easy to handle for everyone, who wants to work with 3D data. A whole new 3D photogrammetry application (ImageScan Module) presents a low-cost alternative for creating 3D models and is very suited for archaeological objects. The presented projects used a combination of airborne photogrammetry and terrestrial laser scanning. aSPECT 3D produces photorealistic 3D models ready for scientific analysis. The main tool for this is the integrated PostgreSQL database, which systematically helps to manage 3D geometry data. 3D models can be segmented, structured and annotated—e.g., in form of damage mapping. aSPECT 3D takes archaeological data analysis into the third dimension.

Schaich, Martin [154] see Fux, Peter

Schambach, Frank [30] see Jeane, David

Scharf, Elizabeth (University of North Dakota) and David Rhode (Desert Research Institute)

[23] Packing for the Trip: Plant Remains from High Elevation Sites in the Great Basin

High-altitude (> 3000 m) environments in the Great Basin were used almost exclusively during the late Holocene. Early use of alpine areas is primarily associated with hunting camps and hunting-related facilities, such as drive lines and hunting blinds. More recent use involved the construction of multiple residential dwellings ('villages') at particular locales, implying much greater investment and duration in occupation. This paper presents information on botanical remains from Midway (in the White Mountains of California) and Alta Toquima (in the Toquima Range of Nevada), both sites containing multiple occupation components in the late Holocene spanning the period of increased residential occupation. Differences in plant use between early and late occupations of these sites reveal how these late Holocene occupations were utilized and subsidized, in part, by subsistence resources from lower elevations. We use these data as a basis to consider more broadly the role of plant foods in the subsistence economies of high elevation occupation of high elevation areas within and outside the Great Basin.

Scharlotta, Ian

[163] When a "Midden" is not a midden: The "Encinitas Midden," San Diego County, California

CA-SDI-17402, located on Moonlight Beach in Encinitas, California, was originally recorded as a meter-thick midden, consisting of dark soils with sparse artifacts, dubbed the "Encinitas Midden." Recent development uncovered a series of ten thermal features dating to the Archaic period, further supporting the cultural origin of the deposit. Regional analysis of contemporary sites indicates that Moonlight Beach was likely a stopover point for travelers along the San Diego coast. During excavation, charcoal appeared

lacking, leading to a detailed analysis of the soils. A combination of Loss-on-ignition, FTIR, pXRF, GC-MS and microscopic analysis of charcoal remains from soils taken inside and outside of features, as well as from sterile strata produced ambiguous results. No evidence could be found to support a cultural anthrosol, black mat or similar organic formation, or contamination from petroleum derivatives. Evidence for movement of the outflowing creek explains impacts to specific features, but provides no insight into the deposit at large. Surrounding bluffs do not present a logical source for dark sediments, yet a sizeable stratum of dark soil is present, in association with hearth features, that is clearly not a midden.

Scheffers, Anja [249] see Orange, Marie

Scheffler, Timothy (Dept. of Anthropology, UH Hilo and GCI, Inc.)

[161] Non-Center Domestication in Southeast Mesoamerica

The El Gigante rock shelter holds some of the oldest stratified archaeological deposits described for Southeast Mesoamerica. The cultural adaptations of early Archaic people represented at the site highlight the diversity and dynamism of later indigenous groups such as the Lenca. This paper describes changes in the avocado (*Persea americana*) remains found at the site. The macrobotanical preservation of pits and rinds was excellent throughout occupational horizons. The identified specimens span the very early Archaic through the Formative periods. Metrics (length, diameter/radius) and statistics (size indices, coefficient of variation, ANOVA analysis) are presented from which the directed selection for larger fruit is inferred. The interpretations highlight connections that form and operate within an unfolding process of agricultural intensification and landscape transformation. These changes are met in part through the adoption and manipulation of both annual and perennial species. The rate and direction of selection evident in the avocado assemblage is compared with the highland Mexican collection from Tehuacan.

Scheiber, Laura (Indiana University)

[159] Archaeology as Mediator of Place, Heritage, and Tourism in the American West

The image of the contemporary American West incorporates numerous pervasive myths related to the near and distant past. The dominant narrative recalls the American Frontier, Indian Wars, Wild West shows, and a cast of colorful characters. Meanwhile past Native presence, as well as its impact on the surrounding landscape, is often disregarded in part based on successful wilderness policies in national parks and forests, which claim pristine environments untouched by humans. The tourism industry capitalizes on a history of the West that remains thus manipulated and constructed. In this paper, I discuss the way that the archaeology of modest campsites and hunting features can help bridge gaps in Western heritage that exist in part because of the Yellowstone tourist industry. According to the Crow (indigenous residents), time is not as relevant as place in history, and historical events are tied to place much more than they are to time. Archaeological data can be incorporated with oral histories about nearby prominent natural features to reveal a more in-depth engagement with the process of place-making in the past and present. Likewise, archaeology can also engage with the history of the recent past by emphasizing linkages between places and people in historically-manipulated contexts.

[314] Discussant

Scheiber, Laura [265] see Burtt, Amanda

Scheinsohn, Vivian (INAPL-CONICET/ University of Buenos Aires) and Florencia Rizzo (INAPL/CONICET)

[90] Rock Art as a Mortuary Practice in North Patagonia

In Patagonia, some archaeological publications noted certain recurrence between the presence of human burials and rock art in Patagonia. Rizzo (2012) demonstrated that this association was not statistically significant. However, in those sites where there was rock art and human burials, the hypothesis that certain rock art, or at least certain motifs, could be associated with the presence of burials, remains untested. Here, we propose a method to test this hypothesis. For this work we will focus on a specific area of Northern Patagonia (Argentina) and a specific rock art style (known as Fret Style, Menghin 1957) which was dated from 700 AP onwards. Departing from archaeological literature and sites studied from first hand, we will build a database that records all sites where there is an association between of rock art and burials and all motifs (pictographs, as this is the predominant rock expression) present in each site. The hypothesis rejection will allow considering that rock art was performed independently of the burials. But if it is corroborated certain rock art motifs could be indicating the

presence of burials, and then those motifs could be considered as a mortuary practice, accompanying the burial.

Schele, Elaine (Austin Community College)

- [319] *A Tale of Two Dates: A New Look at the Controversy over the Age of the Bones of K'inich Janab' Pakal I*

In 1952, when Alberto Ruz discovered the magnificent tomb of K'inich Janaab' Pakal I, the most important Classic Maya king of Palenque, Mexico, he also discovered Calendar Round (CR) dates on the edge of the tomb's sarcophagus lid. No Long Count dates were present to anchor them in history. According to Ruz's physical anthropologists, the king's remains within the tomb were those of a 40 to 50 year old. In every subsequent report Ruz wrote where he referred to the dates on the lid, Ruz anchored the first inscribed date which was 8 Ahau 13 Pop at AD 603. That date was the presumed birthday of the occupant of the tomb. However, 16 years later in a 1973 publication, Ruz re-anchored this CR date to A.D. 665. 1973 was also the year that Linda Schele and Peter Mathews presented a information on the kings of Palenque using newly deciphered hieroglyphic readings at the First Palenque Roundtable where they contended that the age of Pakal was 80. Others joined in the debate and thus began a scholarly argument that lasted for several decades. This paper is a new look at the events and the personalities associated with this controversy.

Schepartz, Lynne

- [303] *Feasting Men, Suffering Women: Social Roles, Diet and Health at Mycenaean Pylos*

The sociopolitical structure of Late Bronze Age (ca. 1675-1050 B.C.) Mycenaeans is generally understood from their written records (primarily accounts of economic transactions and preparations for feasts and rituals), monumental art, and mortuary practices. In this study, bioarchaeological data from high status tholos tombs and chamber tombs at Pylos were used in conjunction with stable isotope analysis to investigate observed differences in dental health. Frequencies of caries and antemortem tooth loss (AMTL) differ significantly by sex and social stratum. Individuals from tholos tombs have significantly fewer caries and AMTL, and women have more dental pathology than men of the same rank. Greater access to animal protein from feasting activities, predicted for the highest status individuals, is hypothesized to be the reason for these differences. This was verified by carbon and nitrogen isotope studies, where individuals from the tholos tombs are clearly associated with greater access to protein and the males from those contexts have the most elevated protein values. Social rank and gender, not access to wealth, seem to have been the key factors underlying patterns of dental health among the Mycenaeans.

Scher, Sarahh (Upper Iowa University)

- [192] *The Boat Woman's Dress: Net Imagery and Meaning in Moche Iconography*

Fishing imagery, like all imagery of the Moche of north coastal Peru (0-800 C.E.), is laden with associated meanings that evoke the relationship between the world of humans and the supernatural world. The Boat Woman, also called the Moon Goddess, is a figure that originates in the Southern Moche but moves to prominence in the female-centered iconography of San José de Moro in the North. She wears a dress that mimics the design of nets used in Moche depictions of fishing and deer hunting. This paper explores the visual relationships among the netted dress, fishing nets, and deer nets, and postulates what these relationships might mean in the expression of gender roles, site identity, and the political relationship between Northern and Southern Moche.

Scherer, Andrew (Brown University) and Charles Golden (Brandeis University)

- [128] *Border-Building and Territory-Taking in the Usumacinta River Basin*

Over a decade of research on issues of borders, boundaries, and frontiers in the Middle Usumacinta River region of Chiapas, Mexico and Petén, Guatemala has shown that neighboring Classic period Maya dynasties developed distinct strategies for occupying frontiers, establishing borders and expanding the limits of royal authority. These differences reflect the particularities of history, geography, and political strategy among each kingdom. Contemporary lords had very different relationships with the territories they sought to control, the people they claimed to govern, and the networks of production and exchange that flowed in the shadow of their courts.

Schieber de Lavarreda, Christa (Ministerio de Cultura y Deportes Guatemala) and Miguel Orrego

Corzo (Ministerio de Cultura y Deportes Guatemala)

[253] *The Passion for Mosaics in Lapidary Art at Tak'alik Ab'aj, 2000 Years Ago and Today: The Mosaic Project at Tak'alik Ab'aj*

Excavations at Tak'alik Ab'aj have revealed a considerable collection of Preclassic and Early Classic lapidary art based on the technique of mosaic assemblages. Among which the most notorious are five iron pyrite mosaic reflectors and seven jadeite mosaic ceremonial miniature heads. Four reflectors and one miniature head was found in situ, as part of the royal funerary apparel of Late Preclassic Burial No. 1 located in the depth of ceremonial platform Structure 7. Hundreds of jadeite mosaics of six disassembled miniature ceremonial heads and one iron pyrite mosaic reflector, as part of Early Classic massive offerings deposited in front a staircase of Structure 86 in the West Group of Tak'alik Ab'aj and at the central sacred vertical axis at Structure 6, provide valuable primary and secondary contextual and chronological data. This, carefully documented, represent the platform for the current Mosaic Project at Tak'alik Ab'aj, which study, re-assemblage and conservation, offers information and insights about ancient design concepts, production and assemblage techniques, and signal regional Mesoamerican lapidary traditions through time.

Schiffer, Michael (School of Anthropology, University of Arizona)

[328] *The Archaeology of Science*

In their reconstruction of technologies, archaeologists have been studying the scientific knowledge produced by prehistoric peoples. This paper argues that archaeologists may also study the science of early modern and modern societies, seeking to formulate generalizations. This can be achieved by a focus on the people-artifact interactions occurring during activities that lead, for example, to discovery claims. Examples of such generalizations are provided that shed light on discovery processes.

Schilling, Timothy [266] see Monaghan, George

Schilling, Timothy (Midwest Archeological Center), Anne Vawser (NPS - Midwest Archeological Center) and Albert LeBeau (NPS - Effigy Mounds National Monument)

[343] *Buffalo Jumping in the Black Hills*

Native Americans from the Northern Great Plains have a long history of using communal, mass kill techniques to obtain occasional surpluses. Techniques such as jumping or trapping animals in pounds were especially effective at yielding tremendous quantities of food and other products from animals, like the Plains Buffalo (Bison bison), that were otherwise difficult to kill using more individualistic hunting strategies. Buffalo jumping, where prehistoric hunters stampeded herds of buffalo over a cliff edge is typically depicted as an indiscriminant, non-selective hunting technique. A recent archaeological project at the Sanson Site in Wind Cave National Park investigated the remains of a late prehistoric multi-component site that includes a buffalo jump feature. Multiple lines of evidence indicate many different kinds of activity took place at the site over a very long time. In particular, large-scale constructed landscape features show that early hunters were highly knowledgeable about buffalo behavior and were able to guide animals to the jump. This knowledge and use of the landscape may have allowed the selection and targeting of specific subsets of the local bison population.

[343] *Chair*

Schillinger, Kerstin (University of Kent), Alex Mesoudi (Durham University) and Stephen J. Lycett (University of Kent)

[193] *The Impact of Imitative vs. Emulative Learning Mechanisms on Artifactual Variation: Implications for the Evolution of Material Culture*

Cultural evolutionary approaches stress that only few social learning processes have the capacity for high-fidelity copying that reduces variation generated by unintentional copying errors. However, the question of whether contrasting social learning mechanisms generate distinct patterns of variation in the archaeological record is largely unexplored. Here, we designed an experiment using 60 participants who aimed to copy the shape of 3D "target handaxe form" from a standardized foam block. In an 'imitation condition', 30 participants were shown manufacturing techniques employed in the production of the target form and the target itself. Conversely, in an "emulation condition," 30 participants were shown only the end-state (target) form. Copying error rate in the "imitation" condition was significantly reduced compared to the "emulation" condition. Moreover, the imitation condition matched the demonstrated behaviors with significantly higher copying fidelity than the alternative condition. Our results illustrate that imitation may be imperative for the long-term perpetuation of visibly distinct archaeological traditions. We propose that the bias to faithfully copy goal-directed manufacturing techniques meets the capacity to reduce the potential for

cultural mutation in reductive manufacturing traditions. Our findings provide evidence that imitation may be required to explain the prolonged continuity of shape standardization in the Acheulean.

Schipani, Alexandra (Eastern New Mexico University)**[13] The Use of the Scapula to Determine Biological Sex**

The scapula contains sexually dimorphic aspects and should thus be useful for creating a technique for determining biological sex. Forensic anthropology is a relatively new field of study with numerous under-tested methods including techniques for determining biological sex. In forensic anthropology, the pelvis and the skull are considered the most reliable areas of the human body to determine sex, however; these areas are often damaged in the archaeological record. Another method suggested by researchers, such as using the scapula, may aid in identifying the biological sex if it is further studied and documented. Researchers have proposed using the scapula to determine the sex of an individual; however, a concrete method has yet to be established and tested. This study will serve to develop concrete evidence that the scapula can be an adequate method for determining biological sex. Through the development of a guide that contains specific instructions for using the scapula to determine sex, it is hoped that the scapula will be deemed an adequate bone in the human body when compared against collections of human remains with known biological sex.

Schlanger, Sarah (Bureau of Land Management) and Signa Larralde (Bureau of Land Management)**[151] All the Gold on the Map: Public Land, Public Good, Public Trust**

The Bureau of Land Management likes to describe the public lands as "all the gold on the map." Here we use examples from personal and professional history to describe the arc of cultural resource management as it has played out in the Bureau of Land Management and on the public lands over the past four decades. Our review includes "FLPMA babies" (the cultural resource specialists hired by the Bureau to meet its obligation to comply with NHPA, ARPA, and the Federal Land Policy and Management Act of 1976, FLPMA) and their impact; the invention of Class I, II, and III inventories; and the rise and fall and re-introduction of modeling approaches to cultural resource identification. We ground our review in the present with a look at the emergence of "landscape-scale" development proposals and we conclude with some thoughts on the Bureau's, and our, response to this challenge.

Schleher, Kari (Crow Canyon Archaeological Center), Jamie Merewether (Crow Canyon Archaeological Center), Cherise Bunn (Crow Canyon Archaeological Center) and Megan Smith (Crow Canyon Archaeological Center)**[333] Material Culture of Public and Private Spaces in the Mesa Verde Region**

Material culture can inform on social integration and disintegration of communities. By comparing material culture from public and private spaces, we can better understand social relationships, including community integration and changes in integration through time. In this paper, we explore differences and similarities in material culture associated with public and private architecture in the Goodman Point Community in the Central Mesa Verde region of southwestern Colorado to better understand the integrative functions of public architecture. By exploring the distribution of various types of artifacts across the Goodman Point Community, we evaluate the connections between material culture and architecture. Are particular pottery designs, pottery vessel forms, or stone tools associated with public spaces more than private spaces? Do these patterns reflect the integrative functions of public spaces? Do patterns change with disintegration of the community, just prior to regional depopulation? In this paper, we present data on various types of artifacts, including pottery, stone tools, and ornaments, to evaluate both contemporaneous and diachronic use of public and private space within the Goodman Point Community.

Schlichtherle, Helmut (Landesamt für Denkmalpflege Baden-Württemberg)**[246] Neolithic Settlement Patterns in the Federsee Region, Upper Swabia (Germany)**

During the Early Neolithic (following 5500 B.C.), the most intensive settlement of southwestern Germany occurred in areas of loess soils along the Danube, Neckar and Rhine river systems. The Federsee area in the alpine foreland remained relatively unsettled. End Mesolithic hunter-gatherers persisted here, whereas Early to Middle Neolithic archaeological material (5300-4500 B.C.) is very scarce. But from 4200 B.C. onwards, the Federsee offers an important window into Late Neolithic settlement, as sites from this period are well preserved in the wetlands here. Whereas early investigations concentrated on the reconstruction of houses and settlement plans, research from 1980 onwards, combined with dendrochronology and bioarchaeological data, have provided deeper insights into settlement structures, settlement dynamics and landscape changes. Now, repeated occupation of the Federsee basin during various phases of the Late

Neolithic (4200; 4000-3850; 3745-3650; 3340-2900; 2900-2800 B.C.) can be demonstrated and new settlement system models discussed.

Schloen, David (University of Chicago)**[65] *The Data Lifecycle at Zincirli (Iron Age Sam'al) in Turkey***

Since 2006, a University of Chicago team has been conducting excavations and geophysical surveys at the 40-hectare site of Zincirli (the walled capital of ancient Sam'al) in southeastern Turkey. Data from the excavations and surveys, including all photographic and spatial data, is recorded and integrated via an online database system called OCHRE (Online Cultural and Historical Research Environment). This system, which is currently being used by several different archaeological projects based at different universities, is hosted and professionally managed on a database server at the University of Chicago Library. This paper will illustrate the use of the OCHRE system for field archaeology by presenting the complete data lifecycle at Zincirli, starting with initial data recording at the site via offline tablet computers and aerial photogrammetry, followed by automatic uploading of data to the Chicago database server on a daily basis, after which the data is immediately available in the dig house for online use and analysis by the field team, who can then correct and augment it as needed.

Schmader, Matthew (City of Albuquerque)**[323] *Slingstones and Arrows of Contact and Conflict: Coronado in the Rio Grande Valley, 1540-1542***

Instances of first contact by outsiders on indigenous peoples are uncommon historically and rare archaeologically. The Contact period in the American southwest lasted from the mid-1530s to the early 1590s. The most important expedition of the southwestern Contact period was led by Francisco Vázquez de Coronado from 1540-1542. His force of 375 Europeans and 1,300 Mexican soldiers arrived in the Rio Grande valley with disastrous consequences for the pueblo people. Investigation at one pueblo village near Albuquerque NM has identified a battle site with European weaponry and artifacts related to fighting between indigenous forces on both sides. European artifact types include lead musket balls and crossbow arrow points, which are found in context with indigenous weaponry such as projectile points and slingstones. These artifacts are found in patterns relative to site architecture, which suggests the structure of conflict-related tactics. Examination of expeditionary documents provides insight about some of these artifact distributions

Schmaus, Tekla (Indiana University)**[20] *Untangling Data and Entangling Lives in Semirech'ye***

Was prehistoric Semirech'ye a shatter zone? Or was it a hub of power in the pastoralist world? Or another sort of place we haven't even imagined? How would we tell, and how much information would we need to feel confident in our answers to these questions? We have access to a broader range of data than our predecessors did, but we still have less material available to us than do our colleagues working in other places. How much can we say about past lifeways when our datasets are limited in scope? This paper approaches these questions using results from a study of dental annuli in domestic sheep as a starting point. The annuli data are indicators of people's seasonal occupation at three settlements in Semirech'ye during the Bronze and Iron Ages. The nature of the datasets limits what it is possible to say about people's lives beyond basic settlement patterns. However, that does not mean it is impossible to apply the information to questions of broader interest. Doing so with a clear understanding of the potential and the limits of the data may even lead to interesting new interpretations of past people's social and political entanglements.

Schmid, Magdalena (University of Iceland)**[29] *The Impact of Volcanic Events on the Landnám: Did Eldgjá 938±4 A.D. Stop the Colonization of Iceland?***

Traditionally, the Scandinavian migration and settlement of Iceland in the Viking Age is dated according to Íslendingabók between 870 and 930 AD. Some settlements are sandwiched between the so called landnam tephra layer - now dated 871±2 AD by correlation to the Greenlandic Ice Sheet - and several tenth century tephra layers: K-920, E-938±4 and V-940 AD; these tephra layers at least partly confirm the historical dating. The explosive 934 AD Eldgja basaltic flood lava eruption was the largest on Earth in the last millennium. The Eldgja fissures produced 19.6 km³ of basalt in a prolonged eruption that featured several distinct episodes and may have lasted for 3-8 years, releasing a huge amount of sulfur into the atmosphere. This paper primarily discusses the intensity of climatic effects from the Eldgja event and their

impact on settlement and colonization. Further, human environmental impacts and economic crisis will also be discussed in the context of the eruption, through the study of soil sediments and archaeological evidence. Conclusions will be made regarding how these factors may have led to individual settlement abandonment or even to the end of widespread colonization in Iceland.

Schmidt, Armin [157] see Parkyn, Andrew

Schmidt, Erin (New Mexico State University)

[188] An Examination of Hacienda Architecture in Yucatán, Mexico

This paper presents archaeological and historical evidence of the changing roles of haciendas in the Mexican economy during the nineteenth century in Yucatán. Specifically, this paper looks at how haciendas changed before and just after the Caste War of Yucatán. Haciendas are agricultural estates that are maintained by a wealthy land-owner and a lower-class labor force to supply small-scale markets with goods and enhance the prestige and status of the owner. The spread of haciendas across Yucatán was a process related to changes brought on by shifts in capitalist relations among owners and workers that occurred during the Industrial Revolution. I compare the variation in the architecture of the haciendas before and after the Caste War (1847), in the areas around Yaxcabá and Valladolid. Architectural variation reveals new details about labor organization and production during the volatile nineteenth century. As knowledge regarding haciendas increases, new questions arise about their structure and functions across time and space.

Schmidt, Peter (University of Florida) and Benjamin Shegesha (Katuruka Preservation and Conservation Association)

[331] Mutuality, Reciprocity, and Local Needs: Missing Spokes in the Collaborative Wheel?

The rhetoric of collaboration in anthropology and archaeology often masks practices that do not fall within the realm of mutuality and reciprocity. Archaeologists using this trope often employ it to reference research conditions where they take the initiative and local "participants" follow along. Mutuality is rarely integrated into collaborative programs, as research agendas continue to be Western-driven and dominated in decision-making. Such empty posturing threatens the integrity of mutual needs and reciprocity and makes diaphanous the absence of benefits accruing to local communities. I examine how such rhetorical traps may be avoided through collaborative research that meets community initiatives, desires, and articulated needs. Examples from western Tanzania show that collaboration in heritage studies and archaeological research satisfy deeply felt needs in communities searching to reconnect to their quickly atrophying heritage and seeking ways to reclaim, through local management of heritage sites, a modicum of economic stability that once marked the region as one of the most prosperous in East Africa.

[331] Discussant

Schmitt, Dave [40] see Kiahtipes, Christopher

Schmittner, Robert [33] see Rissolo, Dominique

Schneider, Tsim (University of California, Santa Barbara) and Lee Panich (Santa Clara University)

[119] Spanish Missions within California's Indigenous Landscapes

Continuing research on the archaeology of colonialism is rethinking the ways indigenous communities in North America creatively engaged colonial programs. Examining Spanish missions in particular, archaeologists are investigating themes of social persistence and power relationships and also re-evaluating the broader geographic relationships between mission communities and the numerous outlying native spaces. Examining Spanish missions within indigenous landscapes, this paper addresses the broader footprint of missionization in California through a critical look at the exchange and circulation of marine shell and glass beads taking place between hinterland native villages and colonial sites. In rethinking and re-exploring the sites and artifacts of mission-era indigenous places, we can more fully understand-and establish more relevant archaeological projects addressing-the practices, experiences, continuities, and adjustments of post-mission California Indian communities.

Schneider, Kent [157] see Garrison, Ervan

Schneider, Joan, Tserendagva Yadmaa (Institute of Archaeology, Mongolian Academy of Science) and Patrick Hadel (Earthwatch Institute, Archaeology of the Mongolian Steppe)

[211] *A Mongolian Quarry Landscape in the Northern Gobi.*

Inventory within Ikh Nart Nature Reserve, a federally protected area in Mongolia, has led to an understanding of the sources of stone used for flaked and ground stone tools. Within the diverse landscapes of the Reserve are geological exposures that provide a variety of materials, but in turn, sometimes limit the sizes of the tools made from the materials, especially leading to the sophisticated microblade-core technology of the Neolithic period.

[313] Discussant

Schoenbrun, David (Northwestern University)

[243] *Reading an Ancient Face: Networks of Knowledge, Public Healing, and Conceptual Metaphor*

The study of metaphor adds depth to social histories of power and scale and to intellectual histories of knowledge and its transmissions by focusing attention on conceptualization. With conceptual metaphor, the iterations that people made from one part of the common phenomenological ground on which they lived life to another, made history, language, things and society along the way. This paper develops a methodology for the historical study of conceptual metaphor in Africa's early history. The specific case at hand—"reading" a group of terracotta figures (including a human head) and decorated pots—draws on deep, regional histories and on far-flung networks with multiple roots. The paper's central historical conclusion finds that the practice of representing territorial spirit mediums as clay figures provided a valuable durability to communities living in the increasingly mobile worlds of 10th to the 12th century in the Lake Victoria region. But it grew risky to communities seeking to expand the scales of political economy using collective violence, in the 13th and 14th centuries when relatively richer water budgets returned to the region. So, they abandoned the practice. "They" were communities of public healers built around practices of social criticism whose improvisations transformed the scale of political affiliation.

Schoeninger, Margaret [63] see Somerville, Andrew

Schoeninger, Margaret (UC-San Diego), Kristen Hallin (Columbia University) and Henry Schwarcz (McMaster University)

[127] *Paleoclimate during Neandertal and Anatomically Modern Human Occupations in Israel: The Stable Isotope Data*

The $\delta^{13}\text{C}(\text{en})$ and $\delta^{18}\text{O}(\text{en})$ values of goat enamel carbonate indicate that Neandertals from sites in Israel (Amud and Tabun Level B) and anatomically modern humans at Qafzeh lived under different ecological conditions. Neandertals lived under wetter conditions than those in the region today. Anatomically modern humans encountered a region that was more open and arid than occurred during the Glacial Period, and more open than today's Upper Galilee region. Climate differences affecting the distribution of plants and animals appear to be the significant factor contributing to behavioral differences previously documented between Neandertals and anatomically modern humans in the region.

Schollmeyer, Karen (Arizona State University), Michael Diehl (Desert Archaeology, Inc.) and Jonathan Sandor

[66] *Variability in Mimbres Food and Food Procurement*

Archaeologists working in the Mimbres region have made important contributions to the study of prehistoric subsistence and social organization. Mimbres Foundation researchers were among the first to recognize temporal changes in Mimbres subsistence and link them to climate, environmental, and social change. Prehistoric changes in the Mimbres Valley included increased weedy plant ubiquity and proportions of small mammals from the Pithouse to Classic periods, and the occurrence of lasting anthropogenic soil change. They also found spatial patterns in resource availability and use, such as in soil use by farmers and spatial differences in wild plant and animal resources. Subsequent research has explored similar themes in a broader spatial and temporal context. Temporal changes in wild plants and animals from around the Mimbres region are generally consistent with patterns observed in the Mimbres Valley, but are less pronounced in outlying areas. Farming practices also differed between eastern and western Mimbres. Post-Classic shifts in subsistence and food procurement are another topic of recent research outside the valley. Major questions about Mimbres subsistence, from both wild resources and agriculture, remain.

Scholnick, Jonathan (Simon Fraser University) and Mark Collard (Simon Fraser University)

[193] *Investigating Cultural Transmission among historic New England Gravestone Carvers with Social Network Analysis*

One challenge for applying evolutionary models to culture is connecting individual learning processes with population-level cultural patterns. However, we have few examples of material culture traditions that can be tied to individual artifact producers. With this in mind, we used gravestone decoration and social network analysis techniques to model social learning pathways among gravestone carvers working in the Boston area during the seventeenth and eighteenth centuries. Surprisingly, the analysis reveals that processes of social learning differed at macro (motif) and micro (decorative element) levels of stylistic variation. Gravestones securely attributed to carvers exhibited very little decorative variation in motifs, which suggests widespread transmission among workshops. In contrast, individual stylistic elements are shared by carvers in the same workshop—a pattern that is consistent with the transmission of such traits within workshops. These results suggest that further applications of cultural transmission theory in archaeology must recognize that artifact design can result from multiple individual learning processes at work simultaneously.

Scholnick, Jonathan [193] see Collard, Mark

Schon, Robert (University of Arizona)

[89] *The Role of the State in Reducing Transaction Costs: A Case Study from the Bronze Age*

In response to the dominant view held by archaeologists that defines the state in coercive terms, a growing body of research has emerged emphasizing collective action and cooperation as driving the state enterprise. From this perspective, one role of the state is to provide and maintain public goods. Among these, the maintenance of roads and the establishment of standardized measures serve to reduce transaction costs, i.e. the costs of engaging in economic exchange. Since these public goods were not excludable, they offered equal benefits to state elites as well as those outside the governmental apparatus. Using the nascent states of Mycenaean Greece as a case study, this paper examines the effect of reduced transaction costs on economic growth— one possible indicator of a successful state. I argue that instances of such “win-win” scenarios provide an under-researched complement to the “zero-sum” approaches of traditional theories of the state. Moreover, the archaeology of the Bronze Age, the period when the first states appeared, offers special insights into the emergent properties of large-scale cooperative institutions.

Schortman, Edward [128] see Urban, Patricia

Schortman, Edward (Kenyon College)

[161] *Research on the Copper Producing Area at El Coyote, Sta Barbara, Honduras*

In 2002, evidence of copper production, in the form of slag, was found on the surface of the southeastern portion of the site of El Coyote in NW Honduras. Test excavations that year revealed more slag and a piece of purified copper; soil tests also outlined the general extent of production. In the subsequent 2004 season, slag, ore, and processing facilities were located, as was evidence in other parts of the site indicating that the copper production was precolumbian. In 2013, further excavation uncovered more workshop areas, and XRF examination of ores, smelting ovens, and soils further clarified the technical details of manufacture as well as defining the zone of concentrated production. Also, investigations to the north and west of the production area amplified the context for copper working here. This paper reviews the evidence for copper production at El Coyote, and places the work in both physical and temporal contexts.

[128] *Discussant*

Schott, Amy (University of Arizona)

[264] *Geomorphic Change and the Regional Environmental Context at La Playa, Sonora, Mexico*

Geoarchaeological work at the site of La Playa in Sonora, Mexico has resulted in an understanding of the formation processes and depositional environment of the site. The principal occupation of the site was during the Early Agricultural period (3650-1800 cal BP), and an extensive canal system dates to this time. The floodplain on which the site is located was formed by deposition of low-energy overbank deposits between 4000 to 1600 cal BP. The slow and steady deposition of fine-grained sediments likely contributed to the stability of the floodplain, making this an attractive location for canal agriculture. This period was followed by higher energy deposition and extensive cut and fill erosion. In the Southwest,

periods of aggradation and erosion in alluvial deposits are often correlated with regional climatic changes. This paper examines the regional environmental context of change in deposition at La Playa. The alternating episodes of higher and lower energy deposition do not correspond well to cycles of alluvial cutting and filling in the greater Southwest, but the fine-grained deposits at La Playa do correlate with low magnitude flooding in the Southwest. The fine-grained deposition may have been further controlled by the extensive canal network.

Schoville, Benjamin J. [209] see Wilkins, Jayne

Schreg, Rainer [246] see Fisher, Lynn

Schreiber, Katharina (University of California - Santa Barbara)

[27] *Public Spaces in the Wari Empire*

When the Wari Empire expanded across the Central Andes in the Middle Horizon (AD 700–1000) it built administrative facilities ranging from small structures to town-sized centers. Spaces within these facilities were given over to state functions, including elite housing, food production, storage, etc. and certain areas appear to have been devoted to more public activities including feasting and ceremonial rites. This paper explores the architectural distinctions of such spaces, their layout and spatial syntax, and the social order implied. While Wari did not have plazas in the usual sense, they did employ certain spaces to enable particular forms of ritual communication and interaction among groups of people. These spaces created and reinforced the new political and cosmological order imposed by the Wari regime.

Schroder, Whittaker (University of Pennsylvania)

[311] *Stone Spheres and Sacred Landscapes in Southwestern Costa Rica*

People typically view monuments as large, static objects, designed to commemorate the activities of a person or an event. However, monuments rarely act alone, and their existence as highlighting an already meaningful place reveals the inherent bonds that form between monuments and their associated landscapes. Much of the object's biography was created in the actions that occurred before it was placed in its "final" site, after which meanings and uses could shift repeatedly throughout its afterlife. Thus, the key to understanding monuments is through a multi-scalar landscape approach, which focuses on the transformation of space into humanized place, a process in which individuals ascribe meaning and power to the environment through its modification. In the Diquís Delta of southwestern Costa Rica, landscape archaeology can be combined with contemporary indigenous views of sacred places to reflect on the study of the stone spheres found throughout the region, adding to their site context in an attempt to reconstruct the values and meanings behind these enigmatic objects. The present study applies GIS and remote sensing techniques to the stone spheres originally documented by Doris Stone and Samuel Lothrop and examines Boruca and Bribí concepts of space to test various interpretations regarding these monuments.

Schroeder, Jessy (Eastern New Mexico University)

[234] *Museum Audiences and Visual Displays: A Study of Llano Estacado Archaeological Museums and Their Educational Goals*

Museums have long been institutions that display and educate the public on artifacts, objects, flora, fauna, and technology. Archaeological museums are one of the few reliable resources that the public has access to in order to learn about and better understand past and present human cultures. As important archaeological and educational destinations, every archaeological exhibit should be analyzed for how well they present their information. Therefore, this research will aide in answering the broader question of what and how audiences learn information put forth in archaeological museums. The intent of this study is to answer whether or not specific museums within the Llano Estacado region of the United States are effectively achieving their educational goals. Specifically: are the visitors learning what the museum curators want them to learn? And what visual aspects of explanatory labels help or hinder visitor learning? This study involves interviews with the curators, surveys completed with visitors, and visual analyses of explanatory labels in each museum. The data will be compared in order to determine whether or not each museum is effectively communicating its information, thus effectively educating the public.

Schroeder, Sissel [260] see Munoz, Samuel

Schroedl, Gerald F. [196] see Yerka, Stephen

Schuermann, Ryan [200] see Trombold, Charles

Schuermann, Ryan (Texas State University) and Charles D. Trombold (Washington University in St. Louis)

[322] *Establishing 3D Unit Space from Low-Tech Field Data Acquisition Methods Using Post-Processing in GIS: A Case Study of Site MV-206 (La Quemada, Zacatecas, Mexico)*

Spatial analysis of intrasite artifact distribution is essential to the discovery of activity areas. Difficulty in establishing confidence in potential activity areas increases as artifact spatial resolution decreases. In the archaeological record and at ongoing/ future excavations, artifact provenience at a three-dimensional point resolution may not be possible, resulting in the excavation unit as the highest level of artifact spatial resolution. In this paper, we present methods for automating the creation of 3D unit space through post-processing. We present a methodology that utilizes Geographic Information Science (GISc), through an overall implementation of the Knowledge Discovery in Databases (KDD) process. As a case study, we use the archaeological record from MV-206, a large village outlier of La Quemada in Zacatecas, Mexico. Here, unit space was explicitly defined by a methodology that included a strict grid/ artifact provenience and planar base definition. Additionally, the site's relatively short [major] occupation manifested in shallow deposition, combined with the site's substantial range and density of artifact types, allows for statistically significant spatial analyses at the excavation unit level. Identification of meaningful spatial patterns within low-resolution data sets presents new possibilities for intrasite analyses, and helps shape future site data acquisition methods.

Schuldenrein, Joseph (Geoarcheology Research Assoc)

[17] *Geoarchaeology, Forensics, and the Prosecution of Saddam Hussein: A Case Study from the Iraq War, 2005-2008*

During the Iraq war, the U.S. government dispatched teams of forensic archaeologists and anthropologists to examine a series of mass graves, ostensibly representing the victims of genocide perpetrated by the Saddam Hussein in the latter 20th century. Prima facie evidence in support of mass graves was as compelling as it was fragmentary. The mobilization of teams in a war zone required that the strategy for making a legal case involved merging the most efficient technologies in use by archaeologists and forensic scientists. A central hypothesis in the Research Design was a landscape-based approach positing that selection of a mass burial site was well thought out. The site's landscape elements were key to understanding planning strategies and efficient disposal of large numbers of bodies. Further, an examination of the burial fill sequence, the content of disaggregated residues, and the matrix of the overburden contained evidence bearing on grave preparation, sequential body disposals, and post- interment re-landscaping to camouflage the scene of the crime. Taken together, these data provided an evidentiary baseline for the ultimate conviction of Saddam Hussein and his henchmen. The lessons learned over the course of this study provide a blueprint for practical, critical applications of geoarchaeology going forward.

[71] *Discussant*

[117] *Chair*

Schuldenrein, Joseph [117] see Hulse, Eva

Schultz, John [102] see Whitmore, Katie

Schultze, Carol [194] see Klarich, Elizabeth

Schulze, Luke (Binghamton University - SUNY) and Ruth M. Van Dyke (Binghamton University - SUNY)

[77] *Castro Colonies Living History Center, the Jacob Biry House, Castroville, Texas: A Preliminary Investigation*

Under a commission from the Republic of Texas, Castroville was founded by empresario Henri Castro in 1844. The community was settled by primarily immigrant Catholic Alsatian farmers and the connection to their Alsatian heritage remains strong to this day. The Jacob Biry property is located in the town on a 1/3 acre plot. It consists of two standing structures: a stone house and a dogtrot log cabin both reputedly dating from the 1840s and associated with the initial settlement of the town. A stone smokehouse

foundation is visible in the backyard, and local informants have described the historic presence of privies, wells, cisterns, and a garden. Preliminary archaeological and dendrochronological fieldwork was conducted in January 2013. An electromagnetic resistivity survey and systematic auger testing were utilized to determine soil horizons, and identify locations and extents of buried subsurface features. As a result, 8 subsurface features were located. A detailed architectural recording of the dogtrot cabin was performed and 46 tree-ring samples were taken to help determine the age of the structure. These initial investigations provide the groundwork for a more in-depth archaeological project at the property designed to include and engage the local community in their history and heritage.

Schumacher, Jennifer (McMaster University)**[261] Same Puzzle Pieces Different Puzzle: Extant Collections**

The future of archaeology lies not only in further excavation but also in revisiting past research and excavations using innovative methodological techniques and theory. With increasing funding restraints, the re-evaluation of extant collections has become practical and therefore more attractive. Using the approaches of technological style and consumption I demonstrate how utilizing extant collections can shed new light on academic debates and the pragmatic issues concerning their use. I demonstrate this with a case study of an Ontario Early Late Woodland site, Van Besien. Since potting is a social event involving transmission of knowledge, production exists within social constraints specific to each potter and influences the technological choices he/she makes. Such technological choices cumulate in what is regarded as technological style, created by the repetition of activities or choices that create discernible patterns. These patterns allow for identification of styles that demarcate social boundaries. Due to these new approaches, levels of homogeneity unprecedented in Ontario during the Ontario Early Late Woodland were discovered as well as unexpected social divisions within a village. This study represents a successful re-evaluation of an extant collection and how with new approaches new interpretations can be discerned.

Schurr, Theodore (University of Pennsylvania)**[69] New Genetic Perspectives on the Colonization of the Americas**

The key issues for understanding the prehistory of the Americas are the number of migrations that contributed to the diversity of Native American populations and the time at which the ancestral population(s) initially entered the New World. Recent analyses of mtDNA variation generally support the Beringian Incubation Model, in which the ancestral population entered the Americas some 20,000-15,000 YBP after having genetically diverged from sister populations in Asia. By contrast, recent osteology and nuclear genetic studies suggest that two or more population expansions gave rise to the biological diversity in the Americas. We re-examined these issues through high-resolution analysis of mtDNAs and Y- chromosomes from populations inhabiting the Arctic, North America and Mesoamerica. This analysis revealed distinct sets of maternal and paternal lineages in these regional populations, with new branches of Y-chromosome haplogroups Q-L54 and Q-M3 being identified in them. Those lineages observed in the circumarctic region reflected population expansions occurring over the past 5,000-10,000 years, and possibly recurrent gene flow from Beringian or Northeast Asia. These data have important implications for the timing and process of the colonization of the Americas, and, in particular, the type and number of founding genetic lineages which first reached this region.

Schurr, Mark (University of Notre Dame)**[303] The Juxtaposition of Stable Isotope and Mortuary Analyses: Illuminating Social Transformations in the Late Prehistoric Southeast**

The end of the prehistoric period in the Southeastern United States was a time of regional social transformation. Throughout the region, hierarchically organized Middle Mississippian chiefdoms with ascribed ranks maintained large sites and aggregated regional populations that were replaced by less hierarchical groups with more dispersed settlements. The changes in social organization and landscape use are generally understood, but the processes that produced and accompanied these transformations remain unclear. In southwestern Indiana, on the northern border of the Southeast, the Angel chiefdom was replaced by Caborn-Welborn phase peoples across part of the Angel chiefdom's range. Both groups (Angel and Caborn-Welborn) recruited or attracted people from other areas. Thus, regional patterns of population movement played an important role in the development of one Middle Mississippian society and its successors. Mortuary contexts and patterns of variation in human diet (as reflected in stable carbon- and nitrogen-isotopes from 282 individuals) are juxtaposed to illuminate how this type of social change occurred. The demographics of recruitment are reflected in mortuary patterns and human diet in ways that appear contradictory to what might be expected from each phase's need for more members.

[157] Chair

Schwake, Sonja (Franklin and Marshall College), Andrew Snetsinger (Trent University) and Gyles Iannone (Trent University)

[335] A Regional Analysis of Ancient Maya Mortuary Practices from the North Vaca Plateau, West-central Belize

Excavations by the Social Archaeology Research Program in the North Vaca Plateau of Belize over the past 15 years have revealed a rich mortuary record for the people that lived at the sites of Minanha, Ixchel, Martinez, and Waybil. Human remains have been discovered in a variety of contexts, spanning the Preclassic to Postclassic Periods. In this paper, we argue that the most meaningful scale of analysis of these remains is the regional scale, incorporating data from multiple sites in the region, including both large settlements (Minanha, Ixchel) and small (Martinez, Waybil). In addition to the spatial distribution of remains, careful consideration of the associated material culture and the basic mortuary patterns of grave orientation, location, and complexity of construction have given us the ability to characterize this region's mortuary practices as distinct in some ways from other areas of the Maya world. At the same time, some overlap in these regional mortuary practices ties the Maya of the North Vaca Plateau into larger spheres of interaction with some of the big players within the Maya socio-political landscape.

Schwalenberg, Megan (University of Wisconsin - La Crosse)

[12] A Comparative Analysis of the Dental Health of Two Middle Woodland Burial Populations in the Lower Illinois Valley

The Gibson and Ray sites are burial sites located in the lower Illinois Valley and dated to the Middle Woodland period, ca. 50 B.C.–A.D. 400. Through the examination of 48 skeletons, this study compares the dental health between the two sites in terms of dental pathologies and their potential correlation to either site, sex, age-at-death, or all of these. Information on dental attrition, caries, abscesses, and other dental pathologies was collected from a pre-selected sample of 24 adults from each site, and estimation of sex and age-at-death were established with two age groups: young adults (20-35) and middle-to-old adults (35-50+). These results suggest there was little to no dietary difference between the sites and that poor dental health was prevalent among middle-to-old adults. Higher attrition rates found at the Ray site can potentially be explained by a different food processing technique or a slightly different diet. This information provides insight into the dental health of the Middle Woodland people during the transition from hunting-and-gathering to horticulture in the lower Illinois Valley and a baseline that can be utilized by other researchers for comparison to later maize agriculturalists in the region.

Schwarcz, Henry [127] see Schoeninger, Margaret

Schwartz, Adam [16] see Churchill, Steven

Schwartz, Lauren E. (UC, Riverside)

[110] Vernacular Architecture of Southeast Mesoamerica: An Evaluation of Design Variations and Identity Expression from the Late and Terminal Classic Naco Valley, Honduras

Architectural designs and site-planning principles have been well studied in Mesoamerica, however, our knowledge is based predominantly on the archaeology of large urban polities, monumental styles, and elite-associated contexts. A standardization of the architectural canons of domestic, rural, and/or household milieus remain underexplored, especially within southeastern Mesoamerica. The approach of evaluating vernacular architectural traits from this particular region of the Pre-Columbian Americas promises to initiate the decipherment and systematization of construction similarities and variations from "everyday" settings. Therefore, this paper will present an analysis of the vernacular architecture from the Late and Terminal Classic site of PVN647, located within the eastern region of the Naco Valley in northwest Honduras. Of particular focus will be the assessment of architectural feature design, location, construction quality, temporal order, and function. These aspects will be examined both within and between patio and plaza arrangements within the site. Additionally, intra- and inter-valley comparisons will be explored to reveal the extent of regional architectural design correlations. This discussion advances our understanding of the elasticity of shared identity expression to meet local ideals, as interpreted from the ancient material record, as well as the cultural and ethnic diversity from this region of southeastern Mesoamerica.

[110] Chair

Schwartz, Mark (Grand Valley State Univer) and David Hollander (University of South Florida)

[329] *Unpacking Uruk Exchange Networks: The Use of Functional, Spatial, and Bulk Stable Isotope Analyses of Bitumen Artifacts from Hacinebi Tepe, Turkey in Reconstructing Broad Economic Patterns of the Uruk Expansion*

This research addresses the economic expansion of state societies from southern Mesopotamia into southwest Iran and southeast Anatolia, through the use of stable carbon and deuterium isotope analyses of bitumen artifacts. The key goal of the project was to get beyond simply the identification of trade and examine broad regional patterns in the exchange system. To this end, the methodological approach of this research was focused on the reconstruction of general exchange patterns using a large sample set. The results of these analyses suggest the utility of bulk isotopic analyses in the identification of broad regional patterns, serving as a complement to detailed isotopic and molecular work on asphaltene extractions of bitumen. The source identifications presented in the paper were further supported by gas chromatography-mass spectrometry as well as compound specific isotope analyses. Furthermore, because bitumen was employed in a variety of ways in the ancient Near East, including as a packaging material for other trade goods, a spatial/functional analysis of bitumen artifacts, combined with geochemical data allows for a range of questions to be addressed. The results of this research indicate changes in the organization of trade at the site of Hacinebi associated with the Uruk expansion.

Schwindt, Dylan (Crow Canyon Archaeological Center), Scott Ortman (University of Colorado) and Donna Glowacki (University of Notre Dame)

[289] *Comparing Demography and Population History between the Northern San Juan and Northern Rio Grande*

Using Bayesian statistical methods, we reconstruct the population history in the two Village Ecodynamics Project study areas: a 4,569-km² area in the northern San Juan and a 6,955-km² area in the northern Rio Grande. In the north we apportion population from nearly 8,000 sites across 14 time periods between C.E. 600–1280 and examine demographic trends across 6 subregions: (1) McElmo, (2) Mesa Verde National Park, (3) Dolores, (4) Hovenweep, (5) Mancos and (6) the Ute Mountain Piedmont. In the south we apportion population from approximately 2,000 sites between 17 different time periods between C.E. 900–1760 and examine demographic trends across 5 subregions: (1) Chama, (2) Pajarito, (3) Santa Fe, (4) Cochiti, and (5) Velarde. In the north we see episodes of population growth and decline, with a smaller peak in the late 800s and a larger peak in the mid-1200s. In the south, we document population growth that coincides with the depopulation of the northern area and population decline that begins before Spanish arrival. We interpret the timing and similar magnitude of peak population between regions as evidence of migration from the northern San Juan to northern Rio Grande.

Scott, Mary Katherine (University of Wyoming)

[330] *The Tourist Commodity: The Value of Handicrafts in Yucatán's Puuc Region*

The steady rise in tourism in Yucatán beginning in the 1960s has made producing and selling handicrafts a profitable industry and an appealing alternative to other lines of work available. Naturally, the marketing of Maya history, the people and their traditions within the tourism industry has influenced the kinds of artistic objects that are produced and sold within Yucatán. As such, value systems are based on what tourists perceive to be 'authentic' remnants of Maya culture, so contemporary artisans create replicas and other pieces with stylized Maya imagery - in stone, wood, ceramic, plaster, gourd, and others - that will appeal to this notion. By focusing on the handicrafts produced in Yucatán's Puuc region, this paper will examine them within larger fields of cultural production and will show how the agency of artisans - their strategic marketing techniques and forms of presentation and display - likewise influence and shape the way tourist outsiders view and understand contemporary Maya people and their culture. In this context, the complex network of cross-cultural encounter, social relationships, economic transactions, and the local and institutional discourses that create and assign value to handicrafts in the Puuc region will be considered.

[9] *Discussant*

Scott, Ann (University of Texas at Austin/aci consulting)

[33] *A Historical Retrospective of Mesoamerican Cave Archeology: Celebrating James Brady's Contributions to the Field*

The history of cave investigations in Mesoamerica, especially in the Maya area, cannot be written without acknowledging the corpus of work penned by James E. Brady. The more than 125 publications, spanning thirty plus years, have transformed speleoscholarship with new and unconventional ideas

about the ritual use of caves by the ancient Maya. Significant growth within the field has been influenced by Brady's own academic interests including the study of cave pilgrimage, man-made caves, the ethnography of cave rituals, iconography and epigraphy, and the relationships between surface architecture and caves in the sacred landscape. His influence has touched numerous scholars leading to several co-authored publications and has inspired many students to pursue a path into the darkness. This presentation sets the stage for the papers that follow by providing a brief history of cave studies along with a short literature review of Brady's bibliographic portfolio. A celebration of Jim Brady's 30 years of achievements, contributions, and scholarship would not be complete without testimonials from colleagues, friends, and students whose destinies have also included dark passageways.

[33] Chair

Scott, Douglas (University of Nebraska-Lincoln), Peter Bleed (University of Nebraska-Lincoln) and Amanda Davey (Midwest Archeological Center, National Park Service)

[82] *A Battlespace Model of the 1865 North Platte Campaign*

Conflict is an important human behavior that leaves clear, interesting, and concrete material traces. Archaeologists have developed means of exposing and interpreting the record of past combat. This study presents archaeological data from battles that took place in February 1865 in the North Platte Valley of Nebraska between Union cavalry and Cheyenne forces reeling from the Sand Creek tragedy. Archaeological data, presented in landscape terms, arrayed with modern graphic techniques, and interpreted with conceptual tools that address military issues, offer specific insights into the thinking of the people who fought these battles.

Scott, David [104] see Warmlander, Sebastian

Scott, Jannie

[169] *Freedom's Institutions: The Archaeology of Antioch Colony's First School and Church*

Since the late 1960s historical archaeologists have made great strides in bringing light to the lives and conditions of Africans and their descendants in the "New World." In archaeological texts, however, focus on Black institutions created by and for African Americans are largely absent in discussions of the history of Black Americans in the United States. This paper focuses on the archaeology of a historic school and church located in Antioch Colony. Antioch Colony was a vibrant rural freedmen's community located in Central Texas formally established in 1870. How can archaeology be used to understand the importance of education and religion within an African American community during the early post-emancipation time period?

Scott, Rachel (DePaul University) and Alexander Bauer (Queens College)

[296] *Archaeology Should Be Anthropology: The Benefits of Four-Field Training*

The field of anthropology has become increasingly fragmented in recent years, challenging the coherence of the four-field approach and archaeology's place within it. In opposition to this deconstruction, we argue that four-field training provides key benefits for education, employability, and research. To illustrate these points, we draw on our own experiences as students, researchers, and advisors. When taken as part of a larger anthropology curriculum, archaeology courses help students to see the connections between the past and present, encouraging their development as world citizens and preventing archaeology from becoming an esoteric discipline. Moreover, a basic understanding of all of anthropology can improve a graduate's chances of attaining a tenure-track position, particularly in smaller departments where a broadly-trained applicant may be expected to teach a variety of introductory courses and communicate with colleagues in other sub-fields. Finally, engagement with multiple aspects of anthropology enables scholars to push the boundaries of archaeological research by asking new questions and incorporating external methods and theories. Because of these benefits, we contend that archaeology should seek to strengthen its bonds with the other sub-fields of anthropology rather than allowing them to disintegrate through increasing specialization.

Scott Cummings, Linda (PaleoResearch Institute, Inc.)

[267] *Ancient Blackwater Draw Sediments Reveal their Age and Clues to Paleoenvironment*

Stored in a plaster jacket applied in the field, sediments removed from Blackwater Draw recently revealed the first Clovis age radiocarbon date from this site (11095 ± 35 RCYBP). In general, pollen and phytolith records combine to indicate paleoenvironmental conditions for the Clovis period in the Blackwater Draw

Locality and Frost Arroyo that are unlike those of today. Open or ponded water, vegetation communities reflecting marshy areas along the margins of the water, and evidence for drier habitats outside the wetlands all were noted in this study. Phytolith analysis for the Folsom Block yielded evidence of an open lake or pond teeming with algae and aquatic plants. Sedges dominated the lake margin during the earliest period of time, followed by a thriving community of common reed (*Phragmites australis*). The interpretation of open water is echoed in the pollen record by extreme dominance by *Pinus* pollen, representing wind transport of this pollen and accumulation on the water surface and by recovery of pollen from wetland plants such as cattails, sedges, common reed, and knotweed (*Persicaria*). Drier sagebrush vegetation communities grew adjacent to the wetlands. This description sets the stage for the Clovis occupation of Blackwater Draw.

[39] *Discussant*

Scott Cummings, Linda [207] see Ladwig, Jammi

Scullin, Dianne (Columbia University)

[122] *Moche Use of Multi-Media at Huaca de la Luna*

Marshal McLuhan's often-quoted "the media is the message," insists that instead of producing new content, any new type of media creates new parameters within which human beings interact. Since human beings experience the world with all of our senses simultaneously, different types of media shape and orient the senses in particular ways and achieve particular effects via these configurations. Moche musical instruments greatly increase the range over which sound can travel, increasing the size of potential audiences and the impact of human sound. Moche architecture, such as the plazas and pyramids of Huaca de la Luna, directly control the scale of space within which people interact. Large wall murals allow groups of people to simultaneously view the same image. Smaller, portable objects, such as decorated ceramic vessels and musical instruments, allow an image to travel long distances. The semi-permanence of images and architecture extend their communicative efficacy over time, while the ephemeral nature of sound connects an experience to a present action. Through the analysis of the acoustic properties of architectural space, music iconography and sound-producing objects, this paper addresses the question of what do the media of architecture, art, and sound communicate in a Moche context?

[122] *Chair*

Seager-Boss, Fran [173] see Krasinski, Kathryn

Seah, Ian [244] see Zeanah, David

Sealy, Judith [26] see Sahle, Yonatan

Searcy, Michael (Brigham Young University) and Todd Pitezel (Arizona State Museum, University of Arizona)

[47] *Using Ethnoarchaeology to Interpret the First Ground Stone Quarry Discovered in the Casas Grandes Region*

Several researchers have noted and studied the exquisitely formed manos and metates of the Casas Grandes region of northern Mexico. During a survey project in 2013, we located the first quarry ever discovered where these tools were manufactured of vesicular basalt using a suite of stone tools. This paper explores the morphology of the site, the toolkit of the metateros (metate makers), and ethnoarchaeological implications resulting from the study of modern metateros.

[47] *Chair*

Sears, Erin [128] see Jimenez, Socorro

Sebastian, Lynne (SRI Foundation)

[304] *Can You Get a JOB Doing That? The SRIF/UMD Summer Institute in Cultural Resource Management*

Many upper-division undergraduates and beginning graduate students in Anthropology have no clear idea about career paths other than the standard "academic teaching position" that will be available to

them when they graduate. In many academic programs, faculty members do not have the experience of or knowledge about other career paths to enable them to guide the students in determining what future path would suit them best. Indeed, some faculty members actively discourage students from pursuing non-academic career paths. At the same time, private and public sector employers complain that they cannot find new hires with even the most rudimentary knowledge about or experience in cultural resource management. The SRI Foundation and the University of Maryland have teamed up in an academic/private sector partnership to provide students with basic knowledge and skills, practical experience, and the beginning of a professional network, as well as information enabling them to evaluate a wide variety of career paths in CRM. The SRIF/UMD Summer Institute in Cultural Resource Management, now in its fourth year, combines intensive classroom instruction and highly structured internships, and is open to students from any college or university.

[151] Discussant

Sedar, Dena

[334] Seeing Red: An Analysis of Ocher Treated Incised Stones Found within the Great Basin
Incised stones have been found at sites throughout the Great Basin dating from the Archaic period to the Historic period. The purpose of these incised stones is unknown, although the deposition of the artifacts does not suggest that they were used for rituals or were in any way sacred. Within the incised stone artifact category there is a subcategory of the stones, those that have been treated with ocher. An analysis of these rare ocher-treated incised stones, and the sites in which they were found, will try to determine if the addition of ocher to the stones changed the meaning of the stone, or if the addition of ocher was an artistic enhancement to the stone on par with painted stones that are found in the Great Basin and the Southwest.

Sedig, Jakob (University of Colorado), Stephen Lekson (University of Colorado, Boulder) and Barbara Roth (University of Nevada, Las Vegas)

[66] Making the Transition: A Reassessment of Mimbres Pithouse-to-Pueblo Period

The Transitional (Mangas) phase, approximately A.D. 900-1000, has been a topic of some contention. Originally, the Transitional phase, between pithouses and cobble masonry roomblocks, was defined as small, surface cobble-adobe roomblocks associated with Mimbres Boldface (Style I-II) ceramics. Evident in the Gila River valley, little evidence for a transitional phase was observed in the Mimbres River valley, and the Mimbres Foundation, in its seminal chronology, omitted the phase, positing a very rapid shift from pithouse to pueblo style sites. Later work in the Mimbres Valley revealed that Transitional period was more diverse and widespread than originally thought. Work at NAN Ranch and the Harris site has found evidence for the Transitional phase in the Mimbres River valley. But more substantial evidence can be found in the upper Gila. Surface roomblocks with Boldface ceramics were found at the Saige-McFarland site, and recent research at Woodrow Ruin is providing new insights on the Transitional phase. Woodrow was continuously occupied from AD 550-1130, and excavation there has demonstrated that Transitional architecture is more variable than previously expected. This paper discusses the history of research on the Transitional phase, and examines how archaeological understanding of it has changed in light of recent findings.

Seidel, Andrew (Arizona State University) and Kristin Nado (Arizona State University)

[291] Changing Conceptualizations of Kinship among Post-Meroitic and Christian Period Nubians from the 4th Cataract Region, Sudan

Kinship systems are inextricably bound to cultural conceptions of age and sex. While recent research has begun to emphasize the interconnections between multiple aspects of social identity, kinship has only infrequently been used within archaeology as a lens through which to investigate changing age and gender ideologies. This project combines data from cranial non-metric and odontometric traits with the age and sex characteristics of individuals interred at the Ginefab School Site to investigate changes in the specific biological relationships used to signal kin groups in the mortuary record from the Post-Meroitic period (ca. A.D. 350-550) to the Christian (c. A.D. 550-1500) period in the Fourth Cataract Region of Upper Nubia. Results demonstrate that genealogical relationships were emphasized in different ways in the mortuary record of the Ginefab School Site through time, with a shift evident that temporally coincides with the introduction of Christianity to the region. We discuss how the gender and age aspects of local kinship systems responded to socio-political, religious, and economic transitions occurring during the Post-Meroitic and Christian periods of ancient Nubia, as well as how these changes reflect the status of kinship as a social identity incorporating multiple socially mediated interpretations of biological characteristics.

Seidemann, Ryan (Louisiana Department of Justice) and Kenneth Kleinpeter (Historic Highland Cemetery, Inc.)

[270] *Restorative Excavations and Ground Truthing Remote Sensing on the Cheap in Historic Highland Cemetery (16EBR190)*

Historic Highland Cemetery in College Town, Baton Rouge (est. ca. A.D. 1817), is one of the City's oldest cemeteries. Well-meaning, but ill-planned "preservation" efforts in the 1930s and 1970s have done more harm than good to this historic treasure. Since the early 2000s, the present Historic Highland Cemetery trustees have undertaken a comprehensive effort to scientifically and accurately document and restore Historic Highland Cemetery, including extensive documentary research and archaeological reconnaissance. This presentation reviews the cemetery's history and importance and the results of excavations aimed at ground truthing the results of both low- and high-tech remote sensing in the cemetery.

Seidemann, Ryan [283] see Hawkins, William

Seifried, Rebecca (University of Illinois at Chicago) [36] Chair**Seinfeld, Daniel (Florida Bureau of Archaeological Research), Munir Humayun (Florida State University) and Jennifer Humayun**

[276] *Chemical Analysis of Chevron Beads from Early Sixteenth-Century Spanish Entradas into the Southeastern United States*

Glass beads are one of the primary diagnostic material remains from the early European incursions into the New World. LA-ICP-MS (laser ablation inductively coupled plasma mass spectrometry) analysis of chevron beads provides insight into the movement of the Pánfilo de Narváez and Hernando de Soto entradas. Beads from sites associated with the Soto expedition have a relatively consistent chemical composition, which suggests a common source. Beads from the Wakulla Cemetery site (8WA15), a site suspected to be associated with the Narváez entrada, are chemically distinct from the de Soto beads. The variability in the chemical compositions of bead from the de Soto and Narváez expeditions are related to subtle differences in manufacturing techniques by individual producers. Analytical results will help trace the routes of early explorers in the Americas as well as indigenous trade routes. They also inform our understanding of 16th century bead manufacturing techniques. Our findings will shed light on nature of exchange between Europeans and indigenous groups in this early period of cultural contact.

Sejas Portillo, Alejandra (University of Pittsburgh)

[231] *Changes in the Interactions Networks during the Late Period at the Southern Shore of the Poopo Lake, Bolivia*

From early times Andean people have been moving between different ecological floors in order to obtain products that would complement their diet and also exotic goods for social differentiation. In this context, vessels of particular styles were circulating among different interacting communities located sometimes at considerable distances. The aim of this investigation was to study the effects of the Inka influence in the interaction network of the local population at the site of Tambo Viejo de Sevaruyo, the principal administrative site in the Southern Poopo Region, Bolivia. This poster presents the results of the technological and decorative analysis of ceramic material systematically collected at this site from the pre-Inka and Inka period; which made possible the identification of the provenance of this material with in these interacting areas.

Selden, Jr., Robert Z. [30] see Trubitt, Mary Beth

Seligson, Kenneth

[195] *In Search of Kilns: The Forms and Functions of Annular Structures in the Bolonchen District*

Over the last few decades, archaeologists have identified hundreds of annular structures throughout the Bolonchen District of the Puuc Region in the northern Yucatan Peninsula. Despite the ubiquity of these distinctive structures, which generally appear in the archaeological record as mounded rings surrounding a central pit, questions remain as to their full range of forms and the variety of functions that they might have served. Preliminary studies suggest that they were involved in the cooking process, but whether they were used in the processing of food, ceramics, quicklime, or a combination of these is yet

to be determined. Spatial analyses of the annular structures from the sites of Kiuc and Sayil indicate that at least some of the annular structures at these sites were most likely used as kilns for the processing of limestone into powdered lime. Previous studies of traditional methods for lime plaster production have demonstrated how the ancient Maya may have used open air pyres to produce powdered lime, but the identification of permanent ancient kiln structures remains unclear. If it does indeed turn out that these annular structures represent ancient kilns, they will be some of the first structures positively identified as such in Mesoamerica.

Sellet, Frédéric [206] see Reynolds, Cerisa

Semon, Anna M. [10] see Valentinsson, Signe

Senn, Matthew (The Ohio State University)

[301] *Spatial Analysis of Monument Sites on the Dhufar Plateau: An Archaeological Application of Space Syntax Analysis*

The early-middle Holocene of southern Arabia is difficult to discuss due to an incomplete and fragmentary record. It is known that the region was important on the larger scale because of its abundance of valuable frankincense, but without more information about the local mode of production, and their incumbent relations, we can only speculate on the role that indigenous societies played. The most prominent archaeological remains are megalithic monuments, representing social and ideological engagement with the landscape between the late fourth millennium and the late 1st centuries B.C. Investigations of neighboring regions have resulted in an intriguing scenario wherein mobile southern Arabian societies marked social transformation upon the physical landscape. This research models ancient mobility based on economic factors of production and the social configuration of space via the spatial organization of megaliths. Space-syntax analysis characterizes spatial systems on the ways in which spaces interact, which simplifies the arrangement of structures into nodes and linkages, thus describing relations of space using graph theory. Regional scale spatial analysis, surface monuments, and natural features all contribute to a mobility model. Change over time in mobility informs us as to the social context of first millennium relations of production between Arabian incense traders.

Seowtewa, Octavious [159] see Dongoske, Kurt

Seppä, Heikki [201] see Tallavaara, Miikka

Sereno-Uribe, Juan

[140] *Settlement Sequence at Gualupita Morelos*

This poster will present the historical sequence of the Gualupita neighborhood in the city of Cuernavaca Mexico, from the Preclassic period until the establishment of the mega store COSTCO DE MEXICO SA de CV in to the region, showing the settlement sequences and the transformations that have come to pass in this area. The oldest archaeological information that we have from Gualupita neighborhood goes back to the Preclassic period (900 BC). During the archaeological excavations we were able to uncover the remains of a small Preclassic house; on the clay floor there was a large deposit of ash, indicating where the kitchen was located. Among other things we also recovered a series of Preclassic figurines, similar to those described by Suzannah B. Vaillant and George C. Vaillant during their excavations in 1934. After the Preclassic settlement, the Gualupita neighborhood was abandoned for many years, until the beginning of the construction in 1930 of the Casino de la Selva Building. This was going to be the first Casino in Mexico, but with the proclamation of the Federal law in 1947 that forbid gambling, the Casino had to close its doors

[8] *Discussant*

Sereuya, Dalantai [92] see Hadel, Patrick

Serra Puche, Mari Carmen (IIA-UNAM)

[112] *Interacción entre Xochitecatl-Cacaxtla y el Valle de Puebla-Tlaxcala durante el periodo Formativo*

A traves de las evidencias arqueologicas de la cultura material del centro regional de Xochitecatl durante el periodo Formativo, intentamos explicar las dinamicas de interacción con los sitios contemporaneos del Valle de Puebla-Tlaxcala. Se trata de evidenciar las interacciones socio politicas de este centro, que

tanto por su localización, su arquitectura, la presencia de edificios ceremoniales, la variedad y cantidad de tipos cerámicos locales y foraneos refleja una jerarquia sobre el resto de los asentamientos del valle. Este centro regional que controla seguramente rutas de intercambio y abasto, se convierte en punto de referencia y poder de la region durante el Formativo Tardío, hasta su desaparición por la erupción del Popocatepetl alrededor de 200 años después de cristo.

[112] Chair

Seufer, Katherine [200] see Turkon, Paula

Sever, Thomas (U. of Alabama, Huntsville)

[295] *The Application of Remote Sensing and GIS technology to Archaeological Research: Past, Present, and Future.*

Archaeology was one of the first disciplines to use aerial photography in its investigations at the turn of the twentieth century. The low resolution of digital satellite technology that became available in the 1970s limited its application to regional studies; however, that situation has changed. The arrival of high resolution, multispectral capabilities of IKONOS, QuickBird, and other commercial satellites at the turn of this century and the scheduled launch of new satellites in the next few years provides an unlimited horizon for future archaeological research. The almost untapped potential that remote sensing, coupled with Geographic Information System (GIS) technology and computer-aided analysis for the study of human cultures seems beyond measure. Although many archaeologists are not comfortable with remote sensing and GIS technology, a new generation is embracing it and archaeological projects of broader scope than ever before envisioned are now possible as demonstrated in this session.

Sever, Thomas [295] see Griffin, Robert

Severs, Matthew [341] see Mueller, Raymond

Seymour, Deni

[198] *Remote and Rugged: Historic Apache Landscape Strategies*

Images of the Chiricahua Apache conjure the consummate opponent to the state, the iconic Geronimo resisting to the end, maintaining autonomy long after others had surrendered. Their mobile lifeway shielded them from domination. The rugged and protective mountain landscape they used allowed the Apache to avoid subjugation longer than any indigenous group in North America. Use of the international border also benefited them, pitting two states against one another until cooperation between the US and Mexico brought an end to that strategy. Apaches used elevation and remoteness to their advantage. Changes in portion of landscape used and in fire-making behavior occurred as a result of changes in pursuit strategies and commitment by opposing militaries (Spanish, Mexican, American states). The way they distributed their housing across the landscape is directly related to expectations regarding enemy incursions. The historic Apache are an outcome of their peripheral position relative to these states.

Seymour, Elizabeth (Utah State University)

[262] *Variability in Pithouse Floor Area and Implications for Social Organization amongst the Fremont*
Archaeologists use domestic architecture to enhance the study of social organization in ancient cultures. Such investigations indicate that house floor area is one measure that proves useful in examinations of social organization. This research compiles elements of Fremont domestic architecture routinely recorded in archaeology and applies methods previously used in the American Southwest to examine social organization in the Fremont culture. In particular, the variability in house floor area at Fremont residential sites is used as a proxy for the level of participation in a corporate or network strategy. Data were compiled by culling measurements of house floor area from cultural resource management reports and forms at the Utah Division of State History and from published journals and theses.

Sgarlata, Cosimo (Western Connecticut State University)

[218] *Evidence of Primary Forest Efficiency in Southern New England's Late Archaic Period*

In 2012 several Western Connecticut State University students participated in excavation at the Warner site, a Late Archaic campsite in Woodbridge, Connecticut, securely dated between cal 4530 to 4420 B.P. Analysis of stone cores, lithic debitage and tools indicated that lithic raw material was stockpiled; and even high quality lithics were utilized almost exclusively for the production of simple, expedient flake

tools. In Southern New England, and many other parts of the Northeastern United States, the Late Archaic (6,000 to 3,700 B.P.) "fluorescence" has raised numerous questions due to the sudden and dramatic increase in documented cultural features, recovered diagnostic artifacts and reported radiocarbon dates. Analysis of lithic artifacts from the Warner site indicates that Late Archaic inhabitants practiced regularly scheduled seasonal moves, and centrally positioned camps adjacent to locations where a number of seasonally reliable resources were close at hand. However, although populations moved to new locations from season to season, evidence from the Warner site indicates that residential stability during particular seasons may have been an effective strategy allowing stockpiling of lithics. This, in turn, reduced time and labor expended searching for raw material and manufacturing formal tools, while maximizing efficiency procuring and processing foods.

Shafer, Harry (Texas A&M University Professor Emeritus) and Thomas**Hester [31] *Colha in Retrospective: Maya Lithic Craft Specialization***

Colha is an ancient Maya town located in northern Belize. The economic importance of Colha is due to its setting. High-quality chert needed for axes, adzes, knives and spears, was abundant in large cobble and boulder-size masses and was easily obtained in a geographically restricted area within a very broad zone of settlements and polities. The technological tradition established at Colha may have seen its ultimate origin in the Preceramic period at the site, and expansion during the Middle and Late Preclassic led to the production of millions of stone tools that were dispersed to consumers throughout the region. Workshop production responded to supporting the needs of Terminal Classic warfare. This unique tradition became extinct with the destruction of Colha in the Terminal Classic. A new settlement was established in the Early Postclassic with an entirely different lithic tradition with origins in the Yucatan.

[66] Discussant

Shafer, Harry [292] see Hester, Thomas

Shaffer Foster, Jennifer (University at Buffalo)**[94] *Unexpected Objects: Stone Tools in an Age of Gold***

During the Irish Early Medieval period (ca. A.D. 400-1200), metallurgy flourished and artisans created exceptional products in silver, gold, and bronze. Trade from abroad also brought sophisticated ceramic wares from the continent and England. These spectacular items have been found during the course of excavation and have resulted in much research, while less attention has traditionally been paid to everyday, expected domestic finds such as locally made pottery and woodworking. Recent work collecting and synthesizing reports and grey literature by the Early Medieval Archaeology Project (EMAP) has made it possible to track the results of excavations dating to this time period and examine all objects, not just spectacular examples, in detail. Drawing on work by EMAP as well as the author's own work in County Armagh, Northern Ireland, this paper examines an unexpected corpus of artifacts—lithics—utilized during this time period. Archaeologists have long assumed that lithic manufacture and use ceased during prehistory and yet increasing evidence suggests that stone tools were used well into the Medieval period, while metal tools were widespread. The use of lithics during this time is enigmatic, but may have been linked to socioeconomic status while also having ritual connotations.

Shakour, Katherine (University of Virginia)**[259] *Materialized Grieving: An Ethnoarchaeological Perspective on Village Residency, Westquarter, Inishbofin***

The Irish Famine did not result in an immediate and total abandonment of rural coastal villages, rather it created the context for a complex interweaving of demographical, residential and immigration patterns that continue to unfold. Focusing on the small village of Westquarter, Inishbofin, County Galway, Ireland, this paper explores the social and residential history from around 1800 through the present day. Centered on the dynamic intergenerational shifts within and between families in the village, we track concurrent patterns of residential continuity among select family members, the relocation of other family members to other areas of Inishbofin, and the off-island migration of still other members to America, mainland Ireland, and England. Collectively the use of oral history, archaeological field research, historical maps, and local interviews provides new insights into how and why residential patterns change within a village, and the extent to which this can be linked to archaeological data sets. With these datasets we trace village history through ethnoarchaeological historical and documentary sources to understand the resulting social and political policies which created considerable, lasting social and economic changes.

[259] Chair

Shakour, Katie [259] see Kuijt, Ian

Shankel, Sarah (Connecticut College), Tianna DiMare (Connecticut College), Anthony Graesch (Connecticut College) and David Schaepe (Stó:lō Research and Resource Management Centre)

[173] *Methods for Detecting Living Surfaces in Residential Architecture: Penetrometer Readings and other Archaeological Indicators of House Floors at Welqámex (DiRi-15)*

The broader goals of household archaeology are predicated on the assumption that archaeologists can (1) discern among the material records of spatially discrete residential groups and (2) analytically isolate the constituents of living surfaces, refuse, and other behaviorally significant strata. This poster highlights research addressing the utility of soil penetrometers for recording and measuring variation in the compaction of living surfaces attributed to regular foot traffic in architectural features. Our data are drawn from subsurface investigations at Welqámex (DiRi-15), a large residential settlement spanning the Late and Contact/Colonial periods in southwestern British Columbia and featuring as many as five unique architectural styles. Variability in several hundred systematically sampled penetrometer readings is evaluated against other stratigraphic indicators of living surfaces, including non-cultural floor constituents (e.g., waterworn pebbles) and size-density profiles of frequently encountered residential trash (e.g., thermally modified rock and charcoal). We argue that penetrometers (1) provide supporting data for in-the-moment interpretations of strata revealed during plan-view excavation, and (2) show considerable promise for the analytic isolation of walkways and spatially discrete family areas in multi-family residential architecture.

Sharapov, Denis (University of Pittsburgh)

[20] *Evaluating Social Developments of the Middle and Late Bronze Age periods (2100 B.C.-800 B.C.) in the Southern Urals, Russia, using Regional Settlement Pattern Evidence*

This study utilizes Geographic Information Systems (GIS) techniques to analyze a regional (~4,400 km²) dataset derived from the systematic stereoscopic readings of Soviet-era aerial photographic images taken over the Kizil district of Russia (Zdanovich et al. 2003). In particular, the Kernel density function is used to evaluate the regional spatial distribution of hundreds of housing depressions, attributed to either the Middle Bronze Age (MBA) (2100BC-1800 B.C.) or the Late Bronze Age (LBA) (1800 B.C.-800 B.C.) periods, characterized by divergent patterns of social, political, and economic complexity. Comparing the settlement patterns in each period to the distribution of locally available subsistence and economic resources, utilized by the Bronze Age populations, allows to: 1) establish a link between resource-driven nucleation of the MBA populations and the resulting scalar effects associated with social complexity; 2) propose a hypothesis of gradual population disaggregation during the LBA, driven by a long-term trajectory toward extensive pastoralism.

Sharma Ogle, Mini (SWCA Environmental), Zach Windler (SWCA Environmental Consultants) and Celia Moret-Ferguson (SWCA Environmental Consultants)

[326] *Where, Oh Where Did You Go? The Mystery of the Missing Methodist Meeting House*

SWCA Environmental Consultants didn't find the archaeological remains of the historic Methodist Meeting House, but it wasn't for a lack of trying. The City of Hillsboro, Oregon, a suburb of Portland, hopes to construct a major road that would bring a rural area into industrial development. This project had it all: a project very high on Governor Kitzhaber's' economic development plan, a small unmarked pioneer cemetery that was thought to have Native American burials affiliated with the Nez Perce Tribe of eastern Oregon/western Idaho, and extensive negotiations surrounding how to discover or rediscover the anticipated archaeological remains, and a number of local residents concerned about the loss of historic resources. Media attention captured the high expectations of important discovery as remote sensing technologies were employed to identify hot spots where the missing meeting house foundations and associated burials might be located. The SHPO, Tribes, locals, historians all believed that there was something to be found out there. The City and State had to 'do something' to protect the resources expected out there. Permitting, meetings, stakeholder coordination and working in a media fish-bowl is a narrative of its own. The mystery remains but many lessons were learned along the way.

Sharon, Gonen (Prehistory Laboratory, Tel Hai College)

[26] *Levallois in Acheulian Giant Cores?*

The large flake Acheulian is a substantial stage within the Acheulian Techno-complex in which bifacial tools were shaped on large flake blanks detached from giant cores. While the end products of this

industry, primarily handaxes and cleavers, are astonishingly similar in shape and size world-wide, the core technology applied in their production is highly diverse. Recent research demonstrates that some of the Acheulian giant cores from very remote regions such as South Africa and India follow, at least in part, the definitions of the Levallois core method. The questions to be asked of these findings are: is the method really Levallois? Can this term apply to such large tool production or is the definition limited to small core sequences? What is the meaning of the similarity in tool shape and size versus the diversity in core technology? Most interestingly, are these highly inventive core technologies an example of convergent social evolution or is it simply a modification of a known technology for use in different conditions and with the rock types and shapes of varying regions?

Sharp, Kayleigh (Southern Illinois University Carbondale) and Melissa Litschi (Southern Illinois University Carbondale)

[104] E-data and the Gallinazo: Exploring the Past in the Technological Present

Archaeologists working in international research settings face challenges of data accessibility, limited time frames, and optimizing data collection. The methods devised for our recent two-week field season were guided by two critical concerns: (1) given the ever-increasing difficulties of sample exportation from Peru, it was necessary to devise a rapid method of data collection that would preserve as much information as possible in the time allotted, and (2) determining future excavation locations required a custom method for data collection that would facilitate preliminary diagnostic analysis of artifacts without the physical sample. During the 2013 season, we successfully implemented and tested an innovative approach combining a digital image catalog, tablet PCs, and GIS for electronic data collection and e-transport of the sample. This approach proved highly successful in terms of data accuracy and portability. It was also useful for establishing criteria to be used in the discovery of differences between coexisting Gallinazo and Mochica technological identities as a part of our long-term research agenda. Preliminary results show that the tablets were useful for maintaining data integrity and provenience, and that the information contained in the electronic environment was easily transferred into the geodatabase structure for preliminary and future spatial analysis.

Sharp, Emily (Arizona State University) and Rebecca Bria (Vanderbilt University)

[105] Cycles of Violence and Cultures of War: An Analysis of Cranial Trauma in Recuay and Wari-Era Tombs at Hualcayán

Bioarchaeological investigations provide a deep time perspective on the causes and consequences of violent activities, and more specifically, they attest to the physical impact of violence on the body. This study investigates the association between cultural emphases on warfare and violence and the influence these developments have on cranial trauma rates. In the north-central Andes, the Recuay culture (A.D. 1- 700) flourished during the Early Intermediate Period (EIP). While warfare is considered common for the Recuay era, this is one of the first in-depth studies of Recuay interpersonal conflict in the Ancash highlands. Excavations at the site of Hualcayán have uncovered human remains that date to the EIP and the subsequent time period—the Middle Horizon or Wari era. Approximately 80 crania from eight burial contexts, including above-ground and subterranean tombs, were analyzed to assess the frequency and patterning of antemortem and perimortem trauma. Osteological analyses reveal substantive evidence for violent conflicts, likely in the form of warfare and raiding. Individuals, specifically adult males, interred in Recuay tombs exhibit high rates of healed trauma. Other contexts show trauma on juvenile and adult female crania. Results indicate significant differences in trauma type and frequency across sex, age-at-death, time period, and burial location.

Sharp, Robert (The Art Institute of Chicago)

[251] Sacred Narratives of Cosmic Significance: The Place of the Keesee Figurine in the Mississippian Myths

The recovery of flint-clay effigy pipes and sculptures of male figures from late prehistoric sites in the southeastern United States suggests that their distribution may represent the deliberate dissemination of important elements of sacred narratives, cultural practices, and religious rituals. Building on the scholarly efforts of James A. Brown, Thomas E. Emerson, and F. Kent Reilly, this presentation considers the contribution that the newly discovered Keesee Figurine from Phillips County, Arkansas, can make to our understanding of one or more of the sacred mythic narratives of the Mississippian world. This sculpture offers an important link between prehistoric images of supernatural figures and social, communal, and religious practices of the historic period.

Sharpe, Ashley (University of Florida)**[113] Evidence of Preclassic Long-distance Trade at the Maya site of Ceibal, Guatemala**

Excavations over the past decade at the Maya site of Ceibal, Guatemala, have revealed new evidence of complex inter-regional interactions between the Gulf-region Olmec and southern Maya lowland civilizations, calling into question earlier arguments that the Olmec had been the "Mother Culture" or original source of cultural innovation in ancient Mesoamerica. In addition to architectural, artistic, and ritual similarities between the Preclassic (1000 B.C.-A.D. 100) Olmec and Ceibal Maya, there may also exist evidence of long-distance trade between the two regions in the form of marine resources, particularly shells. Here we present the preliminary results of the zooarchaeological material at Ceibal, assessing the type, source, context, and potential use of marine species at the site. We compare this information between Ceibal and contemporaneous Olmec sites, and discuss the potential for the long-distance trade of animal resources as a linking factor between these two regions.

Sharratt, Nicola [19] see Piscitelli, Matthew

Sharratt, Nicola (American Museum of Natural History/Bard Graduate Center)**[203] Personhood in Death, Personhood in Life?: Tiwanaku Infant Burials in the Moquegua Valley, Peru**

Large-scale excavation and analysis of Tiwanaku burials at Moquegua Valley sites including Chen Chen, Omo M10, Rio Muerto and Tumilaca la Chimba have been instrumental in illuminating provincial Tiwanaku burial practices through time. Allowing for subtle and limited variations, a standard set of funerary treatments that spans differences in cemetery, intra-community group, sex and age, is recognizable in Moquegua. Notably, cultural norms about how to treat the dead extended to the very youngest members of Tiwanaku towns in the valley. In Moquegua, Tiwanaku infants, neonates and miscarried fetuses were buried in community cemeteries and afforded the same mortuary treatments as their elders. This apparent inclusivity contrasts starkly with numerous cross-cultural archaeological, ethnographic and historical contexts, in which the relative absence of neonates and infants from cemeteries and their non-normative disposal is seen as evidence that the categories of person and human are often distinct, with personhood ascribed not at birth but during later rites of passage. Focusing on the funerary rites surrounding fetuses and babies in Moquegua and comparing them with other regions during the Middle Horizon, I consider the implications for our understandings of personhood in and beyond this Tiwanaku enclave.

[203] Chair

Shea, John (Stony Brook University)**[26] Discussant**

Shea, Rachel [105] see Mavko, Jonathan

Shearn, Isaac (University of Florida) and Mark Hauser (Northwestern University)**[124] Discerning Changes in Dominican Land Use through GIS**

In this paper we examine the ways in which environment informs land use through different periods of occupation in Dominica, an island with nine active volcanoes and less than 8% flat land. The earliest papers on the archaeology of Dominica characterized the island as being unfavorable for intensive habitation and the terrain impenetrable for archaeological prospection. This paper reports on two long term projects undertaken in Dominica that contradict this view, one focused on the colonial period and one on the pre-Columbian period. Both projects utilize a variety of methods including remote sensing, GIS mapping, and extensive pedestrian surveys. A comparison of settlement patterns associated with industrial and subsistence agriculture show constructed patterns of land use are a critical factor in people's daily lives and in broader patterns of community organization and interaction.

Sheets, Payson (University of Colorado)**[194] The Cerén Village as a Compressed Rural Landscape**

Maya settlements ranged from isolated farming households through small and large villages to the large urban site of San Andres during the middle of the Classic Period in El Salvador's Zapotitan valley. Before

it was buried by volcanic ash about A.D. 630, the Ceren village was much like dozens of other small villages in the valley. Here the focus is comparing the isolated farming household to the advantages of a score of households coalescing into a settlement. Each Ceren household overproduced something for exchange with other households, thus avoiding the need to be largely self-sufficient economically. Each household focused on producing an artifact or special plant material in amounts well beyond what they would consume internally. Households were within a 5-minute walk of each other. Non-royal governance was effective in organizing political, economic, social, and religious activities and the structures in which they took place. Local individuals were responsible for construction and maintenance of the sache, and they had considerable discretion in how they achieved their goals, within the parameters of cultural acceptability. Compressing rural households into a village had disadvantages, including some loss of privacy and increased concern with theft.

Shegesha, Benjamin [331] see Schmidt, Peter

Sheldon, Craig and Ned Jenkins (Alabama Historical Commission)

[276] *The Hernando de Soto and Tristán de Luna Entradas and the Provinces of Talisi and Tascaluca in Central Alabama.*

Assemblages of 16th century Spanish artifacts in collections from four aboriginal sites in central Alabama are traced to the expeditions of Hernando DeSoto and Tristan DeLuna. Most of the artifacts are mortuary associations suggesting that they came from direct Indian-Spanish contact. Analysis indicates potential useful distinctions between some of the artifacts of the DeSoto and DeLuna expeditions. Two of the sites are identified as Talisi and Atahachi, principal towns visited by DeSoto in 1540. Another site is probably the Atache described by DeLuna in 1559/1540. Each of the provinces had distinctive geographic ceramic phases and components, which greatly assists in our interpretation of chiefdom organization in the region and of changes in pre and post DeSoto and DeLuna settlement patterns, mound construction, display items and other aspects of culture.

Shelley, Steven [45] see Kremkau, Scott

Shelton, Rebecca [70] see Burbank, Joshua

Shelton, Jo-Ann (University of California, Santa Barbara)

[162] *Hunts in the Ancient Roman Colosseum*

The aim is to investigate spectacles in the Colosseum at which animals were killed by professionals called "hunters." These spectacles demonstrated human triumph over the natural world, but also the supremacy of the Roman state over distant lands. They had roots in rural events which confirmed the ability of humans to create a secure environment for themselves. First, at annual festivals farmers celebrated the community's success in producing food by killing animals that preyed on livestock or consumed food plants. Second, wealthy statesmen promoted notions that aristocratic hunts on their private estates made a man better fit for public service and helped the community by eradicating dangerous and devouring animals. Politicians vying for urban votes brought the hunting experience to town in the form of staged hunts. These permitted town-dwellers to take part, at least as spectators, in an activity otherwise beyond their means. As the Romans expanded their territory, they imported species from the most remote areas of their empire: lions from Asia Minor, elephants from Africa. Their destruction in front of the Roman people provided concrete proof that Rome was able to subdue any force that resisted it.

Shennan, Stephen [187] see Edinborough, Kevan

Shennan, Stephen

[187] *Demography and the Cultural Evolution of Neolithic Europe*

This introductory paper will provide the background to the session. It proposes that the key basic dimension of cultural systems is population, so the reconstruction of demographic patterns is fundamental. Changes in population size and density are linked to economic patterns so it is necessary to analyse the factors that affect them. In turn population patterns impact cultural patterns and processes. A novel treatment of summed calibrated radiocarbon dates shows that the introduction of farming to Europe was followed by a boom-and-bust pattern in the density of regional populations, not the steady population

growth to a ceiling usually assumed. Demographic patterns for 24 different regions of Central and Northwest Europe 8,000-4,000 cal. BP will be presented and it will be shown that the patterns do not appear to be related to climatic factors. Possible alternatives will be discussed.

[187] Chair

Shepardson, Britton (Terevaka.net Archaeological Outreach, Northern Arizona University) and Beno Atan (Explora (Easter Island, Chile))

[152] *Approaching Sustainable Public Archaeology on Rapa Nui (Easter Island, Chile): Education, Conservation, Research, and Tourism*

Rapa Nui, like many other locations rich with archaeological heritage, poses extreme risks and potential when attempting to combine cultural conservation with tourism. After ten years of work on Easter Island, Terevaka.net Archaeological Outreach (TAO) has developed a program to provide tourists, hotels, archaeologists, and conservationists with a vested interested in the education of high school students local to the island. Our 2013 project sheds light on both a recipe for success in sustainable archaeology on the island and our shortcomings in reaching the goals of all participating organizations.

Shephard, Christopher (College of William and Mary) and Martin Gallivan (College of William and Mary)

[338] *Powhatan Sovereignty and Consumer Politics in the Algonquian Chesapeake*

Powhatan sovereignty was structured around the acquisition and socialization of "foreign" materials. In the centuries preceding the arrival of Europeans, shell beads and copper-dangerous and unpredictable objects-were introduced into the Virginia Algonquian world from sources beyond the Chesapeake by priests and chiefs. Typically stored away from settled areas, these objects were intermittently brought into circulation during feasting and commemorative events that mediated relations of authorization and subjection. As outsiders, Europeans and the objects that they possessed represented a danger that also needed to be socialized. In the well-known divination of John Smith, for example, priests performed a ceremony aimed at indigenizing Smith and his compatriots, making them no longer tassantasses (strangers) but Powhatans and subjects of the paramount chief. In this paper we explore the historical processes that structured sovereign relations in the indigenous Chesapeake and the changing materiality and consumption of objects that occurred as a result. The seizure of Virginia Algonquian lands during the colonial era influenced new forms of sovereignty. The desire for objects that mitigated the destructive power of other-worldly beings continued in the Powhatan world, though guns and swords became the primary means for chiefly authorities to maintain land and to protect populations.

Sheppard, Peter [67] see Bunting, Augusta

Sheptak, Rus (University of California - Berkeley)

[190] *"After the Conquest": The Archaeology of Colonial Honduras*

Archaeological research in Honduras is predominantly concerned with the period before European colonization. This has contributed to an impression of discontinuity between the late prehispanic period peoples of Honduras and the histories that came after colonization. In this presentation, I reconsider what has been accomplished through excavation and research on archival documents. I point to a number of challenges for creating archaeological understanding of colonial Honduras. There is a major disconnect between the way archaeologists working even on the late prehispanic period conceptualize the units of analysis (usually, as linguistic/ethnic units with a wide geographic distribution) and how the same people were described in the first generations of colonization. It has been challenging to assign dates to colonial sites and assemblages because the default assumption has been that colonial period sites will yield European tradition materials, whereas these are rarely found in Honduran sites. There are contradictions between descriptions in documents, which describe a rich material world, and those few colonial sites that have been explored, in part due to retention of objects as property transmitted to successors. I end by demonstrating that these problems can be avoided and rich archaeological understandings of the colonial period can be generated.

Sherwood, Sarah C, [207] see Carmody, Stephen

Sherwood, Sarah (Sewanee: The University of the South) and Ksenija Borojevic (University of Massachusetts, Boston)

[299] *Examining Late Neolithic Structures on the Danube: A Microstratigraphic Approach*

This poster uses micro and macrostratigraphic studies to examine two comprehensively excavated and analyzed buildings, Structures 01/06 and 03/03, at the tell site of Vinca-Belo Brdo. The large nucleated settlement located on the Danube River in the central Balkans (Serbia) is the type-site for the Vinca culture (5,300-4000 B.C.), known for the development of Neolithic communities in Europe. Recent excavations emphasized the built environment focusing on wattle and daub constructions. The micromorphological investigations, integrating plant identification in thin section, enhance the interpretation of construction materials and techniques, plant use, and the sequence of buildings during the late Vinca period.

Shibata, Koichiro [27] see Chicoine, David

Shiguekawa, Andrés [336] see Peters, Ann

Shimada, Izumi [103] see Bader, Alyssa

Shimek, Rachael (University of Wyoming)

[132] *What Does a Dog Cost? Factors Related to Domestic Dog Husbandry and a Cost-Benefit Analysis of Dogs as Hunting Aides*

Domestic dogs are frequently associated with human populations throughout the world beginning in the Upper Paleolithic, but their physical remains are few and far between in the archaeological record. Therefore, archaeologists pursuing the subject of human-dog interactions in prehistory must utilize other sources of information to help generate an understanding of dog husbandry. This paper uses historic and contemporary ethnographic data regarding dog use among hunter-gatherer groups to examine some of the anthropological and ecological factors associated with dog husbandry. Anthropological factors such as average annual mobility and ecological factors such as environmental productivity are expected to condition and constrain how domestic dogs are utilized by humans. A more detailed examination of the use of dogs as hunting aides is explored from a behavioral ecology perspective. A theoretical optimality model of the costs and benefits of using dogs to hunt helps generate expectations for dog use both in the present and in the past. Such alternative paths to the anthropological study of human-dog interactions are complimentary to traditional archaeological methods reliant on the recovery and analysis of canid skeletal material.

Shiratori, Yuko (The Graduate Center, CUNY), Carolyn Freiwald (The University of Mississippi) and Timothy Pugh (Queens College, CUNY)

[147] *Postclassic and Contact Era Animal Use in Itza Maya Households at Tayasal*

The Petén Lakes region in Guatemala was occupied by distinct Maya ethnic groups during the Postclassic period (A.D. 1200-1500), and use of animal resources varied in each community. We present basic patterns of faunal use in subsistence and ritual contexts in Itza households at Tayasal, and compare them to similar contexts in households at the Kowoj capital of Zacpeten. Use of animals from different catchments - local vs. non-local, lacustrine vs. terrestrial - and distinct domestic and wild species may reflect one way of expressing group identity, or even social distinctiveness. More broadly, ethnographic analogy, ethnohistoric sources, and the frequency and distribution of different taxa provide insight into the social and economic organization of the Itza Maya from the Postclassic through the Contact periods at Tayasal.

Shoberg, Marilyn (GSAR)

[318] *Microwear Analysis of Stone Tools from Clovis and Older-than-Clovis Cultural Occupations at the Gault Site*

Microwear analysis of stone tools from Clovis and Older-Than-Clovis occupation levels at the Gault Site provides evidence of a broad spectrum of cultural activities during both of these early occupations. Tools were used for hunting and butchering animals, and for gathering and processing plant materials. Other artifacts were manufactured from animal skins, wood, reed, and bone. Utilized tool forms include projectile points, large bifaces, prismatic blades, gravers, scrapers and modified flakes.

Shock, Myrtle

[246] *Resource Management in the Amazon: A View from Macrobotanical Remains*

A survey of macrobotanical remains in Amazonian occupations is ongoing to investigate Pre-Columbian

resource management strategies. Locations across the Brazilian Amazon with active archaeological research projects have been investigated to distinguish contexts with preservation of charred remains. Sites date to the last two millennium and are notable for Terra Preta, a fertile anthropic soil generally associated with sedentary occupations and concentrations of ceramics. Analysis of plant remains seeks to understand foraging and farming practices in a region where agroforestry is a viable subsistence alternative. A notable, recurrent species in archaeological remains is the Brasil nut (*Bertholletia excelsa*) for which the modern tree distribution in groves may be the result ancient management practices.

Sholts, Sabrina [143] see Meza-Peñaloza, Abigail

Short, Laura (Texas A&M)

[43] *Raman Spectroscopy of Earth Ovens in South Central North America*

Heated stones have been used worldwide to cook food, but unless carbonized remains are preserved in the archaeological record, it is difficult to identify what was cooked using this fire cracked rock. By analyzing the residue in the crevices of the stones, vibrational spectroscopy offers an additional technique to discern what they were used to heat. This study is a continuation of previous work on earth ovens in south central North America. Given earlier difficulties with obtaining informative results, this research is focused on improving methodology and addressing issues such as contamination and taphonomy.

Shott, Michael (University of Akron)

[255] *Discussant*

Showalter, Stephanie (Indiana University of Pennsylvania), Ashley Taylor (Indiana University of Pennsylvania), Katie Turner (Indiana University of Pennsylvania), Matt Howryla (Indiana University of Pennsylvania) and Mark Durante (Indiana University of Pennsylvania)

[172] *Geophysical Investigations Meters Deep: Examination of the Johnston Site (36IN002), Indiana County, Pennsylvania*

The Johnston site (36IN002), located near the Conemaugh River in Indiana County, Pennsylvania, is a Monongahela village dating to the Johnston Phase (1450-1590) that is buried beneath a meter of alluvium soil. Excavations at Johnston began during the 1950s and resumed in the early 2000s by Indiana University of Pennsylvania (IUP). Much of the research done by IUP has focused on the location of stockades at the site. While three stockades have been discovered at the Johnston site, no research has attempted to locate features inside the stockade. Geophysical investigation using ground penetrating radar (GPR) and electrical resistivity at the Johnston site was undertaken in the fall of 2013 to examine the possibility of anomalies within the stockade. This poster summarizes the results of these investigations.

Shrestha, Ramesh (University of Houston/NCALM) and William Carter (University of Houston/NCALM)

[337] *Airborne LiDAR: Optimizing the Technique for Archaeological Research in Mesoamerica*

Geodetic images (e.g., shaded relief, 3-D perspective, and color coded relief images) produced from airborne laser scanning (ALS), a.k.a. airborne light detection and ranging (LiDAR) observations are often stunning to the eyes of laypersons and scientists alike, especially when they reveal the surface features normally hidden by dense vegetation. Such images enable researchers to view landscapes at scales and resolutions never before possible, revealing natural features such as fault lines and surface erosion in intricate detail, along with such anthropogenic features as roadways, agricultural terraces, irrigation networks, and buildings, or their ruins. The information and insights derived from ALS observations have proven transformative to research in geomorphology and geophysics during the past decade, and because archaeologists share the need for similar information about landscapes, ALS may well have similar impacts on archaeological research, particularly in rainforest covered areas of Mesoamerica. ALS observations have already been used to find hundreds of additional features at known sites, and to find previously unknown sites, in Belize, Honduras, and Mexico, and the results of these early projects are being studied to find ways to improve the techniques that will be used in future archaeological projects.

[337] *Discussant*

Shrestha, Ramesh [337] see Fernandez Diaz, Juan

Shurack, Nikki [18] see Fehrenbach, Shawn

Sibley, Krisstin (ASM Affiliates, Inc)

- [316] *Prehistoric Obsidian Use in the Truckee Meadows and its Implications for Settlement Patterns along the Sierran Front*

Relationships between mobility and technological organization have been important topics in archaeology, especially in the Great Basin. The Great Basin is dominated by open air lithic scatters lacking in subsistence residues, features, and architectural remains making mobility and settlement pattern reconstruction more difficult. Using data from previous collections, reports, and my own testing, I explored obsidian patterns within the Truckee Meadows region. My research focused on two major issues: (1) testing the implications of Delacorte's (1997) model, which implies that the Truckee Meadows was part of a more extended settlement system earlier in time and a localized system later in time; (2) the ability to generate radiocarbon-hydration pairs for Sutro Springs obsidian to further our understanding of the first research question. Although my results failed to provide insight on absolute dating from radiocarbon-hydration pairs, a new obsidian pattern was identified during the Late Archaic Component for the Truckee Meadows area.

Siegel, Peter

- [250] *Island Historical Ecology: Socionatural Landscapes across the Caribbean Sea*

Humans leave traces of their actions on landscapes in subtle and dramatic ways. First-colonizers to new places are often difficult to identify archaeologically because of the light imprint of their activities and issues of preservational bias. Understanding colonization history and subsequent developments in the Caribbean has been confounded by these problems. We address Caribbean colonization history through an aggressive data-intense project in historical ecology. Wetlands on selected islands between Venezuela and Puerto Rico were cored to obtain microfossil and pedological data to investigate Caribbean island ecologies from the perspective of social and cultural interventions over the full range of human occupations. Through the analysis of multiple proxies, we demonstrated that the Lesser Antilles were colonized and landscapes modified during the Archaic age, considerably earlier than what many archaeologists heretofore believed. Over the ensuing millennia, subsequent people continued to manage increasingly modified landscapes. On some islands, we obtained data dramatically illustrating the effects of early European colonial occupations, especially in the context of sugarcane plantation agriculture. This chronologically and geographically extensive dataset provides us with an unique empirically based perspective on the Caribbean islands as socionatural landscapes.

- [250] *Chair*

Sierra-Sosa, Thelma [192] see Jiménez-Cano, Nayeli

Sievert, April K. [74] see Munson, Cheryl Ann

Silliman, Stephen (University of Massachusetts Boston)

- [338] *When the Foreign Becomes the Familiar: Consumption Practices on Native American Reservations in New England*

A significant element in studies of Native American responses to colonialism is the notion of "adoption." Although this concept works in terms of the first introductions of the foreign into the familiar, particularly with respect to material culture, it cannot be sustained as an interpretation and frequently cannot even work in the first instance if the archaeological sites being studied do not represent actual adoption. More frequently, Native American archaeological sites during colonial eras manifest acts of ongoing consumption, and these require different analytical perspectives to account for the process of familiarizing the foreign, the actual definition of "the foreign" itself in archaeology and lived experience, and the position of such objects in individual experiences and collective memories. These processes have been studied for ten years now on the Eastern Pequot reservation (established 1683) in southeastern Connecticut as part of a long-term collaborative field school, and this paper uses that research context to examine the nature of consumption and colonialism on reservation households in Native New England and considers the implications for broader North American colonial contexts.

Sills, E Cory [138] see Vines, Patrick

Sills, E. Cory (University of Texas at Tyler) and Heather McKillop (Louisiana State University)**[330] Salt: Mover and Shaker in Ancient Maya Society**

As a basic biological resource in short supply at inland urban cities where the Classic Maya civilization developed, the coastal production and transportation of salt accorded the maritime Maya a degree of political and economic autonomy. The methods of salt production reflect the maritime landscape: the arid northern Maya lowlands were suitable for solar evaporation of salt along the Yucatan coast. Heating brine in pots over fires was more effective in the wetter climate farther south, especially along the coast of Belize. The production of salt in wooden buildings at the Paynes Creek salt works, underwater sites submerged by sea-level rise that provided stunning preservation of wooden architecture, offers a model for salt production elsewhere along the coasts of Belize and Guatemala. Changes in salt production and trade from the Preclassic through the Classic and Postclassic periods are evaluated, along with examples of production at inland salt springs.

Silva, Rosicler (Pontifica Universidade Católica de Goiás) and Julio Rubin (Pontificia Universidade Católica de Goias)**[6] Archaeological Sites, Natural Processes, Anthropic Activity and Conservation of the Central Plateau of Brazil**

This work determines the correlation between certain events noted in the archaeological area of Serranópolis, namely natural processes, anthropization and conservationist initiatives. The correlation suggests growing impact in this archaeological area, both in the already registered sites and the potential identification of new sites occasioning a hiatus in the archaeological context. This correlation also indicates that conservationist initiatives, when bounded without technical criteria, in areas where archaeological sites have been detected, may retard or accelerate the natural and anthropic impact on the cultural heritage.

[6] Chair

Silva, Jorge [281] see Burger, Richard

Silva Collins, Gabriel (Hunter College HS)**[285] Spatial Functionality and Ritual Offerings in Lurín Valley Ychma Households**

This work will make public recent findings from the excavations of the 2013 Season at the domestic sector of Panquilma, Peru, especially those from unit 09. It will attempt to identify the main characteristics of a typical household of the Ychma culture. It will also interpret the evidence recovered to propose a spatial functionality for each component of this household and its sequence of occupation. Special attention will be paid to offerings found in the unit so as to correlate different types of offerings and their characteristics to the spatial functionality of household components in this Lurín Valley site.

Silva De La Mora, Flavio**[227] How Were They Getting Around? Looking at Communication and Exchange Routes in the Northwestern Maya Lowlands during the Classic Maya: A Study in the Palenque-Chinikihá Region**

The essence of how exchange, movement of people, and goods was organized in Pre-Columbian times is poorly understood, yet exchange and the movement of commodities is believed to be a critical aspect in the establishment and development of sociopolitical relations in Mesoamerica. Previous studies in Maya archaeology have seen a tendency to interpret ancient economies under two basic models, as either a centralized prestige goods model or a decentralized subsistence goods model. The Northwestern Maya Lowlands has been an important part of archaeological inquiry and resent studies in the Palenque-Chinikihá region provide a case study of the larger regional dynamics that united and separated the local communities during the Classic period. Using sourcing analyses on obsidian tools and debitage, united with the previous investigations this presentation will delve into the regional settlement distribution, communication routes and exchange of goods in the Palenque-Chinikihá region.

[227] Chair**Simek, Jan, Mark Wagner (Southern Illinois University), Sierra Bow (University of Tennessee, Knoxville), Heather Carey (Shawnee National Forest) and Mary McCovie (Shawnee National Forest)**

[248] Portable X-Ray Fluorescence Analysis of Paints From Prehistoric and Historic Period Native American Rock Art Sites in Southern Illinois

Over the past several years, we have initiated a research program using non-invasive portable X-ray fluorescence (pXRF) to analyze the elemental composition of manufactured pigments used to produce prehistoric pictographs from numerous sites in southern Illinois spanning the period AD 1000-1835. In this paper we present the results of our analyses as they relate to variability in prehistoric paint production and use and possible links between rock art sites, design motifs, and cultural identities in southern Illinois over a period of almost 1,000 years from the Mississippian to historic periods.

Simmons, Scott (University of North Carolina Wilmington)**[57] The "Ambassadors to the Past" Program on Ambergris Caye, Belize: Embracing an Archaeology for, with, and by Indigenous People**

In the past decade indigenous peoples of the Americas have become increasingly involved in various aspects of archaeological research, and the development of 'indigenous archaeology' has taken many forms. This paper describes some of the ways that indigenous peoples of Belize have been active participants in both archaeological fieldwork and public outreach efforts in San Pedro, Ambergris Caye. As part of the ongoing "Ambassadors to the Past" program Mopan and Kekchi Maya university students have been teaching short classes on archaeology in San Pedro's secondary schools over the past two years. The program is aimed at helping Belizean students make connections to their country's ancient Maya heritage. The successes of the program are discussed along with the challenges the 'ambassadors' have faced in helping secondary school students make meaningful connections to their cultural heritage. The unique perspectives and approaches these Maya university students bring to a public archaeology program specifically aimed at indigenous peoples are examined. Finally, the roles indigenous people play as major stakeholders in illuminating their own history are considered.

Simmons, Alan (University of Nevada Las Vegas, Department of Anth)**[332] A View from the Top: Ais Giorkis, an Early Cypriot Neolithic Village in the Uplands**

Ais Giorkis is amongst a handful of early Neolithic sites on the Mediterranean island of Cyprus that have re-written our conception of Cypriot and Near Eastern prehistory and have contributed to understanding how islands are colonized. Sites belonging to the "Cypro-PPNB" are unexpectedly early (ca. 7500-8400 cal. B.C.) and are contemporary with developments on the mainland. Ais Giorkis is one of these sites, and the only excavated one that is located in the foothills; the preferred location for settlement appears to be coastal. Ais Giorkis is unusual not only for its location, but also its rich artifactual, structural, and economic materials. These include imported obsidian, a technologically refined blade technology (including refitable cores), abundant ornamentation, well-preserved paleobotanical materials that include some of the earliest directly dated domesticates in the Near East, and the second largest faunal assemblage on the island, which include small amounts of cattle, previously thought to be absent from the island until the Bronze Age. In addition, unusual oval platform structures and deep pits are present. The results of ongoing interdisciplinary investigations at Ais Giorkis are summarized here and put into a broader context.

[71] Discussant**Simon, Katie****[335] Prospecting Epigraphical Landscapes: The Use of Traditional Geospatial-scale Tools in Analysis of Sub-millimeter Resolution 3D Data**

With recent advances in technology, archaeologists have gained greater access to a wider variety of scales and resolutions in remotely sensed data. While many of these advancements were developed for other disciplines, their archaeological applications are made possible through innovative methodologies moving beyond their initially intended purposes. This paper aims to assess the potential utility of employing software and methods intended for landscape-scale to process and analyze sub-millimeter 3D scan data of the ancient inscription of Drakon's Law on Homicide, one of the most important documents in the history of criminal law in ancient Greece. Unfortunately, its worn and degraded surface renders much of the inscription illegible. A joint team from the American School of Classical Studies at Athens and the Center for Advanced Spatial Technologies (CAST) were the first to be granted permission to study this inscription since 1969 and conducted close-range 3D scanning. While the effort yielded some promising results using 3D scan software for analysis, this paper will discuss the innovative use of 2½D GIS and airborne lidar software tools to explore additional means of deciphering new letters in the 3D scan data and gain further knowledge of what was written in Drakon's law on homicide.

[55] Moderator

Simon, Katie [154] see Garrison, Thomas

Simon, Arleyn

[182] *Competition and Conflict: A Reassessment of the Role of Warfare among Salado Platform Mound Communities in Central Arizona*

The occurrence of prehistoric warfare in central Arizona has been a topic of much discussion in recent decades, but to advance our anthropological understanding of the role of societal conflict it is essential to contextualize the role of warfare based on theoretical and ethnographic perspectives as well as multiple lines of archaeological evidence. This research focuses on the Salado platform mound communities of the Tonto Basin in central Arizona and surrounding region during the period of A.D. 1250–1450, a time of regional population movements and aggregation. Extensive data available from the Roosevelt Archaeology Projects and other excavations in the study area are synthesized and evaluated. In addition to physical evidence of violence, the social networks within the study area are assessed based on comparative study of the archaeological collections. Results are used to evaluate alliances and competition among the platform mound communities where conflict may have occurred on individualized or interneccine levels, or with external groups. Theoretical and anthropological perspectives regarding the motivations and mechanisms of warfare inform our approach to assessing evidence of conflict in the archaeological record and of attaining more complete and informed explanations of the role of conflict in prehistoric Salado society in central Arizona.

Simonia, Irakli [90] see Houston, Gordon

Simpson, Ian (University of Stirling), Konrad Smiarowski (City University New York), Christian Madsen (University of Copenhagen) and Michael Nielsen (University of Copenhagen)

[29] *Norse Greenland Homefields as Narratives of Resilience, Collapse and Survival.*

Homefields, the managed areas of land immediately around farm dwellings and often enclosed with turf and stone boundary walls, are ubiquitous features of Norse North Atlantic agricultural systems. In this paper we offer a regional radiocarbon and optically stimulated luminescence (OSL) chrono-stratigraphic framework for Norse homefields in the Easter settlement of Greenland, crossing the Viking Age to Medieval transition and ranging from inner to outer fjord locations. We go on to demonstrate that complex soil and sedimentary field- and micro- stratigraphies are associated with these homefields. These retain important records of environmental change, evidenced by contrasting phases of eroded soils and peat accumulation, and management adaptation, evidenced by soil amendments, nutrient levels and controls on soil water. Regional assessments of these soil and sedimentary records indicate varying types and intensities of environmental change faced by Norse Greenland communities and that resilience to these changes depended on a diversity of homefield management strategies specific to the environmental problems faced and contrasted with location, size and nature of the farm.

Simpson, Duane

[196] *Electrical Resistance Survey of Historic Cemeteries: The Pro and Cons of the Technique*

The survey of historic cemeteries has proven to be one of the more difficult archaeological site types to investigate using geophysical techniques: a conundrum for researchers given the size and obvious patterning of graves contained within the majority of cemeteries investigated. AMEC has used electrical resistance as an investigative technique at over 35 cemeteries across North America in a variety of environmental and soil conditions. These surveys have provided a wealth of insights to effectiveness of the technique based on an array of changing conditions, such as soil moisture, particle size, age of interment, and spacing between graves. These insights are explored within this presentation, as well as the pro and cons of the technique for the survey of historic cemeteries.

Simpson, Erik (Salmon Ruin - Division of Conservation Archaeology)

[344] *Identity and Ethnogenesis in the American Southwest*

The role of identity and ethnicity has become an important component in an increasingly nuanced discussion of social interaction and organization. In the northern portions of the American southwest, the evolving identity of populations in the upper San Juan region of the early A.D. 700s to the late A.D. 1200s is interrelated with, but distinctive from, neighboring populations. As such they provide a contrasting view of the sweeping and far reaching social and cultural changes of the period. This peripheral yet long-lived

process of identity formation and maintenance develops in opposition to Early Pueblo Period developments occurring to the west and culminates in the dramatically homogenizing Gallina ethnogenesis.

Sims, Marsha (Nat Resources Conserv Svc)

- [166] *Extinctions of Fauna in North America, A Focus on Quartzipsamments and Human-Fauna Symbiotic Relationship*

Quartzipsamments, wind-blown sandy soils high in quartz of the Entisols, developed across the world in the late Pleistocene. Previously, glacial tills and river deltas provided this type of soil. Both human remains and remains of Pleistocene fauna are recovered predominantly in areas shown as Quartzipsamments. The reasons are coincidence, high preservation in these areas, need for the same minerals by certain Pleistocene fauna, predictable areas to locate fauna, and others not listed. This research studies soil samples from three faunal sites and overlays of maps showing high correlation to Quartzipsamments for Pleistocene fauna and humans. Various factors lend credence to selection of Quartzipsamments for dietary benefit over the other choices. This paper stresses trophic levels and the symbiotic relationship of humans with fauna in North America as the driving force for extinctions. Auerbach (2012) shows wide bodies and high body mass of Paleoindians is indicative of high-latitude, arctic region, or cold-environment adaptations. As the world warmed, these humans expanded their range just as Pleistocene fauna. Quartzipsamments allowed this expansion into areas that support varied vegetation and following the fauna that left dung heaps fertilizing seeds increased the food availability and carrying capacity of humans who out completed the fauna.

Sims, Christopher

- [278] *Applications of Geospatial Analysis and a Landscape Approach to Paleolithic Sites in Portugal*

Developments in the domain of landscape approaches to archaeological research have been greatly advanced by the use of geospatial technologies. Despite the boon to theory, methodology, and technology, certain questions remain where the spatial distributions of archaeological material are complicated by other factors. Geomorphic processes significantly hinder site survivability and fieldwork. Such is the case for Paleolithic archaeological sites in Portugal, where the current landscape bears little to no resemblance to environmental conditions during the Pleistocene. Therefore, approaches using landscape theory and geospatial technology must be adapted, and a reworking of conceptual frameworks regarding site distribution is necessary in order to understand locality patterns. This presentation focuses on the results of geospatial analysis of data from recent archaeological investigations in the coastal and Estremadura regions of Portugal, and places them within a conceptual framework that allows for severe environmental changes and limited site survivability.

Sims, Ashleigh (College of Wooster) and P. Nick Kardulias (College of Wooster) [300]

- A Study of National and Local Identity at the Modern Cemetery in Athienou, Cyprus*

The current study examines a modern cemetery in the village of Athienou on the island of Cyprus. This cemetery is unique because the town is very close to the border between the Republic of Cyprus and the Turkish Republic of Northern Cyprus. An analysis of the cemetery is undertaken using a combination of landscape archaeology, following Ashmore and Knapp (1999), and Saxe's (1970) hypotheses on mortuary analysis. Data resulting from a preliminary study conducted there in 2005 are used to show how the cemetery has evolved over the past eight years. Current analysis demonstrates how the cemetery, through the attributes of the gravestones and the overall layout, exemplifies the cultural identity of the people interred there. By prominently displaying members of certain corporate groups, such as war veterans, the cemetery is used to legitimate the people of Athienou's claim to the surrounding land. The theoretical framework adopted here is applicable to the study of archaeological cemeteries both in other parts of the Greek-speaking world and other regions. Additionally, it enhances our understanding of the cultural identity, social structure, and status of corporate groups in a given society.

Sinclair, Paul (Uppsala University), Paul Lane (Uppsala University) and Anneli Ekblom (Uppsala University)

- [75] *The Future Past: Applied Historical Ecology in Southern and Eastern Africa*

We report on recent work on the historical ecology of eastern and southern Africa. Long term trends in settlement aggregation and resource utilization are analyzed from a multi-scalar regional and landscape perspective. In this study, urbanism on the Zimbabwe plateau is viewed in terms of deep time interactions between ideology and governance, networks of local and interregional trade, systems of resource

procurement and responses to climate change. Our second study explores rural landscape dynamics and social transformations in the Lower Limpopo Valley and specifically present day conservation management in Kruger National Park. In both of these, long term trends in settlement aggregation and resource utilization are evident in selected areas of eastern and southern Africa. Implications of the research results for sustainable futures are compared. Finally, we report on new work on the nineteenth century ivory trade and its antecedents, and how some of the newly emergent data challenges dominant environmental narratives concerning the drivers of soil erosion and agricultural intensification, which in turn have tended to shape modern day interventions in local livelihood strategies in the name of 'development'. This latter case study illustrates the potential contributions of historical ecology to more 'social' archaeological interpretations and the analytical potential of multi-sited archaeology.

Singhania, Abhinav [337] see Fernandez Diaz, Juan

Singleton, Eric

[251] Archaeology in Museums: Finding the Forgotten

This paper will explore the role museums play in the exploration of Mississippian cultural and iconographic representations—principally through the care and collection of artifacts, and facilitation of object-based research. Moreover, this paper will explore the depth of research that can still be conducted on museum collections, either through the accumulation of multiple assemblages from various collectors through purchase or donation, or via collections from old archaeological excavations. Specific examples of the research potential of museum collections emphasized in this paper include objects from the Gilcrease Museum in Tulsa, Oklahoma, with particular emphasis on a Hopewell Period bone scepter, textiles and basketry from the Spiro mounds, and fragmented engraved shell.

Sinopoli, Carla (University of Michigan) [212]

Discussant

Sisk, Matthew (Stony Brook University)

[278] Ecological Modeling of Middle and Upper Paleolithic Sites in the Vezere Valley, France

This project compares the ecological setting of Middle and Upper Paleolithic sites from the Middle Vézère region of southwestern France. This region works well for this type of study because of its diverse environmental character, well understood chronology and dense archaeological record. The spatial location and chrono-cultural attribution of nearly 100 sites across the region were included in a database of relevant geological data and modern ecological characters, including measures of diversity and proximity to important resources. Within a GIS framework, these disparate data were then incorporated into models of important patterning between the Middle (Neanderthal) and Upper (Homo sapiens) Paleolithic populations of the region. Using tools from ecological niche modeling that rely on presence-only data (including MaxEnt), this project demonstrates a clear difference in the variability of environments exploited by these two groups, but also gives insight into important controls on settlement between the two time periods. It suggests a preference for more heterogeneous environments during the Middle Paleolithic, and a focus on particular resources during the early Upper Paleolithic. The analytical techniques employed here have clear application for other archaeological projects and a brief discussion of their utility will be included.

Sitek, Matthew [27] see Goldstein, Paul

Sitek, Matthew (UC San Diego) and Abigail Levine (Cotsen Institute of Archaeology)

[104] Building on Ancient Ground: Excavations at a Formative Period Mound and Sunken Court Complex in the Northern Lake Titicaca Basin

This poster presents the results from the 2013 excavations at Huayra Mocco, a Formative Period (ca. 1300 B.C.-A.D. 100) sunken court site associated with the greater Taraco complex situated in the northern Lake Titicaca Basin of Peru. We examine the construction techniques of architectural features uncovered in Unit III, located on the northwest slopes of the mound. These features include a large, Formative Period terrace face and associated canal. Evidence from lower strata suggests that the Formative Period architectural features may have been constructed directly on top of and even cutting into Archaic Period deposits. In light of these findings we propose two possible interpretations: (1) The lower strata represent terminal Archaic deposits and Huayra Mocco served as one of the few continuously occupied sites during the Archaic-Formative transition in the altiplano; (2) Huayra Mocco was selected as the site for Formative monumental architecture because of its substantial Archaic

occupation. Through exploring these hypotheses we aim to demonstrate the possibility of unprecedented long-term site occupation and re-occupation in the northern Titicaca Basin.

Sitters, Julian (AmaTerra Environmental, Inc) and Danny Walker (Office of the Wyoming State Archaeologist)

[155] A Multi-Methodological Approach to the Detection of Graves

Geophysical remote sensing, a method often employed to noninvasively detect the presence of archaeological features, has been successful in the detection of human burials (De Vore, 2007; De Vore and Nickel, 2003; Jones, 2008). However, the success of geophysical techniques in the detection of human burials is dependent upon multiple factors: methodology, vertical survey depth, terrain, soil chemistry, hazards, data processing, and grave conditions to name a few. The study presented here summarizes a systematic survey of major archaeological and geophysical journal reports on human burial remote sensing studies to further evaluate the effectiveness of geophysical prospecting for burial identification. Using the results from the literature review as a guide, a geophysical survey of the Tie Siding Cemetery (1824-2005) in southeastern Wyoming was conducted using multiple geophysical techniques. As a result of field investigations, numerous (n=22) geophysical anomalies were identified and are believed to be those associated with unmarked graves. By employing multiple geophysical techniques archaeologists were not only able to assess which techniques detected the same anomaly, but also whether different techniques can identify different burial types.

Skibo, James [322] see Malainey, Mary

Skidmore, Maeve (Southern Methodist University)

[15] Cusqueños, Huareños, and the Wari: An Evaluation of Intense Cultural Exchange in the Middle Horizon Cusco Region of Peru

This paper applies Green and Costion's model of cross-cultural interaction to the Wari colonial setting in the Cusco region, exploring relationships that the Wari established with peoples of this region and others in the southern Andes from approximately A.D. 600-1000. It reviews past research on Wari/Cusqueño interaction before presenting new data from the Huaro Valley, where excavation at Hatun Cotuyoc, a residential sector of settlement, has revealed houses and mortuary remains pertinent to this inquiry. Evidence for interchange between Wari and Cusqueño populations is somewhat less intensive than expected at Hatun Cotuyoc, and possible reasons for this are addressed.

Skinner, Anne [201] see Kappelman, John

Skipington, Jane (University of Western Australia)

[244] Reconstructing Paleo-environments and Seasonality of Occupation through Isotopic and Trace Element Analyses at Boodie Cave, Barrow Island, Western Australia

To complement and support the Barrow Island Archaeological Project investigating the nature of early occupation on the coastal landscape of northwest Australia, this presentation outlines an approach based on the isotopic and trace element analyses of the bone (including mammalian teeth and fish otoliths) and shell assemblages excavated from dated cultural deposits within Boodie Cave (Site J08-00) to reconstruct the changing palaeoenvironment and investigate the seasonality of site occupation. In particular, the relevant theoretical frameworks, methodological complexities, procedural practicalities, ethical questions, and environmental contexts will be reviewed to argue that the proposed research presents a significant and unique opportunity to critically evaluate the relationships between humans and the dynamic climatic conditions (including the intense variability in sea levels and aridity) experienced from the earliest occupation of Barrow Island in the Pleistocene (<45,000 years ago) to its termination in the early Holocene (7,400 years ago). It is suggested that the proposed research will confirm an interpretation of prehistoric coastal communities as highly adaptive strategists responding both reactively and proactively to the dramatic transformation of climate and resource availability over substantial time depth as well as across shorter-term seasonal changes resulting from monsoonal weather patterns.

Skov, Eric [220] see Giles, Bretton

Skowronek, Russell [14] see Gonzalez, Juan

Slater, Donald [31] see Pagliaro, Jonathan

Slater, Donald (Brandeis University & Robert S. Peabody Museum)

[70] A New Look at Old Faces in Maya Caves

Representations of simple anthropomorphic faces have been documented in caves throughout the Maya region. Earlier interpretations suggested that these signs were unrelated to elite graphic communication styles and were likely the work of peasants. Current interpretations, however, are shifting. Drawing from various sources including ongoing investigations at the cave site of Aktun Kuruxtun, Yucatan, I argue that these seemingly simple faces are closely connected to royal Maya graphic forms and that they served as synecdochic humanoid embodiments of ch'ulel or the life force believed by Maya people to animate the cosmos.

Slater, Philip (University of Illinois Urbana-Champaign)

[109] They Don't Make Them Like They Used To: Point Production and Maintenance at the Middle Stone Age Site of Marmonet Drift, Kenya

The Marmonet Drift archaeological site in Kenya's Central Rift Valley has a stratified sequence of over 26 meters of paleosols containing six Middle Stone Age archaeological horizons and thirteen volcanic ashes. Four volcanic layers have radiogenic argon dates ranging from 244 to 94 thousand years ago (ka). Excavation in 2013 recovered almost 8000 in-situ obsidian artifacts from two archaeological horizons: one lies directly above an ash dated to 94 ka and another directly above an ash with dates of 100 and 105 ka. The younger horizon is dominated by extremely thin unifacial and parti-bifacial points and knives. The older horizon has bifacial knives, large end scrapers and burins, but no points. Both assemblages contain high percentages of thin shaping and resharpening flakes with lipped platforms, very low external platform angles and radial scar patterns on dorsal surfaces, indicating invasive soft hammer flaking of large thin flake tools. These assemblages provide new evidence for the organization of technology, specifically in relation to tool production, shaping, maintenance and discard. They expand the known range of lithic technology variation in the East African MSA, and have important implications for our understanding of role of technological organization in the evolution of Homo sapiens behavior.

Slaughter, Mark (Bureau of Reclamation), Steve Daron (National Park Service), Patricia Hicks (Bureau of Reclamation), Mark Boatwright (Bureau of Land Management) and Kelly Turner (United States Forest Service)

[77] The Southern Nevada Public Land Management Act: Recent Archaeological Achievements

The Southern Nevada Public Lands Management Act, or SNPLMA, provided funding for archaeological research and outreach in southern Nevada. These projects included research on extant collections, cultural resource survey/inventory, site documentation and eligibility determinations, artifact and archive curation, and public outreach. This poster, by the Cultural Resource Team of the Southern Nevada Agency Partnership (SNAP), is a brief overview of the larger projects and programs that benefited from SNPLMA. In sum, this work significantly advanced the archaeological knowledge and awareness of Southern Nevada's diverse resources, created a site steward program and partnership with the State Historic Preservation Office, and furthered public outreach efforts within the region.

Sload, Rebecca

[33] The Cave under the Sun Pyramid at Teotihuacan as a Chicomoztoc

Chicomoztoc, literally, "seven caves," is the legendary ancestral home of the Aztecs, with each cave representing a different Nahua group. The concept fits within the framework of ancient Mesoamerican grand mythic traditions that also includes Tollan ("place of reeds"), Coatepec ("serpent hill"), Tonactepetl ("sustenance mountain"), and Altepetyl ("water mountain"). Each of these, including Chicomoztoc, is accepted as having a more general and long-lived meaning than the Conquest period attribution.

Chicomoztoc is interpreted as the place of emergence or cave of creation. Brady's work with artificial caves, the spatial relationships of natural and artificial caves to surface architecture, the philosophy of religion, and ethnographic data produces the hypothesis that caves combined with mountains/pyramids and water define the Center, of which one aspect is Chicomoztoc. He agrees with Doris Heyden that the cave under the Sun Pyramid at Teotihuacan may be a Chicomoztoc. Up until now most support for the idea has been cross-cultural, relying on Conquest period sources of Aztec mythology about Teotihuacan. This paper uses 1978 Teotihuacan Mapping Project excavation data from the cave under the Sun Pyramid to explore the idea that the cave was a Chicomoztoc.

Small, David (Lehigh University)**[214] Using the Mortuary Record to Spot Phase Transitions**

Complexity theory in its evolutionary frame is currently enjoying increasing usage by archaeologists who view concepts such as self organization, chaos, and phase transitions more amenable to explaining the record of the past than past theoretical frames. Several scholars have identified what they would label as phase transitions in the archaeological record. One of the problems with this however, is that the results of a phase transition may well be identified, but understanding the dynamics of that transition is yet to be realized. I propose that using the mortuary record can be of great help in further elucidating this issue. The period right before the phase transition, the "edge of chaos" was most likely a time of social fluidity and uncertainty as new social structure was emerging. This period can be compared to that of transegalitarian communities which were moving from one social structure to another. In transegalitarian societies elaborate funeral feasting was used by aggrandizers to secure positions of strength and to move toward creating new emergent institutions. In this paper I shall focus on identified periods and cultures which underwent phase transitions, and locate the period of chaos before that transition through mortuary analysis.

[214] Chair

Smallwood, Ashley (University of West Georgia) and Thomas Jennings (University of West Georgia)**[263] Preliminary Results from Excavations of a Middle and Late Archaic Site in Phinizy Swamp, Georgia**

Site 9RI381 was first discovered and shovel-tested in the 1970s-1990s. The site is located in Phinizy Swamp, Georgia along an oxbow remnant of the Savannah River. In cooperation with the Georgia Department of Transportation and the Georgia Department of Natural Resources, we returned to the site to open block excavations. The recovery of Savannah River points, steatite fragments, and a burned clay feature provide evidence of a Late Archaic occupation. Morrow Mountain and Guilford points suggest the site was also occupied during the Middle Archaic period.

Smallwood-Roberts, Cheryl (Gilcrease Museum)**[189] Body Language—Interpreting Aspects of Posture, Gesture, and Gender of West Mexico Shaft Tomb Ceramic Figures**

Ceramic figures from ancient West Mexico provide rich physical details of the people they represent, as well as clues to their culture. In order to understand the purpose of these figures, Robert Pickering and I are researching posture, gesture, and gender. Utilizing a database developed to record the details of 70 variables, over 1500 artifacts (to date) have been examined. The sample includes figures from the Gilcrease, Hudson Museum, Denver Museum of Nature and Science, the Museum of the Red River, Field Museum of Natural History, and the Houston Museum of Fine Arts. Each figure is subject to external scrutiny and internal endoscopic examination for condition, mineral deposits, insect puparia remains, and other indicators of authenticity. Nuances of each pose, such as the position of arms and legs, direction the figure is facing, and items held are recorded. Modes of dress, hairstyles, headgear, jewelry, and body decoration are also noted. Using the power of IBM SPSS, correlations of body posture, gender, age, and accoutrement can be ascertained among and between various "styles" of ceramic figures. Extrapolating the frequencies of these correlations may provide insights into the meaning and use of the figures of the Shaft Tomb tradition.

Smeltzer, Marion (Indiana U of Pa) and Bev Chiarulli (IUP Arch Services)**[77] Preservation Methods Go High-Tech through 3D Scanning**

We are constantly looking for ways to help protect, preserve, and maintain our cultural resources and landscapes from environmental hazards and neighboring developments. One method that is blazing the trail for those involved with preservation challenges are looking into the benefits of High Definition Survey (HDS) also known as 3D Laser Scanning used to create accurate computer images of existing structures and landscapes. The laser scanner uses a built-in digital camera to capture photos of structures and their natural environment in micro speed time. The Laser beam travels from each selected target and captures images called "Cloud of Points" that map the completed scanned area. The laser scans can then be combined to show all sides or sections of a completed structure and surface. The collected information from the scanned areas can be utilized to create a more accurate drawing or model and can be used to

monitor environmental effects that may cause damage to historic structures, and aid in future preservation methods.

Smetana, Debra (University of Notre Dame)

- [266] *Prestige in Death: Mortuary Evidence for Social Structure in Hopewell and Mississippian Societies*

The mound-building phenomenon of the Eastern Woodlands and Southeastern United States dates back thousands of years and is shared by a wide variety of prehistoric Amerindian cultures. Two of the most well known mound-building cultures, the Hopewell and Mississippian, inhabited roughly the same area, with the Hopewell phenomenon dating to the beginning of the Common Era and the Mississippian culture occurring about a thousand years later. Although these two cultures shared a common landscape and affinity for mound building and burial, most modern archaeologists interpret the two cultures as having very different social structures. In this poster, I will examine the presence and associations of prestige goods left in mound burials from the Hopewell and Mississippian cultures. The goal of this poster is to determine whether anything can be learned in terms of Hopewell or Mississippian social structure from these grave goods.

Smiarowski, Konrad (CUNY Graduate Center)

- [29] *Sustainable? How Long? The Survival and Collapse of a Resilient Norse Society in Medieval Greenland*

Settled ca. 985 C.E. and abandoned ca. 1450 C.E., this arctic outpost of the European Medieval society was directly affected by the changing environmental conditions throughout its existence. The climate fluctuations of 1250-1300 C.E., recorded by multiple environmental datasets, tested the limits of resilience of the Greenlandic Norse settlements. The effects of these events had impacts on all societies in the North Atlantic at that time, and significantly altered the primary economies of these islands. In Greenland, the increased storminess, and unpredictability of weather and sea ice, caused a decline in farm productivity and contact with continental Europe. The domestic livestock herds were reduced in size, and a shift towards more resilient animals (more goats/sheep, less cattle) is evident in zooarchaeological collections from recent excavations. Greenlanders also heavily increased their reliance on a communal seal hunt, but unlike the Icelanders, they were not able to join the international dried-fish and wool trade. This resilient society was able to survive another 150-200 years, before a new climatic shift contributed to its collapse and disappearance around 1450 C.E. This paper will demonstrate how significantly these events transformed the subsistence strategy of the Norse in Greenland, from the settlement period to the High Middle Ages.

- [29] *Chair*

Smiarowski, Konrad [29] see Simpson, Ian

Smirnov, Oleg [158] see Kennett, Douglas

Smit, Douglas (University of Illinois at Chicago)

- [256] *Fragmented Production, Fractured Power: An Examination of the Colonial Mining Landscape in Huancavelica*

An over reliance on official documents can constrain our understanding of power in the colonial encounter, creating the myth that colonial states acted as unified polities with singular purposes. In the Colonial Andes, the Toledan Reforms may superficially exemplify a triumph in early modern statecraft; moving thousands of people into planned settlements and dramatically reorganizing labor relations through the dreaded mita to support Hispanic mining efforts in Potosí and Huancavelica. However, archaeological approaches provide a different perspective, emphasizing how colonial decrees do not arrive as unaltered packages, but rather are negotiated amidst competing Hispanic and indigenous institutions long before they are emplaced locally. This paper will use settlement pattern data and local archival research to examine the changing power relations associated with the colonial mercury mining in Huancavelica. Preliminary results indicate that in practice, the state-mandated Toledan Reforms did not necessarily correspond with concentrated production or state control, but instead demonstrate how state, merchant, and indigenous interests intersected to produce a fractured landscape of power.

- [256] *Chair*

Smith, Michael (Arizona State University)

[21] Urbanization and Village Nucleation: Causes and Consequences of Moving into Town

I survey theoretical and comparative work on urbanization and nucleation at two analytical levels: (1) Household decisions to move into villages and cities; (2) Larger social forces that stimulate nucleation and urbanization within agrarian regional economies. Primary drivers of village nucleation include defense, political administration, economies of scale, and institutional forces. At the urban scale, I explore these and other costs and benefits. Research on ancient Mesoamerican migration and urbanization can benefit from a better understanding of processes such as chain migration, migrant adaptation to urban conditions, and the ties urban migrants maintain with their village or region of origin.

[1] Discussant**Smith, Erin (Washington State University, Pullman) and Mikael Fauvelle (University of California, San Diego)****[2] A Western Subset of the North American Oikoumene: Regional Interaction between California and the Southwest**

Drastic changes occurred in both coastal California and the Southwest during the beginning of the second millennium, including the intensification of internal trade and increasing complexity in sociopolitical development. Drawing from Peregrine and Lekson's (2006, 2011) continental perspective and the inclusion of both small and large-scale dynamics, we suggest that developments in each area are influenced by both local and regional processes. In this fashion, we see California and the Southwest as components in a continental-wide interaction system spanning North and Central America. Within this system, we argue that interaction was sustained and regular, creating parallels in economic and political developments between the two areas. We offer archaeological and ethnographic evidence for the trade of prestige goods in the form of ceramics and textiles that we suggest moved westward from the Southwest in exchange for shell beads, asphaltum, and obsidian from coastal California. By expanding the scale of regional economic interaction, we hope to demonstrate the degree of connectivity between California and the Southwest, and establish parallels in social development and change between the Southwest and the far west.

[2] Chair**Smith, Karen (University of South Carolina) and Vernon J. Knight (University of Alabama)****[11] Swift Creek Design Elements and their Layouts**

Elsewhere we have argued that Swift Creek core design elements and their layouts—the shared ways in which the elements were arranged on the paddle—were culturally transmitted and, thus, serve as important characteristics that reveal the histories of sets of designs. With this principle in mind, we have worked with core elements whose layouts occur in three-guide-point setups and simpler one-guide-point setups. In this poster, we visually summarize the Swift Creek design corpus in terms of layouts and elements, both core and secondary, and assess the variation we observe across these sets in fill and finish.

Smith, Stuart (UC Santa Barbara) and Michele Buzon (Purdue University)**[15] Cross-Cultural Interaction in the ancient Egyptian and Nubian Borderland**

Ancient Egypt and Nubia have a long history of interaction that led to both cultural and biological entanglements. Cultural and political boundaries shifted over time, with Egypt absorbing parts of its southern neighbor into an eventually far reaching empire, but also with independent Nubian kingdoms dominating Egypt at different periods, at one point with its kings ruling as Pharaohs. This paper examines the influences that flowed back and forth between Egyptian colonizers and indigenous Nubians, mapping the flows and intensity of cultural and biological exchanges diachronically through the graphic model developed by Green and Costion. This model can allow us to take into account the complex nature of interactions between Egyptians and Nubians and the multifaceted role that individual agency played in creating complex outcomes that simultaneously reflect multiple groups with varied interests.

Smith, Geoffrey M. [24] see Wriston, Teresa

Smith, Geoffrey (University of Nevada, Reno)**[24] The Great Basin Paleoindian Research Unit and the Ongoing Search for the First Americans**

The Sundance Archaeological Research Fund (SARF) at the University of Nevada, Reno (UNR) was created in 1994 through a generous endowment from Joe and Ruth Cramer to conduct Paleoindian research in

the Great Basin. In 2010, in part due to Joe's wishes, the SARF evolved into the Great Basin Paleoindian Research Unit (GBPRU). While there are some new faces associated with the GBPRU, its central mission remains the same: (1) search for the earliest sites in the Great Basin; (2) develop a better understanding of Paleoindian lifeways in the region; and (3) place our findings into the broader context of the peopling of the Americas. In this paper, I describe my transition from graduate student to executive director working with SARF/GBPRU and highlight our recent work in Oregon's Warner Valley, where we continue the tradition of Paleoindian research established at UNR 20 years ago with help from the Cramers.

[148] *Chair*

Smith, Kevin (Haffenreffer Museum, Brown University)

[325] *Den of Thieves or the Temple of Doom? The Creation of Mythic Landscapes at Surtshellir Cave, Iceland*

Surtshellir—one of the best known and largest lava caves in the North Atlantic—has historic and folkloric references spanning more than a millennium. Throughout, the cave is associated with horror—the end of the world, social dissolution, the inversion of religious and ethical certainties, mutilation, death, and betrayals—and with accounts of Viking Age chieftains and post-medieval peasant leaders reversing these terrors to restore the balance of life, locally or globally. Two tropes dominate these tales – that the cave was a base for outlaws in the 10th, 12th, or 16th centuries, or that it was the home of Surtur, a being who existed before the world was created and would destroy it, killing the Norse gods at Ragnarök. Preliminary investigations in Surt's Cave identified standing Viking Age structures, massive deposits of faunal remains, and intact cultural deposits. Excavations of those deposits in 2013 provide new data on Surtshellir that encourage a re-conceptualization of the cave, redefine its role within Iceland and the Viking Age, and speak to both the inscription of mythic concepts onto newly settled landscapes by island colonizers and the integration of ritual and political power in North Atlantic chiefdoms.

[68] *Discussant*

Smith, Heather (Center for the Study of the First Americans)

[131] *An Investigation of the Origin of Alaskan Fluted Points and Their Role in the Early Settlement of Beringia and the Americas*

After more than 60 years of inquiry, fluted technology in Eastern Beringia is now confidently dated to the terminal Pleistocene at two sites in northwest Alaska and post-dates the Clovis complex by at least 700-1000 years. Competing hypotheses regarding the role of Alaskan fluted points in the early settlement of Beringia and the Americas persist—that Alaskan fluted points represent either a backwash of Paleoindian technology transmitted northward from mid-continent North America or an example of independent invention in the far north. This paper presents the results of a comparative technological and morphological analysis that investigates the relationship between Alaskan fluted points and other North American fluted-point collections. Discussion addresses the origin of fluted points in Alaska and how fluting technology may have been transmitted culturally across the region.

Smith, Erika (University College London, UK), Christina Halperin (Princeton University) and Ronald Bishop (Smithsonian Institution)

[147] *Late Classic Provincial Politics: Chemical and Mineral Analyses of Late Classic Polychrome Pottery Paints and Pastes*

Previous epigraphic and polychrome pottery investigations have identified the site of Motul de San José as the capital or one of several capitals of the Late Classic period Ik' polity in Petén, Guatemala. Less is known about the regional relationships between Motul de San José and other important political centers in and around Lake Petén Itzá, such as Tayasal, Flores (Nojpetén), and Zacpetén. These centers may have been part of, allied with, or politically autonomous of the Ik' polity. This paper examines regional political-economic relationships between these Lake Petén Itzá centers as well as between the lake centers and the more politically dominant capital of Tikal through the chemical (LA-ICP-MS, INAA) and mineral analysis (ATR-FT-IR, XRD, and EXAFS) of Late Classic Maya polychrome paints and pastes.

Smith, Benjamin (Stony Brook University)

[186] *Barbed Bone Points: 10,000 Years of Fishing on the Shores of Lake Turkana*

As riverine and lacustrine environments expanded across north tropical Africa during early Holocene times, certain characteristic techniques emerged for fishing or "aquatic hunting." This project investigates early Holocene barbed bone points ("harpoons") from the Turkana Basin, NW Kenya. These

geographically widespread and temporally confined tools can shed light on hunter-gatherer tool-kit organization, tool use, and resource acquisition in a context of environmental change. Experimental reproduction from local materials provides a baseline for analyzing collections from archaeological sites west of Lake Turkana. Examining modern local fishing practices can reveal various contexts of near-shore resource exploitation analogous to those of early Holocene Turkana, and reveals fishing techniques that employ tools similar to barbed bone points used in early Holocene times. Analysis of museum collections of barbed bone points from the Lothagam Fishing Site (GeJi11) west of Lake Turkana confirms that although certain typological factors like barb form and projection remain consistent throughout a single assemblage, others seem subject to individual preference or material constraints. The paper concludes with some reflections on the implications of barbed bone point production and use for changing mobility strategies, resource intensification and technological innovation during early Holocene times.

Smith, Monica (UCLA)**[194] *Introduction: Abundance as an Economic Principle***

Archaeologists generally have focused on scarcity as the most significant economic principle governing human-material dynamics. Abundance can be characterized as an equally compelling aspect of the economic realm starting with our earliest human ancestors, who were likely to have used resource quantity as a determining criterion of settlement location and landscape investment. A cognitive predisposition to seek out bountiful locales subsequently was augmented by the capacity to produce abundance through agricultural activities and object manufacture. Masses of tangible items could be utilized by elites and non-elites alike for a variety of ritual and social purposes, including the performance of plenitude at sacrifices and feasts. The desire for and encoding of abundance can be discerned from a variety of archaeologically-visible mechanisms, from the construction of massive storage facilities to the incremental creation of middens and waste dumps. An ancient appreciation for mass quantities also can be discerned through the use of style changes to increase the visible repertoire of goods such as pottery, textiles, and metal objects that encoded dynamic social relationships of identity and group cohesion.

[279] *Discussant***[194] *Chair*****Smith, Scott (Franklin & Marshall College)****[198] *Political Landscapes of the Upper Desaguadero River Valley, Bolivia***

This paper discusses the ways in which politically marginal groups living along the Desaguadero River in the Altiplano region of the Bolivian Andes negotiated the expansion of states. Drawing on both archaeological and historical data I compare two moments in the long term historical ecology of the Upper Desaguadero River: the consolidation and expansion of the Tiwanaku state between AD 500 and 1100 and the incursion of the Spanish colonial state into the region beginning in the late 1530s. At both times, the fishers of the Desaguadero River constituted a minority in a region dominated by agropastoralists. During the Tiwanaku period, the data suggest that these communities became key nodes in the circulation of people, animals, objects, and ideas. During the Spanish colonial period, these communities resisted incorporation into the colonial state and the river became a staging ground for politically motivated raiding and rebellion. For much of the 17th century the Upper Desaguadero River was effectively an internal frontier within Spanish colonial territory. A consideration of this riverine landscape at these two moments highlights the diversity of ways in which politically marginal groups, like the fishers of the Upper Desaguadero, actively negotiated the vagaries of expansionary political formations.

Smith, Galen**[208] *An Experimental Approach to Fishing Net Replication***

The archaeological record provides evidence of the widespread exploitation of fish in prehistoric Eastern North America, but the amount and quality of evidence for fishing technology is limited. Although nonperishable items such as netsinkers may be common and fishhooks made of bone and other material also are known, there are few intact examples of nets that were widely used in the process of fishing. All of the remaining examples of prehistoric netting in Eastern North America were constructed of cordage, although there are representations of differing construction methods that resulted in a multitude of final products through materials, types, overall sizes, and mesh sizes. Thus, an understanding of cordage construction in general, as well as its association with net making, is essential. One potential way of understanding the range of netting technologies utilized in the Middle Atlantic region is to examine

impressions left on identified net impressed pottery and replicate these technologies. The Delaware River provides an excellent opportunity because of its history of fish-based subsistence and the presence of net marked ceramic wares, for researchers to solidify their understanding of prehistoric netting technology.

Smith, Stefanie (Indiana University of Pennsylvania)

- [233] *Foodways in Colonial Western Pennsylvania: An Analysis of Faunal Remains from Hanna's Town*

Hanna's Town, a historic settlement in Westmoreland County, Pennsylvania, is known for its status as the first county seat and court of justice west of the Alleghenies. This poster presents data regarding access to and treatment of food items on the frontier with a specific focus on the faunal remains from the pit features associated with the three areas known as Foreman's Tavern, Hanna's Tavern, and Irish House. With the cooperation of the Westmoreland County Historical Society and Indiana University of Pennsylvania, faunal remains from these three areas of the site were carefully analyzed in order to answer general questions regarding the subsistence practices and sociocultural diversity of 18th century western Pennsylvania frontier communities and their residents. Topics such as taxonomic abundance, skeletal frequencies, butchering practices, and indicators of ethnicity and socioeconomic status were addressed using standard zooarchaeological methods. For each area, proportions of domestic game versus that of wild game were discussed, as well as the ways in which the cuts of meat present and the butchering practices employed vary. This analysis addresses specific elements of Western Pennsylvania colonial frontier life that have not previously been discussed relative to the Hanna's Town community.

Smith, Cecilia (University of Illinois at Chicago)

- [235] *Spatial Autocorrelation and the Changing Organization of Social Inequality in Colonial Philippines*
- Spanish colonization in the Philippines brought drastic social reorganization. It arrived unevenly across the archipelago and via differing vectors, including state representatives backed by military force and missionaries who dispersed as individuals to proselytize. While new products were incorporated by the transitioning elite as indicators of status, some "prestige goods" from the pre-contact period of the 13th-16th centuries continued into the capitalist political economy beginning in the late 19th century. I summarize these material indicators of high status, namely imported Chinese and Southeast Asian ceramics, found over a four year survey and excavation project in the Malangwa watershed on Negros Oriental, Philippines. The results of a spatial autocorrelation analysis reveal significant and changing patterns in the distribution of these artifacts across time. Theories that posit identity and inequality as social process, instead of as fixed positions, help guide the interpretation of these results beyond discussion of political economy and social organization to investigating the changing cultural meanings of enduring prestige items. I also address how spatial data at community and regional scales can be interrogated to discern social patterns using global and local indicators of spatial autocorrelation.

Smith, Kevin (Middle Tennessee State University)

- [251] *"When Frog Stole the Waters": Mississippian Megadroughts, Migrations, and Revitalization Movements*

During the colonial period, many indigenous Native American societies responded to unpredictable external stresses through large-scale migration and revitalization movements. Recent climatic models suggest that between A.D. 1250 and 1550, the interior South experienced different but equally unpredictable external stresses in the form of highly variable weather conditions, including megadroughts. Here I evaluate evidence for the time-transgressive spread of several late prehistoric "archaeological horizons" to test the hypothesis that large-scale migration and revitalization cults may be equally characteristic of the Mississippian era, albeit due to different stressors. I conclude with an evaluation of relevant indigenous folklore concerning drought and floods.

- [251] *Chair*

Smith, Marvin and David Hally (University of Georgia)

- [276] *Where'd You Get that Cool Stuff? Mechanisms of European Artifact Dispersion in the Sixteenth-Century Southeast*

European artifacts, such as beads, bells, and iron cutting implements are frequently found in sixteenth-century Native American archaeological sites. How were these items obtained by Native Americans? Many mechanisms of acquisition can be identified from historical documents and the types of artifacts, but often it is the archaeological context of the artifacts that informs us the most. Mechanisms to be

investigated include European gift giving, barter (both European and Native), tribute, redistribution, theft or pilfering, combat, and shipwreck salvage.

Smith, Lisa (University of Montana)

- [290] *Late Period Household Socioeconomics in the Middle Fraser Region of British Columbia and Its Implications for Understanding the Early Colonial Period*

Housepit (HP) 1 of the S7i7stkn site of the Middle Fraser region in British Columbia is among a few well-sampled late precontact houses in the area, and when compared to data from later houses, it is an ideal baseline from which to measure the effects of the Fur Trade on household socioeconomics. Evidence demonstrates occupants of this multifamily dwelling were relatively egalitarian with a subsistence strategy focused on anadromous salmon. During the early colonial period, there was a notable decline in salmon reliance, as evidenced by faunal data of Housepit 54 of the Bridge River site, suggesting this keystone resource was impacted by the Fur Trade -- a finding that is also reflected in local ethnohistories and native oral traditions. Couched in Practice theory and household archaeology, this research investigates daily activities of individuals within the St'at'imc community. It provides not only greater understanding of late period households in the Mid-Fraser, it informs discussions on incorporation of traditional knowledge to generate a more nuanced narrative of the past.

Smith, Morgan (Texas A&M University)

- [315] *Archaeology at Wakulla Spring: Historical Investigations and Future Directions*

Wakulla Spring, located south of Tallahassee, Florida, has long been thought to possess the potential to be a promising source of Paleoindian and potentially Pre-Clovis archaeological information. This is evidenced by cultural material that has been found in and around the spring and by the fact that the region surrounding Wakulla Spring has yielded an anomalous concentration of Paleoindian age cultural material. Past research at Wakulla Spring has been limited to biology, water chemistry, and paleontology, with archaeology having served as ancillary information in texts. In the past, several mastodons have been removed from the spring in association with stone tools. No provenience information exists from the recoveries however, and the small archaeological assemblage from Wakulla Spring consists of entirely of ex situ osseous and stone tools in private collections. Several recent developments, most notably the analysis of private archaeological collections from the spring, successful terrestrial excavations around the spring conducted by Dr. James Dunbar, and the discovery of a mastodon potentially in situ in the spring run, have made it apparent that Wakulla Spring needs to be re-evaluated as a locale to study First Americans archaeology.

Smith, Craig (Cardno ENTRIX)

- [324] *Hunter-Gatherer Resource Intensification: The Uinta Phase in Southwest Wyoming*

Resource intensification has been an important concept for understanding changes in hunter-gatherer subsistence. The excavation of over 50 sites in southwest Wyoming dating to the Uinta phase, 1800-1000 years BP, provides an opportunity to explore this concept among hunter-gatherers in an environmentally marginal area. This phase when compared to proceeding phases is marked by a greater reliance on seeds from weedy species, a focus on a wide variety of large and small animals, and an increase in the number of sites. It appears to be a time of increased population, the probable constriction of territory and range, and decreased mobility.

Smith, Alexander (Brown University Joukowsky Institute), Amalia Pérez-Juez (Boston University), Ricardo Elia (Boston University), Paul Goldberg (Boston University) and Meredith Anderson Langlitz (Boston University)

- [332] *Survey on Hospital Island: Results from the 2013 Field Season on Isla del Rey, Menorca*

Isla del Rey is a small off shore islet located in the harbor of Mahón on the Balearic Island of Menorca (Spain). Nicknamed "Bloody Island" in the 18th century, the island is well known for its British naval hospital, constructed over multiple periods of British occupation. Along with strong ties to British, French, and Spanish history from the 18th to the 20th centuries, the islet is also host to a Paleochristian basilica, roughly dating to the 6th century C.E. In 2013, the Boston University Field School in Archaeology and Heritage Management began investigating the northern third of the island, which had not been previously explored. The goal of the survey was to provide a systematic analysis of this area, completing the archaeological picture of the islet, while educating field school students. Although a degree of both abundant surface remains and diachronic sample representation was expected, the final results were remarkable, potentially closing temporal gaps and expanding our knowledge of human use of Isla del Rey

from the prehistoric to the modern era. This paper will present for the first time the results of the survey as well as related test pitting carried out in 2013.

Smith, Michele (Research Associate Haffenreffer Museum of Anthropology)**[336] Mineralized Textiles from Viking Burials from Iceland, A.D. 874-1000**

The textile corpus from Iceland's Viking Age is far less abundant than larger collections dating from the 14th-19th century. Without mineralized textile pseudomorphs stuck to iron or bronze grave goods from Viking period burials, the Icelandic corpus would be incomplete. This mineralization provides data otherwise lacking and has helped us to establish a clearer understanding of textile traditions during Iceland's settlement period. These pseudomorphs suggest that Viking Age textiles were woven differently than in subsequent centuries and that their closest parallels were with Norway. By the 11th century, weaving traditions had changed quite drastically suggesting that foreign influences had made their way into Icelandic weaving, possibly as the result of female slaves from the British Isles bringing with them different weaving traditions. These new traditions established the framework for the emergence of *vaðmál*—a cloth-currency that became the main exchange good used in Iceland throughout the Middle Ages. Without the process of decay and mineralization these important early textiles would have been lost, along with vital information they provide.

Smith, David (Anthropology, University of Toronto, Mississauga)**[342] Singing Pots: Symmetry as Cultural Expression in Huron-Wendat Ceramics from South-Central Ontario**

This paper demonstrates that symmetrical patterning is the dominant theme of both form and decoration of Huron-Wendat pottery. It is argued that Huron-Wendat potters fully understood the principles of plane pattern and three-dimensional symmetry and were able to manipulate symmetries and experiment within the parameters of a community of practice. Specific examples from the pottery assemblage of more than 5,000 pots from the Keffer site, a completely excavated late 15th century AD Huron-Wendat village situated in the Don River Valley, will be presented.

Smyth, Michael [158] see Dunning, Nicholas

Smyth, Michael (The Foundation for Americas Research, Inc./Stetson University), Nicholas Dunning (University of Cincinnati), Eric Weaver (University of Cincinnati), Philip Van Beynen (University of South Florida) and David Ortegón Zapata (Instituto Nacional de Antropología e Historia)**[195] Xcoch: An Enigmatic Large Maya Center in the Puuc Region of Northern Yucatan**

Xcoch was a large Preclassic center exceeded only by its Late Classic period occupation. Though water management and agricultural intensification were always critical in this drought prone hilly region, the presence of a deep water cave near the site center, a massive central acropolis, and widespread pyramid architecture make Xcoch rather unique in the settlement history of the region. This paper will discuss the cave, water and settlement features, and their relationships to cycles of drought recently reconstructed via speleothem analysis near Xcoch. The findings begin to reveal a complex picture of long, dynamic cultural development, human ecodynamics, and rapid declines in a region once thought to be relatively late and short-lived in the history of the Northern Maya Lowlands.

Snead, James (California State University Northridge)**[159] Canonical Sites and the Legacy of Place in American Archaeology**

Histories of American archaeology remain largely divorced from the places in which archaeological work has taken place. Our general preference for exploring trajectories of professionalism has left out many significant stories: the general lack of interest in landscape is particularly ironic since engagement with material contexts is fundamental to the archaeological process. At various times in our history, specific places have played critical roles in structuring archaeological interpretation. These "canonical sites" (following Rosemary Joyce's "canonical artifacts") were visited, studied, and attracted considerable comment. Their centrality to the narrative, however, is often completely idiosyncratic, reflecting proximity to travel routes, aesthetic appeal, or other values that are relevant only to the Euro-American viewer. This paper looks at two canonical sites of central importance to the development of American archaeology in the first half of the 19th century: the Grave Creek Mound (WV), and the Selzertown/Emerald Mound (MS). Both sites are preserved today, but in contrast to their 19th century notoriety, contribute little to the modern archaeological syntheses of their surroundings. Viewed in context, however, they provide examples for the relationship between history, place, and the canon construction in archaeological

thought.

[198] *Discussant*

Snetsinger, Andrew [335] see Schwake, Sonja

Snitker, Grant (Arizona State University)

[13] *Exploring the Dynamics of Anthropogenic Fire Regimes through Agent Based Modeling (ABM) and Geographic Information Systems (GIS)*

Landscape modification due to anthropogenic burning practices has a deep history in human-environmental relationships. Although anthropogenic burning is commonly recorded in both prehistoric and ethnographic contexts, few archaeological projects engage in landscape-scale investigations of the social and environmental processes behind these practices. This project explores the complexity of anthropogenic burning by focusing on quantifiable components of a human-altered fire regime within a modeled landscape. Through exploratory agent based modeling (ABM) and geographic information systems (GIS), the human fire regime is examined through dimensions of fire intensity, extent, type, and frequency. Systematically modeling anthropogenic fire under differing conditions will allow archaeologists to explore both cultural and environmental aspects related to the dynamics of human-fire relationships in both past and present contexts.

Snitker, Grant [13] see Cegielski, Wendy

Snow, Dean (Pennsylvania State University) [100] *Discussant*

Snow, Susan (San Antonio Missions National Historical Park) and Paul Ringenbach (Bexar County Historical Commission)

[119] *The Modern Cultural Landscape of the San Antonio Missions: How does It Reflect the People of the Missions?*

The five 18th century mission complexes of San Antonio, including over 50 structures, archaeological ruins, and landscape features, represent the most complete extant example of the Spanish empire's efforts to expand and control using the missionary system. This paper will examine these extant remains and discuss how these features represent the indigenous peoples who built the system and the interwoven mission culture that evolved during the mission period and remains the core of the unique culture of San Antonio and south Texas today. Evidence of the influence of indigenous peoples may be represented in some of the extant architectural features. Individuals and families who identify themselves as mission descendants varyingly identify themselves as indigenous, Spanish, or both, but they all have memories of various aspects of the cultural landscape that they associate with their mission identity. As the missions are considered for World Heritage status, it is this testimony to a thriving cultural tradition that continues to keep the missions as the living center of San Antonio, the 7th largest city in the United States.

Snow, Meradeth [247] see Durand Gore, Kathy

Sobel, Elizabeth (Missouri State University)

[290] *Explaining Prestige Goods: Applying Helms' Cosmological Framework in the Archaeology of the Pacific Northwest*

Archaeologists studying sociopolitical complexity in the Pacific Northwest have extensively studied how two classes of objects - exotics and highly crafted items – operated as prestige goods in indigenous societies. Extant research focuses on the ways that people acquired and distributed these goods, but has not rigorously addressed the question of why people imbued these objects with prestige. Generally, when addressing this question, we uncritically use ethnographic data to identify prestige goods, and we invoke formal economics, citing the rarity and labor costs of these goods, to explain their prestige values. Mary Helms offers a higher level explanation, arguing that the prestige values attached to exotic and highly crafted goods are rooted in cosmology. Helms proposes that all non-industrial cultures ascribe extraordinary power to long-distance trade and skilled crafting, based on cosmologies that position long-distance trade and craftsmanship as transformative acts linking the known realm “inside” society with the unknown, supernatural, powerful realm “outside.” I use Helms’ model, and a critical evaluation of ethnohistorical data, to interpret the archaeological record of the Lower Columbia River. I then assess the

effectiveness of this approach for archaeological analyses of relationships among trade, specialized production, and sociopolitics in the broader Pacific Northwest.

Sobur, Marta (Harvard University)**[67] Sustainability in Early Dilmun Mortuary Economy**

Collapse is a well-represented theme in the study of ancient civilizations. Well-understood examples include the deforestation of Easter Island, or the dissolution of political cohesion among the Maya, while others, such as the demise of the Indus River Valley civilization, are still debated, with the likelihood that inadequate responses to environmental degradation played a key role. The archaeological narratives of collapse paint a picture of human nature as self-destructive, and overshadow the numerous efforts to achieve sustainability and manage resources, which are often expressed as small-scale activities.

Perhaps the last place to look for evidence of sustainability efforts is in the realm of mortuary rites; yet surprisingly, unique examples of recycling of scarce resources come from the burial mounds of Early Dilmun period civilization (2300-1700 B.C.) of Bahrain. The collection of over 50 soft-stone (steatite/chlorite) vessels from the cemetery at Hamad Town, curated by the Bahrain National Museum, contains evidence of recycling and repair activities. The vessels are a common funerary offering in the burial mounds and the care given to their maintenance suggests that they were heirlooms. In this paper, I will contextualize soft-stone recycling in the holistic picture of mortuary economy of the Early Dilmun civilization.

Soderland, Hilary (Boalt Hall, UC-Berkeley)**[331] Discussant**

Sofro, Evan [207] see Swarts, Kelly

Sola, María Fernanda [57] see Díaz, María Etelvina

Solano, Adam (Cal State L.A.), Melanie Saldaña (Cal State L.A.), Toni Gonzalez (Cal State L.A.) and Cristina Verdugo (Cal State L.A.)**[70] Ballcourts, Sweatbaths, and Caves: Sacred Landscape at Chawak But'o'ob**

Cave 1 at Chawak But'o'ob, located in the heart of the site's public architecture, is surrounded by a ballcourt, a sweat bath and a sinkhole. Survey and excavation conducted during the summer of 2013 by a California State University, Los Angeles project revealed a utilization of the cave that differed from other areas of the Maya lowlands. Nevertheless, analysis of the architectonic and natural elements in the Ballcourt Complex make it clear that this was intended as the focus of community identity. Caves are associated with people's first emergence onto the earth's surface and this forms a basis of the group's claim to the land. Ballcourts, according to ethnohistoric sources, were the first structures built in a new community and formed the focus of community identity. Ballcourts and caves are both seen as having connections to the water and the underworld. Sweat baths are also seen as a form of cave. There is a great deal of freedom in the placement of architectonic elements but natural elements such as the cave cannot be moved. Thus, the location of the natural elements probably determined the elaboration of this space.

Solar-Valverde, Laura (INAH Zacatecas)**[339] Coast-to-Coast: Evidence for Aztatlán's Macro-Regional Interaction**

Around 900 B.C. the Aztatlán Network, until then circumscribed to the Pacific Coastal Lowlands, enters a period of apogee. This is discernible by the incorporation of northwest inland sites to its economical and ideological system. At the same time, the Mexican Gulf region experiences a "regional development" not clearly lead by a single polity, but still articulated by what Lee Parsons (1969, 1978) called the "Peripheral Coastal Lowlands". Ceramic and architectural complexes in both regions differ typologically. Nevertheless, we consider that simultaneous strengthening and expansion of this East and West centered network, which at one point seem to converge in the Mixtec region, is reflecting a systemic relation. To sustain that proposal, this paper outlines distinctive iconography and cultural patterns, as well as the sharing of similar artifacts and the synchronic emergence of early metallurgy in both areas. A relation between Eastern and Western polychromes was mentioned decades ago by one of Aztatlán's main researchers, Isabel Kelly (1941). From a World Systems perspective (following Chase-Dunn and

Hall 1997), it is now suggested that these regions were once articulated by a main Prestige goods and/or Information Network, involving much the same conception of ritual's active expressions.

Solazzo, Caroline

[241] Species Identification in Keratinous Tissues using Mass Spectrometry: Potentials and Limitations
Keratin-made artifacts, textiles, but also objects made out of horn, baleen and tortoiseshell tissues, are rarely found in archaeological contexts unless specific conditions are met that prevent extensive biodegradation from micro-organisms. Even when these artefacts survive, processing of the raw material, use and diagenetic changes combine to make identification difficult through visual examination, therefore a minimally destructive methodology for species identification is required. Using the PMF method (Peptide Mass Fingerprinting with MALDI-TOF-MS) complemented with nanoLC-ESI-MS/MS, diagnostic peptide markers (at the genus/species levels) are presented here for a range of wool-producing species, and for tissues such as baleen, horn, quill and tortoiseshell.
Peptide mass fingerprinting is an efficient method to characterize keratinous tissues even when the recognizable structural information has not survived (the scales on hair or the striations on horn). It requires little material but the state of degradation (protein hydrolysis) is a limiting factor. By examining a range of keratinous tissues of different ages (4000 B.C. to medieval times) and preserved in variable conditions (peat-like soil, frozen soil, through mineralization or desiccation), we also explore here the limitations of the technique in regards to the degradation of fibers.

Solinis-Casparius, Rodrigo (University of Washington) and Florencia Pezzutti (Colorado State University)

[21] Roads and Social Space: Exploring Intrasite Accessibility Using Lidar Data from Angamuco, Michoacán

The distribution of space within the built environment of the heavily urbanized site of Angamuco, Michoacan, provides the framework to explore different scales of social interaction and social organization. The placement of roads, paths and trails contributes to the delineation of physical boundaries that define social division of space at four different scales of interaction: household, complejo, neighborhood and district. Furthermore, the physical and material characteristics of this trail system contributed to a differential accessibility, which should have resulted in social interactions and negotiations when moving around the site. In this sense, we propose that trails, roads and paths are agents that help define the social configuration of this ancient city. Here we examine a vast LiDAR database of over 8km², which allows us to examine the urban configuration of Angamuco using network-base spatial analysis from GIS to explore the differences in accessibility within the site.

Solis, Reyna (POSGRADO IIA-UNAM)

[253] The Manufacturing Techniques of Greenstone Lapidary Objects from the Surrounding Structures of the Great Temple at Tenochtitlan

Five hundred lapidary greenstone elements have been recovered in the surrounding structures of the Great Temple at Tenochtitlan, many of them were buried inside diverse buildings and correspond to different temporalities attributed to the last Tenochcan rulers of the Triple Alliance. The purpose of this paper is to show the technological analysis and the organization of production involved in the manufacture of these pieces, using experimental archaeology, optic microscopy, and Scanning Electron Microscopy. This analysis was applied in order to determine patterns among the procedures, techniques and tools. Finally, I will compare the results obtained with those reported for the greenstone objects from the Huey Teocalli, in order to reconstruct the sequence of production of them and to know if both assemblages shared the tools and manufacturing techniques, perhaps because some of them were produced in the same workshops.

Somers, Lewis [157] see De Vore, Steven

Somerville, Andrew (University of California, San Diego)

[63] An Isotopic Investigation of Lagomorph Management and Breeding at Teotihuacan, Mexico

The means by which societies produce and distribute food has important implications for their social and economic organization. To this end we investigate the acquisition of lagomorphs (rabbit and hares) at the ancient metropolis of Teotihuacan. Faunal studies suggest that lagomorphs were one of the most commonly represented vertebrates at the ancient city, and archaeological evidence suggests that certain apartment compounds may have managed or bred these small mammals as a renewable source of

protein or for trade. Through stable isotope analyses ($\delta^{13}\text{C}$, $\delta^{18}\text{O}$, $\delta^{15}\text{N}$) of lagomorph bones from four locations across the ancient city, Oztoyahualco, Teopancatzco, the Caves associated with the Sun Pyramid, and the fill of the Moon Pyramid, we explore dietary variation of these small mammals. Our results indicate that lagomorphs from Oztoyahualco, the residential compound with the most evidence for lagomorph breeding, display the highest $\delta^{13}\text{C}$ values, suggesting that these animals consumed significantly more maize products than lagomorph of other contexts. These data support the hypothesis that rabbits and hares were in fact bred for consumption at Teotihuacan. Moreover, since production appears to have been conducted at the level of residential compounds, this study increases our understanding of the economic organization of New World cities.

[63] *Chair*

Sommer, Caitlin (Crow Canyon Archaeological Center), Jerry Fetterman (Woods Canyon Archaeological Consultants) and Shanna Diederichs (Crow Canyon Archaeological Center)

[289] *Population and Organization of a Basketmaker III Settlement in Southwest Colorado*

The Basketmaker Communities Project is evaluating the surface and sub-surface signatures of a Basketmaker III settlement in the Village Ecodynamics Project study area of southwest Colorado. Seventy-one habitations were re-surveyed to refine the occupation sequence within the settlement while electrical resistivity imaging was applied to clarify the settlement's density. This study has provided insight into the organization of communities during the Basketmaker III period and provided a new method for estimating early Pueblo momentary populations in the Mesa Verde Region.

Sosa Aguilar, Danny

[174] *Late Holocene Obsidian Exchange in the Baja California Peninsula*

Very few studies focus their attention on obsidian artifacts from the Late Holocene in the Baja California Peninsula. The published data from San Quintín, El Rosario, Guerrero Negro, Isla Cedros, Bahía de Concepcion, San Borja, Bahía de los Angeles, and San Ignacio provide valuable information pertaining to sourcing, and they are relevant to addressing possible exchange routes. In a peninsular context, obsidian appears restricted to small quantities and specific locations. Obsidian assemblages can be situated within a social and meaningful landscape. Throughout the peninsula, obsidian procurement, mobility, and interaction during the Late Holocene were affected primarily by two factors: (1) the physical constraints of the Baja California environment; and (2) the free will to situate and to imagine a cultural landscape based on agency, social relationships, and beliefs. The rich ethnohistoric record, ethnographic record, cultural histories, burials, and rock art of Baja California provide sufficient contextual information to develop a geographical picture of obsidian exchange during the Late Holocene. The development of alternative interpretations encourages the multifaceted social and cultural dimensions of small-scale societies often ignored within the hunter-gatherer literature.

South, Katherine (Southern Illinois University Carbondale)

[147] *Middle Preclassic Pottery Use and Production at Four Sites in the Petén Lakes Area*

Recent work in the Petén Lakes area of Guatemala reveals widespread occupation during the Middle Preclassic period (1000-350 BC) in areas extending from the western shore of Lake Petén Itzá to Lake Salpetén. A new study of pottery from the sites of Nixtun-Ch'ich', Tayasal, Ixlú, and Zacpetén, reveals similarities and differences on macroscopic and compositional levels suggesting that while early pottery production in the Petén lakes area shared some characteristics, local variation in both form and paste composition is evident. This indicates that discernible community-level differences were maintained at the level of production. Contextual analysis provides indications of population differences among the sites during the Middle Preclassic period, with Nixtun-Ch'ich' providing the largest sample of early contexts in the area. These contexts also suggest that pottery played an important role in the construction and dedication of architectural spaces during the early phases of community development. This paper explores the production characteristics and the use contexts of early pottery in the Petén Lakes area, highlighting the developing complexity of settlement and craft production during the Middle Preclassic period.

Span, T'Shawna (New Mexico Highlands University), Warren Lail (New Mexico Highlands University) and Victoria Evans (New Mexico Highlands University)

[79] *Window into the Past: Two 19th-Century Unmarked Burials in Roy New Mexico*

During the summer of 2013, two bodies were exhumed from burial contexts in Roy, New Mexico. The bodies, found in unmarked graves, were disturbed when a backhoe operator dug a pit to install a new

septic system. Preliminary laboratory evaluation indicated that the remains were those of two European males; one adult and one subadult. Grave goods, including coffin wood, glass, hardware, clothing, and shoes, together with a pocket watch and wooden pencil were recovered. Early analysis of the grave goods suggested that the burials date from between 1890 and 1904. Following standard bioarchaeological methods, an assessment of the remains helped determine sex, stature, and ancestry, along with evidence of pathologies and skeletal trauma. These burials became the central elements of a broader research effort – through the methods of micro-history – to understand the life, times, and general health of the early settlers of this important historic settlement on the western edge of the Great Plains.

Spangler, Jerry [43] see Yaworsky, Peter

Sparrow, Thomas [335] see Evans, Adrian

Spaulding, Britta (University at Buffalo)

[300] *Positioning Swedish Rural Settlement in Preliminary Landscape Analyses: Medieval Farmstead and Historical Croft Settlement Patterns*

The southern Swedish rural landscape has been increasingly studied in the last thirty years, but relative settlement in those areas of medieval farmsteads and 17-19th century crofts should be increasingly considered. While crofts (Swedish 'torp') have been more popular in recent years in the fields of history and historical geography, the archaeological research on them is less abundant. The settlement pattern for medieval farmsteads in forested, rural areas is less well-known from all three perspectives. Pollen and archaeological records have indicated that some crofters settled in previously-inhabited areas of the Swedish uplands. Future avenues for the medieval research are shown in starting with known crofts and medieval farmsteads to compare their inhabitants' land use choices with regards to agricultural and mixed traditional economies. If the later Swedish historical settlement choice were predicated in some degrees on the subsequent character of the post-medieval landscape, archaeologists might approach rural settlement on a more long-term scale and look for evidence of medieval farmsteads near croft remains. The potential of the ArcGIS software package for historical site survey is outlined in various methods, citing as well other successes in its use in relation to historical archaeology and for rural landscape research.

Speakman, Robert [10] see Hunt, Alice

Speakman, Robert

[287] *Discussant*

Speer, Charles (University of Texas at San Antonio)

[315] *LA-ICP-MS Sourcing of 33 Clovis Projectile Points from the Gault Site (41BL323), Salado, Texas*

A key tenet of Clovis period hunter-gatherer mobility is the utilization of large ranges based on the appearance of exotic raw materials, particularly chert, in Clovis assemblages. The identification of the sources of chert in Clovis assemblages is problematic as it has relied on macroscopic properties.

Macroscopic characteristics of chert can be highly variable in a single outcrop, occur across very large areas, and have correlates in unrelated and far removed contexts. A chemical analysis approach was utilized that potentially offers advances in the capacity to link chert artifacts to their sources. Trace element data was recovered from 33 Clovis projectile points from the Gault Site using Laser Ablation – Inductively Coupled Plasma – Mass Spectrometry (LA-ICP-MS). This data was compared to trace element data from 224 primary geologic samples of chert from multiple primary sources across the Edwards Plateau in Texas and 18 secondary geologic samples of flint from the Knife River near the Sentinel Butte formation in North Dakota. The Clovis points were compared to the geologic sources using canonical discriminant analysis to establish group membership at three spatial scales: macro-regional (greater than 500 kilometers), regional (between 30 and 500 kilometers), and local (between 1 and 30 kilometers).

Speer, Charles [318] see Williams, Tom

Speller, Camilla [160] see Moss, Madonna

Spenard, Jon (University of California, Riverside)

- [70] *Ancient Maya Eminent Domain: Terminal Classic Period Royal Appropriation of Actun Lak Cave, Cayo District, Belize*

Jim Brady's scholarship has revolutionized Maya cave archaeology with broad theoretical contributions as well as narrowly focused studies resulting in over 100 publications. Two overarching themes tie much of his work together. The first is that caves were highly charged ritual-political spaces. The Maya understood particular caves as the emergence places of their communities, while others to be the abodes of chthonic beings that required ritual attention. The second theme is that they were heavily modified through practices such as speleothem breakage, constructions, and caching. This presentation brings these two themes together to understand how and why Actun Lak cave came to be appropriated by a Terminal Classic period ruler of the pre-Hispanic Maya site of Pacbitun in central Belize. In particular, I discuss how changes in the artifact assemblage signify a movement away from open, public access to the cave in the Early Classic period, to its final use as a restricted royal place in the Terminal Classic. I argue that a series of architectural modifications made to the interior and exterior of the cave, in conjunction with a speleothem altar in the rear, were designed to help the king bring much-needed rain to the drought-ridden Pacbitun community.

- [70] *Chair*

Spence, Paul (Eastern New Mexico University)

- [46] *Lithic Procurement at Tsiping'uinge during the Late Coalition Period*

The Late Coalition period (A.D. 1300–1350) village of Tsiping'uinge, known to the Tewa as "the village at the mountain of the chipped stone," was well situated on the flanks Cerro Pedernal to control the primary source of Pedernal chert. This important lithic material was widely used from Paleoindian times through the Historic period. I investigate whether the ancestral Tewa villagers at Tsiping'uinge controlled access, production, and distribution of Pedernal chert across the northern Rio Grande region by conducting an analysis of the site's previously collected lithic assemblage. This includes examining raw material type and procurement and reduction technology. My analysis is then compared to lithic data from contemporary Ancestral Pueblo sites along the Rio Chama and Pajarito Plateau, as well as lithic material found at the Pedernal chert quarries, to understand the economic relationship between village and the material source. I then address the larger questions of regional patterns of interaction and ancestral Tewa landscape use.

Spence-Morrow, Giles (University of Toronto)

- [59] *Pillars of the Community: Household Social Reproduction, Domestic Mimesis and Cyclical Renovation of Late Moche Ceremonial Architecture at Huaca Colorada, Jequetepeque*

Amongst the vast array of subjects depicted in the Moche ceramic corpus, the subset that clearly depict gable-roofed architectural spaces is widely accepted to refer to structures that have been uncovered archaeologically at the summits of numerous huacas across the North Coast of Peru. With mounting evidence that these structures served both ceremonial and residential functions for elite members of Moche society, the visual shorthand of a simple roof becomes a charged symbol of the archetypical household. Using recent excavations of precisely such a structure at Huaca Colorada as a case study, this paper will argue that through socially regenerative ritual performances involving communal efforts of reconstruction, the structures at the peaks of huacas stood as a marker of corporate affinity, a sign connecting the public with the elite. As a form of household social reproduction, such acts of construction and renovation would extend kin-based domestic models across generations, perpetually performing centralized ideology through the incorporative act of construction. By housing the ruling elite at the peak of huaca structures, the entire monument becomes a representation of an idealized central house, with personal communion with a leader or authority figure serving to legitimize and incorporate an individual into a community.

Spencer, Kaylee (University of Wisconsin - River Falls)

- [9] *Discussant*

Spencer, Darla

- [74] *Bettye Broyles (1928–2011): A Woman in a Man's World.*

The archaeological community lost one of its most talented, prolific members when Bettye Jean Broyles

died on March 27, 2011. In West Virginia, Bettye is probably best known for her influential fieldwork at numerous sites during her years with the Archaeology Section of the West Virginia Geological Survey, and particularly her work at the St. Albans site that put West Virginia on the archaeological map. Most of her archaeological accomplishments occurred at a time when few women entered the field of archeology. This paper addresses Bettye's life, major accomplishments, her many talents, and details of her work at St. Albans.

Spencer, Kaylee [309] see Wren, Linnea

Spengler, Robert (Washington University in St. Louis)

[20] *Late Third Millennium B.C. Agriculture in the Foothills of Central Asia: A Mixing Zone for East and South Asian Crops*

Pre-Silk Road interactions through Central Eurasia fostered the spread of agriculture throughout the eastern piedmont zone. A growing body of archaeobotanical evidence from across Eurasia is indicating that economy in the Bronze Age was complex, with people in some regions focusing pursuits more on mobile pastoralism and others on mixed agropastoralism. Areas with mixed agropastoral economies, such as the forest-steppe of Ukraine and the mountain foothills of Kazakhstan, had very different crop repertoires, and therefore, appear to have adopted agricultural technology and knowledge from different parts of the Old World. Eastern Central Asia was a melding zone for crops spreading out of China (broomcorn and foxtail millet) and South Asia (wheat and barley). In this intermediary zone a diversified economic system was developed by combining these distinct crops. As these crops spread through Central Asia, some people adapted them to fit mobile pastoral economies in other populations they replaced previously established agricultural regimes.

Spengler III, Robert [22] see Doumani, Paula

Speth, John (University of Michigan)

[278] *Could Neanderthals Boil?*

Neanderthal sites are largely devoid of fire-cracked rock, and boiling pits are similarly absent. These telltale signs of stone-boiling first appear in the Gravettian. Boiling technology, therefore, is generally thought to be an invention made by modern humans. Curiously, it is common knowledge among the public, but seemingly not within the archaeological community, that one can boil water in perishable containers without utilizing heated stones, placing hide, paunch, bark, or paper container directly over flames or on hot coals. Numerous wilderness survival manuals, and books of experiments that children can do in their own kitchen, describe how to boil water in a paper cup. One recent YouTube video even shows someone boiling water in a paper cup with a blowtorch! Traces of betulin-containing mastic, produced only by pyrolysis in an oxygen-free environment, has been found on several Middle Paleolithic stone tools, clearly demonstrating that Neanderthals utilized birch bark and, though speculative, increases the likelihood that they also used birch bark to make containers. The discovery of starch grains in the dental calculus of a Shanidar Neanderthal with a morphology suggestive of wet cooking makes it increasingly probable that boiling in perishable containers—without heated stones—was part of Neanderthal culinary technology.

Spielmann, Katherine (Arizona State University) and Margaret Nelson (Arizona State University)

[75] *Vulnerabilities to Food Security: Contributions from the Prehistoric US Southwest* Archaeologists are well positioned to contribute to the development of strong policies that establish and sustain food security. Long time spans in the prehistoric record allow us to identify the vulnerabilities that emerge and persist to undermine sustainable food security, as well as the actions that enhance it. In this paper, we identify eight vulnerabilities and illustrate how changes in vulnerability loads impact food security and the experience of food shortage. We then explore the specific role of one of those vulnerabilities: lack of adequate and scale-appropriate food storage. We show that the management of food storage at household and community scales is an enduring and a critical component of a food security portfolio. The cases explored come from the millennium of indigenous occupation in the US Southwest before European contact.

Spivey, S. (Washington University in St. Louis)

[145] *A City Minute: Viewing Concepts of Temporality and Urbanism through the Lens of Poverty Point*

Our conversations about urbanism are often interlaced with unstated assumptions about the temporal relationship between the place in question and the people inhabiting that space. Here, I explore how our understanding of urbanism shifts when faced with an archaeological site that meets many of the classical standards of an urban center, but was only occupied in this way for a short period of time. When the social structures and institutions often categorized as diagnostic indicators of urbanism are relatively ephemeral, how does that reflect upon our belief in their importance as indicators of the development of social complexity? The Poverty Point site, a Late Archaic mound center located in the Lower Mississippi River Valley, offers a foundation for questioning our assumptions about urbanism's place in the development of societal complexity, thereby throwing the analytical viability of these traditional archaeological markers into question.

Spores, Ron [83] see Kowalewski, Stephen

Sportman, Sarah (Public Archaeology Lab, Inc.)

[111] *Medicine at the Mines: Worker Health and Medical Care at Hammondville, New York, 1873-1893*
Hammondville was a small company-owned iron ore mining town located in the Adirondack region of Upstate New York. The Crown Point Iron Co. (C.P.I.C.), which owned and operated the village, provided most of the amenities of daily life including a company physician. This meant that the residents of Hammondville had access to a professionally trained doctor, an unusual situation for many working-class immigrant laborers in the late nineteenth century. Through an examination of documentary and archaeological sources, this paper examines how Hammondville residents viewed professional medical care and made use of the doctor's services. Local newspaper accounts and town death records provide information about the types of injuries and ailments that most commonly affected Hammondville residents and archaeological materials excavated from house yards in the village provides evidence of the types of domestic and professional medical care utilized.

Springate, Megan (University of Maryland)

[111] *"Beware the Little Flaws That Make One Homely": The Interplay of Intimacy, Sexuality, and Gender at an Early Twentieth Century Women's Retreat*

An assortment of toiletries from an early twentieth century privy deposit provides an intimate glimpse of guest experience at a women's retreat on the shores of Lake George, New York. Founded in 1903, Wiawaka Holiday House provided affordable vacations for single working women free from the potentially corrupting presence of men. Drawing on queer theory, these toiletries are used to explore the relationships between sexuality and gender expression/performance in the context of this single-gender environment and what the implications are for understanding these relationships once the women returned to their lives in the cities.

Springer, Corinne [317] see Boomgarden, Shannon

Springer, Corinne (Utah Museum of Natural History), Duncan Metcalfe (Utah Museum of Natural History), Shannon Arnold (Utah Museum of Natural History) and David Potter (University of Utah)

[317] *Experimental Archaeology: What Can We Learn in the Long Run?*

Experimental archaeology can provide insights into the subsistence activities of prehistoric people. At the Range Creek Field Station, in east central Utah, students participate in timed trials of the collection and processing of "wild" dietary staples to obtain return rates. These experiments are expected to augment previous experiments but they also have an additional component. Collecting rounds of targeted patches are scattered along 20 miles and 3000' elevation of Range Creek Canyon and are expected to provide insights on the movement of prehistoric foragers as well as the placement of their base camps and villages. Patch productivities are expected to vary depending on annual rains and temperature at each location. These constraints will be tracked using two fully equipped weather stations and numerous rain gauges to add an additional dimension to this study. The proposed time depth of this experiment is expected to yield data relevant to understanding prehistoric subsistence and will likely demonstrate significant year-to-year variance in the return rates of the available options.

Springs, Lauren (University of Texas) and Sophia Mavroudas (Texas State University)

[103] *Histological Analysis of Skeletal Remains at St. George's Caye, Belize*

The St. George's Caye Archaeological Project in Belize was initiated in 2009 to gain a clearer understanding of the lives and identities of the colonial population in British Honduras. Excavations of the

site have focused on the analysis of cultural and skeletal remains uncovered in a disturbed and mostly unmarked cemetery. In 2012, a total of 21 burials had been excavated. Demographic information was determined for each of the individuals using traditional morphological and metric analyses. However, the analysis was limited due to the fragmentary nature of the remains and taphonomic alteration to the site. This was particularly problematic when trying to estimate the age and ancestry from the skeletal elements. In an effort to clarify the data, skeletal samples of a subset of the individuals were removed for histological, isotopic, and genetic analyses. A comparison of the preliminary data and the results of histological age estimation as outlined in Thomson (1979) are presented here. It is our hope that this and future analysis of the site will allow for a more complete understanding of the colonial site.

Spurr, Kimberly [247] see Pilles, Peter

Spurr, Kimberly (Museum of Northern Arizona / Past Peoples Consulting) and Heidi Roberts (HRA Associates, Inc.)

[247] *Mortuary Practices of Fifty-Four Individuals Recovered from a Large Virgin Branch Puebloan Habitation in Kanab, Utah*

This paper examines the mortuary practices for 54 individuals recovered from 29 burial features during the Jackson Flat Reservoir Project data recovery investigations in Kanab, Utah. All of the burials were excavated from a large Virgin Branch Puebloan site—42Ka6165—that was occupied during the Basketmaker II to Pueblo I periods. The portions of the site excavated contained over 30 pithouses, dozens of massive slab-lined storage cists and bell-shaped pits, and hundreds of extramural features. Human remains were concentrated in the oldest of the site's three habitation areas, and also in a discrete cemetery area located between the habitation loci. The presence of an "oversized" pit structure, the prevalence of worked and unworked turquoise ornaments, plus the association of turquoise ornaments primarily with infants has implications for the importance of this site within the Virgin Puebloan region and possibly within the greater Southwest.

Stahl, Ann (University of Victoria)

[243] *Situated Learning & Gendered Social Fields: Crafting in Contexts of Shifting Global Exchange*

A genealogical approach to suites of practices and their complementarity across productive domains (e.g. diverse crafts) provides insight into how broader political economic changes over the last millennium conditioned situated learning and knowledge transmission in relation to gendered social fields in the Banda area of Ghana. Drawing on data from the long-term Banda Research Project, I explore regional networks of learning and cultural transmission in relation to shifting contexts of predation and power associated with the transition from Saharan to Atlantic exchange. Using diverse lines of evidence, the paper asks how situated learning and knowledge transmission related to the shifting scales and topologies of social networks, as well as to performative engagements with a changing array of materials. Evidence for repetition, improvisation and affiliation in practices of potting and metal working provide insight into how communities of practice were produced, reproduced and reconfigured through these transitions. These 'ways of doing' were enmeshed in broader political economies and constellations of practice that may have been differentially experienced by their constituent members, with implications for the transmission of knowledge across generations and between regions.

[243] Chair

Stahl, Peter (University of Victoria)

[250] *Integrating Archaeobiological Data in the Neotropics with Debby Pearsall*

Collaborative research with Deborah M. Pearsall has led to the productive integration of archaeobiological data recovered from archaeological sites spanning millennia of human occupation in the coastal lowlands of western Ecuador. Contextual associations of archaeobotanical and zooarchaeological specimens have been used to generate inferences about indigenous pre-Columbian activities including landscape manipulation, forest fragmentation, indigenous agro-ecology, and trade networks. The foundation and subsequent elaboration of inferences derived from the integration of archaeologically recovered archaeobiological data are discussed.

Stahle, David (University of Arkansas), Jose Villanueva (INIFAP, Gomez Palacio, Durango, Mexico) and Julian Cerano (INIFAP, Gomez Palacio, Durango, Mexico)

[158] *The Montezuma Baldcypress Record of Moisture Variability over Mesoamerica during the Past*

Millennium

Megadrought has been implicated in pre-Conquest cultural development and decline at several pre-Hispanic city-states in Mesoamerica. However, the tree-ring record in Mesoamerica has not been long enough to extend back into the pre-Hispanic era to test hypotheses about climate and cultural change, or to help improve the dating of archaeological remains. We have developed four new tree-ring chronologies for Mesoamerica using ancient Montezuma baldcypress trees (*Taxodium mucronatum*) from the Rio Nazas and Rio San Pedro Mezquital, Durango, Barranca de Amealco, Queretaro, and Tzimol, Chiapas, which date from 1210–2008, 1075–2012, 771–2008, and 1280–2010 C.E., respectively. These chronologies have been used to reconstruct early growing season moisture conditions and indicate that the mid-12th century drought, the worst megadrought yet identified in the North America tree-ring record for the past 1200-years, extended into central Mexico and was approximately contemporaneous with the decline of the Toltec capital of Tula. The new reconstructions indicate profound drought during the early 15th rise of the Aztec state and during the Spanish Conquest of Mexico during the early 16th century. The Tzimol chronology has been used with a shorter chronology from the Rio Lagartero to reconstruct moisture variability over Chiapas and Guatemala for the past 500 years.

[289] *Discussant*

Staller, John (The Field Museum)

[150] *Political Economy, Ideology, and Language in Ancient Ecuador: Regional Developmental Period (ca. 300 B.C.-A.D. 800)*

The cultural and ideological integration of ancient Ecuador is associated with the spread of maize, Spondylus/Strombus shell artifacts, ceramic technology, and metallurgy in the context of long-distance interaction ca. 1400-300 B.C. Coastal and highland Ecuador were unified early on by vast networks of roads, that facilitated the spread of the Quechua and Aymara language families and economically unified vast highland and coastal regions. Multidisciplinary evidence from the Regional Developmental Period suggest language, religious ideology, and adaptation to the extreme Andean verticality were critical factors in the similarities and diversity of material and architectural responses and their mosaic of cultural expressions.

Stanchly, Norbert [252] see Powis, Terry

Standing Rock Sr., Duncan [77] see OBoyle, Robert

Stanish, Charles (Cotsen Institute, UCLA), Michiel Zegarra (UNSM), Kelita Perez (UNSM) and Henry Tantalean (Cotsen Institute, UCLA)

[146] *Paracas Period Settlement Clusters in the Upper Chincha Valley, Peru.*

Three seasons of survey and excavation reveal a complex pattern of linear geoglyphs and settlements in the upper Chincha Valley of coastal Peru. Excavations indicate that the settlements are largely Paracas in date. The data indicate that the Paracas period settlement pattern in this chaupiyungas area was characterized by clusters of platform mounds, ceremonial structures, habitation sites and associated geoglyphs. This pattern predates Nasca period geoglyphs typical of valleys to the south. These data provide new information on the context in which the geoglyph-building tradition in the south developed over time.

Stankowski, Cindy [68] see Muniz, Ad

Stansell, Ann (CSUN)

[174] *Memorialization and Memory of Southern California's St. Francis Dam Disaster of 1928.*

In studying the interrelated themes of memory, materiality, and heritage, scholars have recently focused on how landscapes, monuments, and other mnemonic devices influence the formation and maintenance of public memory. Utilizing this approach, archaeologists can examine how memory is grounded in a local community and transmitted through society, revealing the role that landscapes and objects play in the construction of memory. Resulting in the 2nd largest loss of life in the state's history, Southern California's largely unheard-of St. Francis Dam Disaster of 1928 provides excellent circumstances for studying catastrophe and memory, and for looking at how political, economic, and social forces impact memorialization and processes of remembering and forgetting. This poster will explore how the disaster and the dead have been commemorated both physically and conceptually throughout the landscape of

the 54-mile flood zone, and will discuss the impact that failing to memorialize has had on the social memory of this catastrophic event.

Stanton, Travis [31] see Pagliaro, Jonathan

Stanton, Travis (University of California Riverside)

[279] Evaluating Formative Period Yaxuna through Monumental Architecture

Recent research focused on the monumental groups of Yaxuna, Yucatan has shed light on the scale and nature of Formative Period public architecture at this early urban center. The current data indicate that this site was established around the ninth century B.C. and quickly grew into one of the largest Middle to Late Formative centers in the central northern lowlands. This paper specifically focuses on the dating of floor sequences in two of the acropolis groups located in the core of the site, as well as in the outlying Tzacaul Acropolis, a monumental group found three kilometers to the east of central Yaxuná, but connected to the core by a raised causeway. Finally, horizontal excavations conducted in the E-Group plaza are analyzed. The implications of these data are discussed in relation to early urbanism in the northern Maya lowlands and exchange relationships to Formative Period sites in Petén.

Stapleton, Charles (Northern Illinois University)

[91] Teotihuacan Predatory Animal Imagery Revisited

A rich and varied repertoire of feline, canine and raptorial bird representations have been found at the Classic-period site of Teotihuacan, Mexico and other related Mesoamerican sites. These painted and sculptural sources are often seen as direct referents to the phenomena of human heart-sacrifice and warfare. The unquestionable predatory prowess of these animals in their natural habitat and a significant body of literature support this set of interpretations in many contexts. However, this corpus also holds additional, largely untapped information that invites scholars to revisit and, in some cases, reconsider their original meaning and function. This paper will focus on alternate and recontextualized interpretations of this special subset of Teotihuacan iconography.

Stapleton, Charles [183] see Stapleton, Maria

Stapleton, Maria (Northern Illinois University) and Charles Stapleton (Northern Illinois University)

[183] Tlaloc: Persistence of an Aztec Deity into Early Colonial Mexico

Far from disappearing, some Late Postclassic images of Aztec deities survived the early Christian evangelization of central Mexico thanks to syncretism with the symbolism and function of important Christian figures. Despite widespread social and religious changes, the Aztec rain-god Tlaloc persisted in the ideology of Mesoamerican people. Figural representations of Tlaloc and associated cult practices gradually merged with those of a new symbolic figure. Christ, a personage of central importance in Christianity, became the recipient of the all qualities previously assigned to the Aztec god Tlaloc. The study of an early sixteenth-century maize-based crucifix brings to light the Mesoamerican transmigration of Tlaloc's qualities and attributes into an officially accepted Christian figure. This holistic study supports claims for the continuity of pre-Hispanic beliefs and a hybridization of indigenous and Christian symbols in early colonial Mexico.

Stark, Barbara (Arizona State Univ)

[281] Are You Being Served by Formal Mesoamerican Ballcourts?

The social roles of the Mesoamerican ballgame have been examined through settlement patterns with success, revealing likely political and social mediation among polities or communities. But who could witness a game? Lines of sight toward the formal court from surrounding architecture at centers in south-central Veracruz yield an estimate of numbers of viewers. The court viewership is compared to public plaza assembly spaces to determine whether ballgame viewership was more restricted. Comparison of these values for primary and secondary centers addresses the consistency of social separations in the political hierarchy.

[101] Discussant

Starkovich, Britt (University of Tübingen)

[201] Climate Change, Human Population Growth, or Both? Upper Paleolithic Subsistence Shifts in

Southern Greece

Changes in subsistence patterns during the Upper Paleolithic and Mesolithic at Klissoura Cave 1 in southern Greece indicate that some shifts track local climatic changes, while others do not. Specifically, increases in ungulate species diversity correlate with wetter periods, and greater abundances of certain dry-loving small game animals (e.g., great bustard) correspond with dry periods. Other large-scale diachronic shifts, such as the increased importance of low-return small game animals (e.g., hares and partridges), occur over the occupation of the site irrespective of environmental conditions. It was hypothesized previously that this relates to local human population growth over the course of the Paleolithic. New data from a nearby site, Kephaliari Cave, augment this hypothesis. The site complements the Aurignacian and Gravettoid occupations at Klissoura and also contains a robust late Upper Paleolithic component. Ungulate species diversity is high at Kephaliari, and there is a greater reliance on low-return small animals (including fish) than at Klissoura. This presentation examines changes in the faunal spectra of the two sites in the context of regional environmental change in order to determine the extent to which climatic change or population growth were the driving forces in subsistence shifts in southern Greece during the Late Pleistocene.

Staurset, Sigrid [58] see Nash, David

Stawski, Christopher (San Francisco State University)

[36] *Landscape, Community, and Human-Environment Relationships in the Lake Pátzcuaro Basin, Michoacán, Mexico: Geospatial Analysis and the Late Postclassic Tarascan Empire*

The Lake Patzcuaro Basin (LPB) in Michoacan, Mexico was the prehistoric core of the Tarascan Empire, a Late Postclassic state that existed contemporaneously with the Aztec Empire. Given the importance of archaeological research in this area, it is only natural that the field of Geographic Information Science (GIS) would find a suitable role, and complement the multiple areas of research and investigation into past human behavior. This paper examines the role of GIS and geospatial analysis in these archaeological investigations of the Tarascan Empire. Specifically, it focuses on the development of prehistoric communities, human- environment relationships, and the emergence of the Tarascan state. This includes the creation of several data sets in a GIS and the utilization of spatial analyses, such as cost surfaces, cost-distance modeling and interaction analysis, to provide two things: 1) an interpretive framework for understanding community formation and coupled human-environment systems that existed over a span of 1,300 years in the lake basin, and 2) the creation of "born digital" data from these geospatial analyses, which can then be used to expand our understanding of prehistoric state emergence in Western Mexico.

Steele, James [16] see Burke, Ariane

Steele, Laura (Eastern New Mexico University)

[46] *Investigating the Dynamic Relationship between People and Turkey in the Pueblo Southwest: The Case Study of Sapawe'uinge*

Ethnographic reports of Pueblo peoples from the twentieth century suggest the use of turkeys for food was taboo, except in rare cases; however some archaeological interpretations, regarding Ancestral Pueblo sites predating A.D. 1300, have cited turkeys as being an integral part of the Puebloan diet. This project seeks to understand if and when a change in turkey-use within Puebloan diets occurred in the late prehispanic or Historic period, and why this change may have occurred. To address these issues, I examine faunal remains from the ancestral Tewa site of Sapawe'uinge (LA 306) located in the Rio Chama watershed in northern New Mexico. Sapawe'uinge, which spans the Classic period (A.D. 1350–1600), is an ideal context for understanding Puebloan subsistence due to a long occupation ranging from Tewa coalescence to Spanish colonization, as well as the site's history of extensive archaeological excavation. By sampling midden, room, and kiva contexts, I use indices to track proportions of turkey compared to proportions of other animals often associated with subsistence through the Protohistoric period. I then relate these results to broader trends in Pueblo-turkey relationships across the American Southwest.

Steelman, Karen [156] see Bates, Lennon

Steelman, Karen (University of Central Arkansas)

[199] *Review of Rock Art Dates for the Lower Pecos, TX*

The Lower Pecos Canyonlands was the original study area for Rowe and his Texas A&M University chemistry laboratory when developing the plasma-chemical extraction technique to radiocarbon date rock paintings. Thirty-three radiocarbon dates from eleven different sites have been determined using plasma oxidation and AMS radiocarbon dating. For the Pecos River style, thirty dates from seventeen paintings at nine different sites have been reported. There are three additional radiocarbon assays: one for a Red Monochrome painting; one for a Red Linear painting; and one for an unclassified charcoal deer. While the Lower Pecos Canyonlands have been considered to be one of the best-dated rock art regions in the world, this review suggests that further research is needed.

[156] Chair

Steelquist, Robert (NOAA Maritime Heritage Program)

[136] Discussant

Steinbrenner, Larry (Red Deer College)

[153] *Managua Polychrome: The Missing Link to Mesoamerica?*

First described by Samuel Lothrop in Pottery of Costa Rica and Nicaragua (1926), the distinctive ceramic type Managua Polychrome has been largely neglected by archaeologists working in Pacific Nicaragua. Commonly identified as a minor local product of the Managua-Masaya region and generally excluded from the loose grouping of supposedly "Mesoamerican-influenced" ceramics often referred to as Nicoya polychromes, Managua Polychrome in fact seems to represent a direct analog of ceramic types found much further afield, including types associated with trading centres in Chiapas and northern Honduras that ethnohistorical accounts associate either with cultural groups indigenous to Nicaragua or with ethnic enclaves of Mesoamericans. This paper will provide a detailed description of the type and discuss some of the possible implications of its apparent links to Mexico and Honduras with respect to ongoing efforts to understand the arrival of Mesoamerican peoples in Pacific Nicaragua during the Postclassic Period.

[153] Chair

Stelle, Lenville (Illinois State Archaeological Survey)

[248] Chair

Stellian, Tatiana and Delia Llamoja Vega

[285] *Archaeobotanical Studies in the Central Coast of Peru. The Case of the Inca site of Panquilma and its Distribution, Consumption and Manipulation of Native Andean Plants*

The excellent conservation of the vegetable remains at the Inca site of Panquilma has developed a new interest in the archaeological research on this site. The information about the distribution, consumption and manipulation of certain native plants can help us to understand the social inequality established among the different groups that occupied the site. The archaeobotanical research focused on the comparison of public and domesticate sectors (respectively sectors 1 and 2). Our aim was to try to discover if there existed a distinction between the access of some or all of the plants and the reason for this. In this communication, after a brief introduction to the archaeobotany, we are going to present independently the results of the analysis of archaeobotanical remains of both sectors. Then we are going to compare the conclusions of the two areas. Finally, this will allow us to present some preliminary conclusions on the socio-economic-political relationship between both sectors.

Stemp, Michael [335] see Stemp, W. James

Stemp, W. James (Keene State College)

[335] *3D Imaging Technology and Multi-scalar Analysis of Stone Tools: Morphology, Reduction, and Use-wear*

Recent advances in 3D imaging technology and better access to 3D printers provide archaeologists with powerful new tools for analyzing material culture and preserving and sharing information. In particular, lithic analysts have been drawn to this technology given its many potential applications for stone tools both in the field and in the lab. For this study, we took 3D images of experimentally used stone tools made from a variety of raw materials (chert, flint, glass, obsidian and quartzite) using a laser imager (reverse engineering model) to reproduce tool morphology and to test how such images may assist in reconstructing reduction techniques. Edge damage on these tools was also examined using the images to establish whether low-power use-wear analysis was possible. The precision and accuracy of tool

surface reproduction in the 3D images is evaluated in terms of analyses at multiple scales.

[335] Chair

Stenton, Douglas [115] see Milne, Brooke

Stephenson, Keith (USC Institute of Archaeology and Anthropology) and Karen Smith (USC Institute of Archaeology and Anthropology)

[263] *G.S. Lewis-West, South Carolina: A Deptford Period Site in Regional Context*

The G.S. Lewis-West site, located in the Upper Coastal Plain of the Savannah River, is unique in the region for its rich assemblage of Woodland period artifacts and cultural deposits. Over 500 features, 50,000 ceramics, and a 25-cm-thick midden, in addition to rare exotics and notable lithic, faunal, and botanical remains, point to a substantial occupation of the landform from at least 200 B.C. In this poster, we re-examine the Lewis-West excavation data generated in the mid-1980s along with a current series of radiocarbon dates to situate the occupation of Lewis-West into the larger Woodland period world.

Steponaitis, Vincas [231] see Nyman, James

Sterling, Kathleen (Binghamton University) and Kelsie Martinez (Binghamton University)

[240] *Feminist Communities of Practice in Archaeological Research and Teaching*

Feminist archaeology is often conflated with gender archaeology, and as such, research and teaching in which gender does not appear to be the primary focus can be seen as being outside the scope of feminism. However feminism is relevant in all aspects of teaching and research because it is about practice and action. Regularly using intersectional approaches provides opportunities to bring feminist practice to everyday work. We will describe one area, Feminist Communities of Practice, where we see potential for the constant integration of theory and practice.

Sterling, Sarah [286] see Butler, Virginia

Sterner Miller, Katherine [255] see Jeske, Robert

Stevens, Nathan [166] see McGuire, Kelly

Stevens Nelson, Erin [260] see Peles, Ashley

Stevenson, Christopher (Virginia Commonwealth University)

[287] *A Single Step Method for Obsidian Hydration Dating Using Infrared Photoacoustic Spectroscopy*

The obsidian hydration layer may be measured using a variety of technologies that include optical microscopy and hydrogen depth profiling by secondary ion mass spectroscopy (SIMS). Photoacoustic spectroscopy (PAS) is a third option which uses infrared energy to quantify the amount of ambient water that has diffused into the surface of the obsidian over time as well as the quantity of structural water contained within the non-hydrated glass structure. This latter variable is the primary determinant of the hydration rate. In the method developed here, the multiple water bands collected by PAS in the mid-infrared region provide the parameters necessary for the calculation of quantitative age estimates.

Stevenson, Christopher [287] see Rogers, Alexander

Stewart, Caitlin (University of Mississippi) and Gabriel Wrobel (Michigan State University)

[70] *A New Approach for Calculation of MNI in Commingled Remains: Mortuary Analysis of Caves Branch Rockshelter, Belize*

Excavations at Caves Branch Rockshelter in the Caves Branch River valley, Belize have revealed a mortuary population spanning the Classic period. Individuals of both sexes and all age groups were represented in the mortuary sample. Like many other cave and rockshelter sites, extensive looting and repeated intrusive burials has created a matrix of highly fragmented and commingled bones. This taphonomic history severely hampers estimates of the minimum number of individuals (MNI) and the

reconstructions of mortuary rituals in caves and rockshelters. Using a new coding system to identify overlapping bone features, a digital inventory of skeletal remains was created in attempt to ascertain an accurate MNI for the Caves Branch sample. This new technique offers a more systematic way of determining MNI of burial populations when preservation and contexts are not ideal and can be applied to a myriad of poor mortuary situations.

Stewart, Haeden [230] see Hall, Katherine

Stewart, Andrew

[246] Viewing Cultural Landscapes in the Long and Short Term

Mike Jochim's view of archaeology as long-term ethnography, with all manner of variation in year to year practices, has provided a call to focus our attention equally on ephemeral as well as large, stratified sites. Investigating variation in behavior requires analysis using techniques like GIS and simulation, in order to achieve more than simply coarse-grained generalizations. In the recent settlement records of the Canadian Arctic and Subarctic, we think we have access to a relatively fine-grained record due, in part, to favourable conditions for preservation and visibility, but also access to informant histories. Sites representing a wide range of behavior and scale of activity are represented across these landscapes. Individual as well as aggregate responses to environmental challenges and opportunities are in some manner accessible through the combination of the archaeological, documentary and oral history records. How has this favourable circumstance informed our understanding of how cultural landscapes evolve; and what is the relationship of these landscapes to individual or small-group behavior?

[246] Chair

Stewart, Haeden (University of Chicago), Cameron Gokee (University of Michigan) and Jason De Leon (University of Michigan)

[328] Terror in the Desert

Since the early 1990s, the American policy along the U.S./Mexican border has explicitly used geography as a tool to deter and punish undocumented migration. Extreme environments, such as the Sonoran desert, have been left un-walled, with the intention that the harsh environment will be too painful to cross. Contrary to this assessment, over this period millions of migrants have made this crossing. At the same time, due to the harshness of the area, thousands have died. Since 2008, the Undocumented Migration Project (UMP) has used traditional archaeological techniques to find, map, and analyze the trails these migrants have used over the past fifteen years through the artifacts they have left behind. Using data collected by the UMP this paper attempts to show how American border policy has increasingly pushed migrants into crossing through increasingly remote and dangerous areas. More specifically, this paper will discuss how the Department of Homeland security has transformed the desert into a weapon for border containment, and how this weaponization is indexed in the material record. Over the past fifteen years, this record shows increasing levels of migrant injuries, increasing use of painkillers and bandages, and ultimately, increasing numbers of migrant deaths.

Stich, Kyle (Louisiana State University) and David Chicoine (Louisiana State University)

[245] Surf and Turf: Maritime and Agrarian Economies at the Early Horizon Center of Caylán, Nepeña Valley, Coastal Ancash

This paper explores the relationships between Andean coastal adaptations and processes of developing social complexity as viewed through the processing, consumption and discard activities related to maritime and terrestrial resources at the center of Caylán. This large urban settlement developed in the coastal portion of the Nepeña Valley, Ancash (Peru) during the Early Horizon. We integrate various lines of evidence including animal remains, macrobotanics, soil samples, coprolites, and material culture to shed light on local practices. In Nepeña, the Early Horizon marked an expansion of agrarian practices, and a continuing reliance on marine resources as common foodstuffs and raw materials. We adopt a multiscalar approach from the regional to the local, and focus on the contexts of process, consumption, and discard of different types of resources in order to understand the combined, dynamic meanings of maritime and terrestrial economies. In particular, we aim at going beyond the traditional cultural ecological debates to focus on the social and political aspects of exploitation and management of coastal resources in the context of incipient urbanism.

Stinchcomb, Gary [209] see Ferraro, Joseph

Stiner, Mary (University of Arizona)

[71] *Finding a common band-width: Causes of convergence and diversity in Paleolithic beads*
Ornaments are the most ubiquitous art form of the Late Pleistocene. This fact suggests a common, fundamental function somewhat different to other kinds of Paleolithic art. While the capacity for artistic expression could be considerably older than the record of preserved (durable) art would suggest, beads signal a novel development in the efficiency and flexibility of visual communication technology. The UP was a period of considerable regional differentiation in material culture, yet there is remarkable consistency in the dominant shapes and sizes of Paleolithic beads over >25,000 years and across vast stretches of space, even though they were crafted from diverse materials and, in the case of mollusc shells, diverse taxonomic families. Cultural and linguistic continuity cannot explain the meta-pattern. The evidence indicates that widespread adoption of beads was not only about local and sub-regional communication of personal identity or group affinity, but also an expansion in the geographic scale of social networks. The obsession with rounded basket-shaped shells in particular related in part to their light weight, wearing comfort, and visual attractiveness. The conformity of the beads grew spontaneously, in a self-organizing manner from individuals' interest in tapping into the network as a means for managing local risk.

Stites, Michael (University of Wyoming), Robert J. Hoard (Kansas Historical Society) and Rolfe D. Mandel (Kansas Geological Survey/University of Kansas)

[280] *Calf Creek in Kansas: The Northwestern Frontier*

Mid-Holocene Calf Creek sites are well documented in Arkansas, Missouri, Texas, and Oklahoma, but less so in Kansas, where most Calf Creek points are surface or creek-bed finds. However, recent studies from a stratified multi-component site, 14CW402 (Site 98), and another site that likely is stratified, 14CO120 (Grouse Creek), provide new data on the Calf Creek complex for southeast Kansas. This paper presents information on the known distribution and nature of Calf Creek sites in Kansas, data on tool-stone sources and their significance, relationships to other regional archaeological manifestations, the environmental and geomorphological settings of the sites, and the effects of the Altithermal climatic episode on human activity and site preservation.

Stockett Suri, Miranda [161] see McFarlane, William

Stockett Suri, Miranda (Queens College)

[296] *Archaeology Should Be Able to Adapt*

Archaeology has frequently been accused of losing its relevance--a problem which has only worsened in the years since I earned my Ph.D. and joined the ranks of working archaeologists. A lack of adaptability within the discipline and among its practitioners is a major source of this problem. We cling to the past represented by our teachers and mentors who worked in an era that bears little resemblance to the academic, political, and cultural climate of today. The tenure track positions they enjoyed are an unattainable dream for most archaeologists of my generation, teaching and education are increasingly devalued, and multi-year, big budget field projects are less and less tenable due to funding cuts and political instability in our regions of study. While most are willing to acknowledge these problems, we seem paralyzed when it comes to solving them. It is my hope that collectives, such as the one convened for the purposes of this session, may collaboratively tackle these challenges--both ideologically and practically. In short, I argue that archaeology and archaeologists must adapt to today's academic and political realities if we wish to escape obsolescence.

Stöckli, Matthias (Dep. de Antropología y Sociología, Universidad del Valle de Guatemala)

[122] *References to Sound in the Rabinal Achi, Guatemala*

Alphabetic texts written by Mayan authors after the Spanish conquest contain quite a few references to the production, perception, and conceptualization of musical as well as non musical, human-made as well as natural sounds in pre-Columbian times. Such a text, originating in the Guatemalan highlands, is the Rabinal Achi, a dance-drama still performed today and therefore especially rich a musicological object of study as it consists of both actual sounds and textual references to them. In this and other colonial documents human-made vocal or instrumental sounds are often related to political power, war, and sacrifice. Again, this becomes especially clear in the Rabinal Achi where one of the protagonists has not only several sets of musical regalia to call his own but, after being captured in war and certain of his immediate death by sacrifice, also ascribes to their sounds a life-transcending power. The focus of this presentation is on those sounds and their meanings.

Stodder, Ann [247] see Neitzel, Jill

Stodder, Ann (Office of Archaeological Studies, Museum of New Mexico)

[247] *Violent Death, Social Memory, and the Nature of Persistent Places*

The role of violence in the abandonment of communities in the northern Southwest is a topic of much discussion among archaeologists and bioarchaeologists. Recent advances in behavioral taphonomy and the integration of meticulously detailed site and oral histories enhance our understanding of the processes that precipitated episodes of violence, and the phenomenological aspects of the events themselves. In this paper, I approach the long view of the impact of one of these events, the massacre at Sacred Ridge, and explore the implications for the social and spiritual history of the survivors and perpetrators, and for the nature of Ridges Basin as a historical place in social memory. If burials are a critical aspect of persistent place as the dead continue to occupy their communities, then what kind of persistent place is created by a massacre?

[247] *Chair*

Stoessel, Luciana [6] see Martinez, Gustavo

Stojanowski, Christopher

[303] *The Utility of Intra-Community Approaches in Bioarchaeology*

Bioarchaeology has developed along two independent tracks that determine research approach. Osteobiography provides a combined humanistic and forensic approach that individualizes the past, while population level analyses are more concerned with top down inferences about population affinity, demography, and health in which the individual is often minimized. Mortuary analysis can bridge these distinct research approaches by developing sampling concepts above the individual but below the community level. In this paper I present spatial analyses of phenotypic variation and data on health and diet from two 17th century Spanish mission churches. Methods are presented for identifying kin groups and documenting spatially relevant patterns of disease profiles among graves. The purpose is to demonstrate how the identification of sample groups at the intra-community level can inform inferences of health and diet that are more directly relatable to broader concepts of economic and social inequality. In addition, I discuss the relevance of identifying single interment events for informing the osteological paradox and looking for co-morbid conditions that reflect short term community stressors which may selectively affect certain segments of the population. Both case studies are contrasted with more standard population level approaches in which the site forms the basic unit of analysis.

[64] *Discussant*

Stojanowski, Christopher M. [291] see Hubbard, Amelia R.

Stokes, Robert

[32] *The Cosmopolitan Mogollon Pithouse World: A Reevaluation of the Harris Site Painted Wares*

Emil Haury's pioneering work at the Harris Site in the 1930s helped to establish the Mogollon culture and formed the framework for Mogollon pottery typology. San Francisco Red, Mogollon Red-on-brown, Three Circle Red-on-white, and Mimbres Boldface became diagnostic cultural markers for the Mogollon and the cornerstone for cross-seriation, useful for dating structures and sites. Although spatial, temporal, and production attribute refinements have been made to this basic typology since then, especially within the black-on-white series, the framework and underlying sociocultural and production assumptions behind it remain largely unchanged: the Pithouse period Mogollon were a localized and somewhat insular group who lacked a larger socioeconomic exchange network characteristic of the later Pueblo period groups. However, recent research at the Harris Site by the University of Nevada-Las Vegas is beginning to demonstrate that the Pithouse period Mogollon in the Mimbres region were far more sophisticated culturally, socially, and economically than previously suspected, and, as the recent ceramic analysis results suggest, maintained a strong, vibrant connection to northern, northwestern, and western groups who produced Cibola White wares and early southern Hohokam pottery. Thus, this paper presents new ceramic data that update our understanding of the cosmopolitan world of the Pithouse period Mogollon.

Stokes, Robert [66] see Toney, Elizabeth

Stoll, Marijke (University of Arizona)

[91] *The Ballgame Traditions of Prehispanic Oaxaca*

The ballgame has a long and profound history in both Oaxaca and Mesoamerica. Archaeological evidence indicates that the game was played in the Oaxacan region by the Middle Formative period, and that masonry courts appeared soon after in the Late Formative. Yet the evidence also suggests that the ballgame tradition in Oaxaca is distinct from other regions in Mesoamerica, and may in fact have had multiple traditions present throughout the Prehispanic era. In this paper, I analyze the archaeological, ethnographic and iconographic sources on the ballcourts and ballgame itself to identify the similarities and differences between different ballplaying regions of Mesoamerica. I also critically evaluate the role both the ballcourts and ballgame played in Prehispanic inter-community sociopolitical relationships, and how this role may have varied through time and by region, focusing specifically on Oaxaca. Finally, I present new research on the recently discovered ballcourts in the Nejapa Valley region of eastern Oaxaca. A multiethnic zone both in the past and today, the Nejapa Valley region may have much to tell us about the ballgame tradition within a specific regional and historical context.

[91] Chair

Stone, Pamela (Hampshire College)**[126] *Maternal Health: The Pelvis and Embodied Social and Political Stress***

Early death for females has long been tied to poor maternal health and complications at birth within archaeological studies. But what do we really know about maternal health and obstetric death in ancient populations' and what have we assumed? This paper examines pelvic and occupational stress data from a number of Ancestral Pueblo skeletal populations to move beyond static assessments of obstetrical death for females by understanding skeletal patterns of stress for reproductive aged females and what can be revealed about the social and political contexts of their lived experiences beyond maternity. Skeletal data is framed within ethnographic and archaeological contexts for Puebloan females to frame daily life (occupational stress) and maternal stressors. These data juxtaposed with recent research, strongly suggests that parturition exacerbates the lived experiences of pain and suffering women face. Thus understanding female's roles in community and the structural frameworks (systems of belief, division of labor, structural violence, etc.) that result in a lifetime of embodied trauma and illness are now coming into focus. This new thinking suggests that poor maternal health and death is more of a litmus test to the larger issues females face, and this should be considered as we examine the past.

Stone, Abigail (Washington University in St. Louis)**[205] *Feeding an African City: Mobility, Pastoralism, and the Development of Urbanism in Mali's Inland Niger Delta***

This paper investigates the relationship between nomadic pastoralists and urban populations, presenting a case study of a complex, non-hierarchical relationship between mobile and sedentary populations in Mali's Inland Niger Delta (IND). The ancient city Jenne-jeno (occupied ca. 250 B.C.E.–C.E. 1400) plays a pivotal role in understanding West Africa's archaeological past and challenges conceptions of the relationship between hierarchical social structures and the development of urbanism. Until recently however, little was known about the broader Jenne-jeno urban cluster (>300 sites within 30km) or the role of mobile populations in the urban system. Drawing on four months of excavation at Tato a Sanouna and Thiel, two small sites in the urban cluster, and upon serial, intra-tooth isotopic analysis ($^{87}\text{Sr}/^{86}\text{Sr}$, $\delta^{13}\text{C}$, $\delta^{18}\text{O}$) of cattle, sheep, and goat teeth, this analysis suggests that rather than relying on a single system of mobile pastoralists sustaining a sedentary urban population, the IND population used a diverse system of local and seasonally mobile husbandry as well as import of non-local animals. These findings both corroborate and complicate previous interpretations of urban development in the IND and provide the first concrete evidence of the role of mobile populations in the Jenne-jeno urban system.

Stone, Jessica (University of Oregon), Greg Nelson (University of Oregon) and Scott Fitzpatrick (University of Oregon)**[298] *Demography at the Chelechol ra Orrak Cemetery, Republic of Palau***

The Chelechol ra Orrak cemetery in the Republic of Palau contains one of the oldest (ca. 1700-3000 BP) and largest human skeletal assemblages in Remote Oceania. To date, elements representing a minimum of 40 individuals, including 12 articulated burials have been excavated. In an effort to better understand the life stresses impacting these early inhabitants of the archipelago, we have produced a demographic profile of the individuals represented in this death assemblage. Sex was determined for each identified and numbered individual using a combination of pelvic and cranial traits, while age was determined using epiphyseal union, tooth wear, and pelvic traits. Although there is a slight male bias (7-5) among the

articulated burials, the sexes appear to be equally represented when all skeletal remains are included. Elements have been recovered that represent individuals ranging from prenatal to middle adulthood, with at least 25 percent being younger than mid-teens. Average age at death appears to be relatively young, with the majority of numbered burials being late teens to early 30s with only one aged 40 or greater. Unlike some other cemeteries in Remote Oceania, underrepresentation of younger individuals or females does not appear to be a factor at Chelechol ra Orrak.

Stoner, Wesley (University of Missouri Research Reactor)**[37] Political Boundary Dynamics in the Tuxtla Mountains, Veracruz, Mexico**

Research in the Classic Tuxtla Mountains of southern Veracruz Mexico has focused greatly on Matacapan and its connection to Teotihuacan. This disproportionate focus has skewed our view of cultural adaptations in the region. Recent studies at two other major centers in the region, Totocapan and Teotepec, suggest that Matacapan was not a typical representation of Classic Tuxtla culture. The three centers were contemporaneous, and comparable in size and monumentality, but Totocapan and Teotepec did not share Matacapan's use of central Mexican symbols. The three settlements appear to have been capitals of sovereign polities. I present an evaluation of political, cultural, and economic boundaries using a combination of GIS modeling and qualitative characterization. All three boundaries are characterized using a general model of boundary dynamics featuring seven variables designed to characterize the nature of cultural and economic interaction among the three polities. In the Tuxtla case, the three discreet polities engaged in ceramic and obsidian exchange and some sharing of material culture styles. Other cultural traits, such as those adopted from Teotihuacan, were not shared across political boundaries. The boundary zone between Matacapan and Totocapan, however, displays a blend of economic and cultural influence from both polities.

Stoner, Edward (Western Cultural Resource Management, Inc.)**[115] Lost in the Data: A Reassessment of the Presence of Children at Quarry, Heat Treatment, and Projectile Point Manufacturing Sites in White Pine County, Nevada**

In my Master's thesis, I told a story of a male hunting group who quarried chert nodules from limestone, reduced these into large bifaces, and took them to a nearby site in which they were heat treated. In gearing up for the hunt, the men detached flakes of suitable size and shape from the heat treated cores and made Rosegate preforms and arrow points. They maintained their workshop and cached thousands of heat treated flakes. Nowhere in my story, however, did I mention child quarries or flint knappers. This is remarkable given the sites might have been perfect classrooms for a novice to acquire those skills in an environment in which lithic raw materials were accessible, abundant, and expendable. In this paper, I reassess existing lithic data sets including the subjective and objective measures of artifact quality, attention to raw material selection, and discard patterns from the Quarry (26WP2418) and the Rosegate Site (26WP4629) and identify the material by-products of novice activities. The identification of children in the archaeological record has the potential to tell a different story of site demography and function; one that is both engendering and inclusive of the social contexts of learning.

Stoner, Wes [275] see Nichols, Deborah

Storey, Rebecca (University of Houston) and Randolph Widmer (University of Houston)**[63] Skeletal Health and Patterns of Animal Food Consumption at S3W1:33 (Tlajinga 33), Teotihuacan**

The skeletons from Tlajinga 33 have high prevalence of skeletal indicators of morbidity. Since this was a lower-status compound of artisans, this could be due to poor diet, as well as an unhygienic environment. Analysis of faunal remains suggests that animal remains were an important and plentiful component of the diet. However, most consist of insects, small fish, reptiles, avian eggs, and small mammals. Of particular importance is the size and nature of these dietary items, as many would be considered vermin which could be incidental in grains. It is important to employ proper recovery techniques to eliminate bias in size and nature of animal remains to obtain an accurate understanding of the total diet. We demonstrate that there was adequate animal protein in the Tlajinga 33 diet but that it was very different than what is usually considered "animal protein." Thus, the residents had access to a nutritious and balanced diet, and this information eliminates protein deficiency as cause of the morbidity. Instead, the focus is on the urban environment and any status disadvantages faced by residents dependent on market exchange for staple foods. Food at Teotihuacan was more likely affected by social inequality than by availability.

Storozum, Michael (Washington University in Saint Louis)**[51] The Middle Kingdom Makes Itself: Archaeology of a Built Environment**

The current period of industrialization in Chinese society is often thought of as a modern phenomenon. However, Chinese states have experienced periods of rapid growth before. During many Chinese dynasties population growth resulted in an increased demand for resources and goods, spurring the need for water management projects, extensive mining and smelting operations, and new agricultural technologies. To place the modern period of industrialization in historical context, an integrative archaeological approach is required. Historical documents, archaeological method, and geoarchaeological data are used in combination to explore past land-use histories, as well as assess the extent and type of environmental impact societies have on natural environmental conditions. Recent geoarchaeological work in Neihuang city, Henan province, China, highlights this approach. Using a deep sedimentary record, archaeological sites, and available historical documents, we attempt to reconstruct a land-use history for the study region to contextualize processes operating in the present but at a much larger scale.

Stott, Jamie**[314] Discussant**

Stovel, Emily [19] see Deibel, Michael

Stovel, Emily (IIAM-UCN and Ripon College) and Christina Torres-Rouff (University of California-Merced)**[150] Multiple Lines of Evidence: Exploring diversity within the consolidation of the Late Intermediate Period in northern Chile.**

The Late Intermediate Period in the San Pedro de Atacama and Río Salado subregions of northern Chile reflects many processes of similarity and difference. Architecturally, defensive settlements were built in both regions at this time. New ceramic styles are shared by both areas while burial practices, in turn, diverge. Each area displayed different amounts of nonlocal material culture in local graves, prompting authors to suggest the increased presence of individuals or cultural influence from southern Bolivia during the latter half of the period. Bioarchaeological work to date, however, belies proposed incursions from elsewhere. This paper employs ceramic evidence, mortuary analysis, and measures of biodistance based on cranial nonmetric traits to explore these coeval processes of cultural convergence and biological diversity. This juxtaposition falls in line with other local studies that show that complex material behavior was deployed in contrast to biological origin throughout prehistory. This study, therefore, breaks down the monolithic homogeneous regional cultures of the Middle Period and questions and contextualizes the ethnic fragmentation that is purported to have characterized the Late Intermediate.

Stover, Clair (Hamilton College), Nathan Goodale (Hamilton College), Alissa Nauman (Hamilton College) and David Bailey (Hamilton College)**[175] Measuring the Matrix II: Elemental Characterization of Sediments from HP 6, Slocan Narrows Housepit Village, British Columbia, Canada**

Housepit 6 (HP6), an unusually large pit house situated in a prehistoric village on the Slocan River in southeastern British Columbia, Canada, was home to hunter-gatherers approximately 2700 B.P. This unique dwelling holds the possibility of increasing our archaeological understanding of social organization among hunting and gathering societies in the Pacific Northwest. We examine evidence collected during the 2013 field season at Slocan Narrows from HP6 with the intention of developing insights into how the inhabitants organized themselves spatially. This project focuses on the elemental composition of sediment samples ($n = 100$) taken from floor and feature contexts within HP6. We prepared the samples and then analyzed them through EDXRF and WDXRF to detect potential chemical signatures of activity areas within the house. We also examined the spatial relationships of features found in, and artifacts collected from, HP6 to results of the elemental analysis. By identifying use-areas, hypotheses can be constructed about the potential social organization of HP6.

Stowe, Michael (Versar) and David M. Hyde (Western State Colorado University)**[137] Settlement Pattern Analysis at the Medicinal Trail Community, Northwestern Belize: Results of Total Station Mapping of the 2013 Season**

This poster presents the results of the most recent season of total station mapping at the Medicinal Trail

Community, a Maya hinterland settlement in northwestern Belize, and integrates it with previous mapping data. Mapping during the summer of 2013 has refined our understanding of the size and distribution of households and numerous landscape features that have been, or continue to be, the focus of excavations. Refinements to total station mapping within the area has revealed (a) the largest, and most complex household groups are associated with ridge tops, (b) possible artificial drainages and reservoirs are associated with dense settlement, and (c) numerous terraces are located on the slopes of the ridges, near some of the drainage features.

Strapazzon, Guglielmo (dBC, Università degli Studi di Padova, Padua, Italy) and Rita Deiana (dBC, Università degli Studi di Padova, Padua, Italy)

[157] *Advanced 3D Visualisation Workflows for GPR Archaeological Prospection Data: Case Studies from Ancient and Contemporary Urban Environments*

The interpretation of GPR data is usually done on two-dimensional time slices or two-dimensional radargrams. This approach is suitable for simple archaeological contexts. However, when we are dealing with more complex contexts, multiphase approaches should be adopted to achieve a better understanding of buried deposits. GPR datasets collected in ancient and contemporary urban environments have been chosen to test the efficiency of the interpretation in a 3D environment and to compare it with 2D and 2D ½ visualization of results.

Straus, Lawrence (University of New Mexico)

[246] *Magdalenian Settlement-Subsistence Systems in Cantabrian Spain*

As closely influenced by Jochim's life-work in the field, this paper describes human adaptations to the environments of the late Last Glacial in Cantabrian Spain. Based on excavations in El Miron Cave in the Cantabrian Cordillera, and on analyses of data from other sites in the Ason River basin, as well as from excavations of Magdalenian (20-13k cal BP) sites throughout this narrow, high-relief, coastal region, it evaluates hypotheses proposing 1. valley-centered local band territories with short, seasonal movements between hub sites near the coast and others in the mountains; 2. local collection of food resources (notably red deer, ibex, salmon) within hub site catchment areas; 3. specialized camps, particularly montane loci for ibex hunting; 4. procurement of non-local, high-quality flints via travel to sources beyond the local valley or inter-group exchange; 5. participation in social networks beyond the Cantabrian region to include the French Pyrenees as manifested in cave and portable art. The data on faunas, lithics, site locations and structures make this one of the richest records for the last few millenia of the Pleistocene and a key source area in the recolonization of northern Europe by humans and other species after the "refugium" period of the LGM.

[71] *Discussant*

Strawhacker, Colleen (National Snow and Ice Data Center, University of Colorado) and Jonathan Sandor

[60] *Maintaining Soil Quality in Irrigated and Dryland Agricultural Fields: A Comparative Study of Upland and Lowland Environmental Impacts in the Hohokam Region in the U.S. Southwest*

Farmers in arid environments across the world use a variety of strategies to bring water to their agricultural fields, including both irrigation from perennial rivers and constructing infrastructure, like checkdams, to divert runoff to dryland fields. These two different agricultural strategies can vary quite a bit in their impacts on soil quality. The Hohokam of southern Arizona are famous for their large-scale irrigated agricultural systems, which fed water to thousands of hectares of agricultural fields throughout the lowland valleys of southern Arizona, but also used upland regions to grow crops in rainfed fields. Both irrigated and dryland agricultural fields in the Phoenix Basin have been little studied, although researchers often hypothesize that problems within those fields, including salinization and flooding, may have led to the depopulation of the region in the mid AD 1400s. This paper will present results from large-scale soil sampling of irrigated fields from the Phoenix Basin and evaluates the impacts of long-term irrigation farming on soil quality within agricultural fields. It will also assess pilot data from soils from upland dry farmed fields and compare how the Hohokam may have used and impacted both lowland and upland agricultural areas differently in the past.

Streeter, Richard [29] see Ingram, Scott

Striker, Sarah (Arizona State University)

[182] *I Saw the Sign: A Comparative Analysis of Warfare Indicators in Ethnographic and Archaeological*

Cases

The majority of societies have at some time participated in a form of warfare. Even so, direct archaeological evidence of warfare, such as battle-related injuries and deaths, is often sparse. Archaeologists therefore often turn to comparative ethnographic research to identify other material indicators of warfare. This work has produced a suite of attributes often associated with warfare, such as defensive site locations, investment in defensive fortifications, and violent imagery, which forms the basis of many warfare models. Despite widespread use of these indicators, there has been little exploration of alternative or evolving explanations for the presence of such indicators. In this paper, we examine the relationship between suggested indicators of warfare and the archaeological record. By comparing cases from the Eastern Woodlands and the Southwest, we will examine the level of correspondence between attributes suggestive of warfare and the archaeological context in which they arise. We will then compare each case to the other cases to see if such attributes are present across the cases in similar contexts, or if their possible meaning is context specific. This work explores whether the attributes currently attributed to warfare provide adequate general insights, or if they are more valuable for understanding particular instances.

[182] Chair

Stuart, David [61] see Runggaldier, Astrid

Stuart, David (The University of Texas at Austin)

[195] Discussant

Sturm, Jennie [155] see Walker, Chester

Sturm, Jennie (TAG Research)

[196] Increasing the Effectiveness of GPR Mapping for Unmarked Burials: A Processing and Analysis Approach

Situations involving unmarked human burials are sadly common, incredibly complex, and often emotionally-charged. Ground-penetrating radar (GPR) is arguably still the single most effective method to locate and map unmarked burials in a non-invasive way. Yet despite many years of proven success in a variety of contexts, the use of GPR to locate and map unmarked burials remains uneven and misunderstood. I argue here that a large part of the confusion surrounding GPR in cemetery contexts can be attributed to the way GPR data are processed and displayed. In other words, both users and consumers of GPR data have come to expect the instant gratification through clear, “x-marks-the-spot” slice-maps, and lacking these, often deem these surveys “failures” prematurely. I argue that any GPR survey, and particularly those involving situations as complex as cemeteries, benefits from a varied data processing strategy and more nuanced approach to data analysis. This presentation draws upon examples from cemetery surveys around the U.S. that might have been considered “failures” had a first-pass processing attempt been dubbed sufficient. It seeks both to address common confusion with data processing and map display, and offer solutions for using these data in productive ways.

Suarez, Rafael (Department of Archaeology, Universidad de la Repùblica (Uruguay))

[69] The Early Peopling of the Uruguay Middle River: New Data, Recent Advances and Perspectives

Uruguay are known in academic circles by the classic Fishtail points, which have been until recently used as practically the only evidence of early settlement in the country. Systematic research to investigate the early human occupation in the North of Uruguay has been undertaken since 2000. The aims of this presentation are analyze developments of Uruguayan new data during the last 14 years of research related to the peopling of South America. Among the principal data we recorded an interesting cultural variability in different designs of projectile points: Fishtail points (ca. 13,000-12,500 yr cal B.P.), K87 Tigre points (ca. 12,280-11,200 yr cal B.P.) and Pay Paso points (10,900-9500 yr cal B.P.). In this paper I explore three major topics. First, Atlantic coast and Uruguay River as a human entry route or way for the exploration of the Southeast of South America. Second, the mobility and territory used by the different groups. Finally, I compare and discuss the Uruguayan data with those of nearby regions such as Pampa (Argentina) and Southern of Brazil.

[69] Chair

Suarez, Sergio [112] see Martinez, Silvia

Suárez, Sergio (Instituto Nacional De Antropología E Historia (INAH))

[60] *Cholula y su paisaje. La utilización del paisaje cultural en la conformación de los calendarios de horizonte.*

Cholula es conocida en el mundo por su Gran Pirámide, por su vocación religiosa y comercial, y por su hermosa cerámica policromía. Si investigamos un poco más, veremos que también se distingue por su estilo arquitectónico, pues muestra su independencia y creatividad con relación a Teotihuacán. Sin embargo existe algo que apenas se está investigado con mayor detalle, pues salvo algunas observaciones que hiciera Tichy (1976 y 1978), en donde reconoce a la ciudad y a su "pirámide solsticial" como el eje rector a partir del cual se orientaron los campos de cultivo, iglesias y asentamientos vecinos, registrando una desviación del basamento de 26° con respecto al norte, que permite, entre otras cosas, que la estructura quede alineada con la salida del sol el 21 de diciembre, y los reportes de Marquina (1975:117), quien agrega que los altares oriente y poniente están orientados con el paso cenital, poco se ha investigado sobre la utilización del paisaje oriente y poniente que se observa desde la Gran Pirámide y que proponemos fue utilizado para estructurar su calendario de horizonte.

Suda, Yoshimitsu (Center for Obsidian and Lithic Studies, Meiji University), Jeffrey Ferguson (University of Missouri Research Reactor Center), Michael Glascock (University of Missouri Research Reactor Center), Vladimir Popov (Far East Geological Institute, Far Eastern Branch) and Sergei Rasskazov (Institute of the Earth's Crust, Siberian Branch of the Russian Academy of Sciences)

[287] *Geochemical Composition of Obsidian from the Shirataki Source, Hokkaido, Northern Japan: Inter-laboratory Check and Its Consequence*

The aims of the present study are to: (1) compare the results of quantitative analysis among independent laboratories, and (2) establish obsidian geochemical reference standards, and 3) compile the quantitative values for the Shirataki obsidian source. Four obsidians from different geologic sites were selected for this study. These were named JOSH-1, JOSA-1, JOO-1 and JOR-1 after the locations of the obsidian outcrops (Hachigosawa, Ajisai-notaki, Oketo and Rubeshibe, respectively). A variety of analytical techniques were used including the EPMA, WDXRF, ICP-MS, NAA and PGAA analyses. The EPMA analysis stands to examine the chemical homogeneity and the petrology of the samples. Other methods serve to determine the whole-rock element concentration in the samples. In this presentation, we first detail the occurrence and petrology of the obsidian. Next, the results of data compilation and their geochemical characteristics are presented. Finally, the utilization of common standards will be proposed.

Sudbury, J. Byron (JS Consulting)

[280] *Phytoliths and Paleosols of Calf Creek Times*

With radiocarbon dates ranging from 4900 to nearly 5500 years ago, the Calf Creek cultural complex in Oklahoma, Kansas, and Texas appears associated with a brief interval of ameliorated climate on the Southern Plains. To better understand the nature of this climate and its effects on vegetation and landscape stability, I report the phytolith signatures incrementally recovered from four buried soils believed to correlate with the Calf Creek cultural complex. Two of these paleosols are in the uplands of northwestern Oklahoma, one is from a small watershed in central Oklahoma, and the fourth is from a tributary to the Verdigris River in the Cherokee Prairie region of northeastern Oklahoma. Calf Creek artifacts have been found near each of these paleosol localities, so the phytolith data are believed to attest directly to ecological conditions when these middle Holocene hunter-gatherers roamed the region.

Sugiyama, Nawa (Harvard University)

[63] *Faunal Acquisition, Maintenance, and Consumption: How the Teotihuacanos Got Their Meat*

Understanding the role of vertebrates in Mesoamerican food systems has often been misunderstood due to the lack of large domesticated livestock that was at the center of Old World subsistence economies. This paper investigates the zooarchaeological record from one of the largest urban centers of the New World at the site of Teotihuacan, to understand the contribution of fauna to their diet. Within this arid highland ecosystem, the process of faunal acquisition, maintenance and consumption is investigated within the context of abundant archaeological, environmental, ethno-historic and ethnographic record to understand the mosaic nature of the Teotihuacan faunal economy. Such evidence is utilized to create a model of household-level management systems that tapped into the diverse local landscape. Furthermore, this system was supplemented by a market economy that imported exotic fauna. While

many animals were not fully domesticated, they were often managed, tamed and controlled to create highly interdependent relationships between the local landscape and the growing human population.

[63] Chair

Sugiyama, Nawa [63] see Somerville, Andrew

Sugiyama, Saburo (Aichi Prefectural U./Arizona State U.)

[279] *The Nature of Early Urbanism in Teotihuacan*

I characterize the process of incipient urbanization during Late Preclassic Teotihuacan (A.D. 1 to 300). The city of Teotihuacan was created rather suddenly to an unprecedented scale around the first century A.D., developing the unique city layout and distinctive architecture style seen today by the 3rd century. I focus on materials corresponding to this foundation period: earlier structures disclosed inside the Moon Pyramid, those found recently in the Sun Pyramid, and remains existed in pre-Citadel periods. I also analyze symbolic objects found in relation to these earlier structures that suggest strong concerns on materializing their innovative worldview and related astronomy/calendar complex. In order to compare or integrate these monuments I re-interpret the symbolic city layout and modification/enlargement programs using newly created 3D architectural and topographic maps. I discuss city orientations, symmetrical/proportional spatial distribution and dimensions of the monumental zone applying my Teotihuacan measurement unit study. I tentatively propose "districts" that functioned along the Avenue of the Dead and the possible meanings encoded in early city formation. It seems urbanism in early phases at Teotihuacan developed along with innovative cosmological ideas, powerful rulership with highly organized political/military institutions that probably triggered population growth, economic activities, social hierarchy, and political conflicts.

Sugrañes, Nuria [11] see Franchetti, Fernando

Sulkosky, Rita A. [210] see Daughtrey, Cannon

Sullivan, Timothy (University of Pittsburgh)

[120] *The Spectacular Polity: The Evolution of Ceremonial Practice and Political Authority from the Middle Formative through Late Formative Periods in the Chiapas Central Depression, Chiapas, Mexico.*

From the Middle to the Late Formative period in the Chiapas Central Depression the layout of civic-ceremonial spaces changed substantially, from sprawling plazas, suggestive of public processional ceremonies, to increasingly smaller and less visible spaces, suggestive of more restricted ceremonial practices and a narrower intended audience. In this paper I analyze changes in the organization and use of civic ceremonial space at political centers in the Chiapas Central Depression and the implications of these changes on relationships between rulers and ruled. I also explore the notion that changing conceptions of ceremony and rulership were linked to geopolitical shifts that accompanied the decline of the Gulf Coast Olmec polity of La Venta and the concurrent rise of Lowland Maya political centers.

Sullivan, Stephanie (University of Arkansas)

[157] *Revealing Architectural Variation through Near-surface Geophysical Survey at a Multi-mound Civic Ceremonial Site in Northwest Arkansas*

Sporadic archaeological investigations have revealed little about the breadth of architectural variation that existed among pre-colonial, aboriginal societies in the Western Ozark Highland region. The results of recent near-surface geophysical survey at the Collins Site, a possible Early and Middle Mississippian period (ca. A.D. 900-1400) multi-mound site in Northwest Arkansas, suggest that geophysical survey is an efficacious method for investigating architectural distribution and variation on a landscape level in the Ozark Highlands. Magnetic gradiometry and ground-penetrating radar yielded a preliminary view of the distribution of architectural features at the site including mound-top enclosures and a number of off-mound rectangular and possible circular structures. A comparison of the characteristics of the geophysical anomalies identified at the Collins site with features excavated at other sites in the Ozark Highlands support the interpretation of the Collins site as a paramount mound complex associated with ritual mortuary events. Because excavation is not permitted at the Collins site, the use of near-surface geophysical survey is vital to the understanding of the site within the archaeological context of the region. In addition, the work exemplifies the importance of the role of geophysical technologies in the field of archaeology.

Sullivan, Lauren (University of Massachusetts), Palma Buttles (Carnegie Mellon University) and Fred Valdez, Jr. (University of Texas at Austin)

[292] Connecting the Dots: Colha, Kichpanha, and Maax Na, Preclassic to Late Classic Interactions

Drawing on data collected in northern and northwestern Belize, this paper will examine how the interdependency between different Maya communities varies over time based on changing access to resources and the political landscape. Several broad generalizations can be posited from research in the northern Belize region. In order to achieve a complete picture of how sites interacted with one another - local and regional processes will be considered. Ceramic and other data indicate that the widespread regional exchange networks used by emerging elite groups to consolidate power in the Preclassic shrinks during the Classic period when more local autonomy and organization is observed. Data recorded from the ancient Maya sites of Colha, Kichpanha, and Maax Na, as well as settlements near these centers, are utilized in this analysis.

Sundstrom, Linea (Day Star Research)

[156] A Mammoth Mistake: Datura Moth Imagery at the Bluff Petroglyph Site, Utah

Researchers have proposed that a petroglyph panel near Bluff, Utah, includes depictions of two mammoths. While mammoths and other Pleistocene fauna are common in European rock art, no convincing examples have been identified in the Americas. This analysis brings to bear a combination of geomorphology, zoology, ethnography, and archaeology and concludes that the petroglyphs are not mammoths, but hawk moths or sphinx moths in various stages of metamorphosis. The attributes of the animals depicted are more consistent with these moths than with mammoths. Further, the rock surface on which the petroglyphs are made was not exposed until after the mammoth went extinct in the region. Ethnographic research indicates that this moth, which pollinates datura, was important in Southwestern religion and iconography.

Supak, Karen B. [86] Moderator

Supernant, Kisha [79] see Coons, Aaron

Supernant, Kisha (University of Alberta, Department of Anthropology), Aaron Coons (University of Alberta, Department of Anthropology) and Katie Tychkowsky (University of Alberta, Department of Anthropology)

[231] Different Assemblages, Same People? Comparing Métis Wintering Site Assemblages on the Canadian Prairies

Relationships between artifact assemblages and cultural identities are complex and difficult to disentangle. The Canadian west during the 1800s provides an interesting historical and archaeological case study that has potential to shed light on the dynamics of settlement, material culture, and the process of identification. During the early to mid-1800s, a set of cultural identities emerged from historical processes of contact to form a new peoples: the Métis. Based originally in the Red River Settlement, some of the Métis began to expand west after 1845, forming interconnected wintering communities to participate in winter bison hunting. These wintering communities were almost entirely inhabited by Métis families, so the assemblages from wintering sites present a test case to examine the material culture(s) of the Métis during the mid- to late-1800s. In this poster, we present results from previous and new excavations of Métis wintering sites in Alberta and Saskatchewan. We compare assemblages across sites and make inferences about the complex nature of Métis identities during the nineteenth century.

Surovell, Todd (University of Wyoming) and Matthew O'Brien (University of New Mexico)

[16] Mobility at the Scale of Meters

Mobility is typically conceived of as a process that operates on the scale of kilometers. Mobility, however, occurs at many different scales, and within the context of residential sites, movement very often operates at the scale of meters. Furthermore, small scale decisions about mobility and spatial positioning within residential locations are one of the fundamental drivers of the kind of archaeological spatial patterning that is regularly observed in archaeological sites. After all, archaeological excavation most often occurs at the scale meters or tens of meters. For this reason, the Dukha Ethnoarchaeological Project was designed to develop theory of human spatial behavior at small scales by shifting the focus of spatial ethnoarchaeology from the mapping of features and material refuse to the direct mapping of people within the campsites of nomadic Dukha reindeer herders in northern Mongolia. Its most general aim is to explore how people

decide where to do what they do. In this paper, I examine some of the factors governing human mobility and spatial positioning in the interior and exterior spaces of Dukha summer campsites and their implications for archaeological spatial patterning.

Surrovell, Todd [23] see Johnston, Christopher

Sutter, Richard (Indiana University-Purdue University Fort Wayne) and Gabriel Prieto (Yale University)

- [245] *The Implications of Biodistance Analyses of Initial Period (1550-1250 B.C.) Human Remains from Gramalote, Peru, for Our Understanding of the Social and Economic Dynamics of Ancient Andean Maritime Communities*

The importance and distinctiveness of Peruvian fisherfolk, or pescadores, and their complementary role in coastal valley economies feature prominently in a number of early ethnohistoric accounts (Ramirez 1995, Rostworowski 1976, 1977), and clearly, archaeological evidence indicates that large permanent fishing communities existed for centuries before. What is unclear is the degree to which, if any, these communities remained biologically distinct from other contemporaneous inland communities. Here we report preliminary biodistance analyses for 42 individuals from the north coast early Initial Period (1550–1250 B.C.) fishing community of Gramalote and discuss their relative distinctiveness from other roughly contemporaneous and subsequent human skeletal populations from the same region.

Sutton, Wendy

- [7] *Imaging a Prehistoric Landscape: Water Management at Chimney Rock, a Pueblo II Settlement in Southwest Colorado*

Since the earliest research at Chimney Rock, in the 1920s, where and how the villagers of Chimney Rock's Pueblo II High Mesa settlement group got their water has been a puzzle. The High Mesa area is located 1000 feet above the valley floor. Recent research has expanded our understanding of water control at Chimney Rock; we are beginning to recognize a complex water management strategy that included check dams and features related to both tinajas and reservoirs. These features can help us understand the complex relationship the Ancestral Puebloans had with this mountainous environment. The water management system also provides clues on how Ancestral Puebloans may have extended the agricultural season and on later migrations.

Sutton, Mark [45] see Kremkau, Scott

Sutton, Elizabeth (University of California, Santa Barbara)

- [68] *Anthropology: What's It to You? Inspiring a Life-Long Love of Anthropology through Authentic Experience at the Utah State University Museum of Anthropology*

The Utah State University Museum of Anthropology is a small teaching museum dedicated to providing anthropology students with experience in public anthropology including exhibit design, public program development, and K-8 informal education program development. Our mission is to inspire the community to appreciate cultural diversity and partner with us to care for our collections and shared heritage. Although our funding is extremely limited, the museum has seen a steady increase in visitation, public support, and state grant funding. This paper provides an overview of the steps the museum has taken to earn a positive reputation and achieve balance in our responsibilities to conserve collections for future generations while inspiring the current generation with authentic experiences.

Suvrathan, Uthara (University of Michigan)

- [35] *The Kadambas and Banavasi: Perspectives from Archaeology and Epigraphy*

In this paper, I discuss the results of a multi-scalar investigation of regional complexity at Banavasi, an Early Historic settlement which rose to prominence as the capital of the Kadamba polity (4th-6th centuries A.D.). Specifically, I focus on the period between the early centuries A.D. and the 7th century, and show how results from a systematic archaeological survey as well as data from inscriptions allowed me to access multiple spatial and temporal scales of analysis. First, my investigation of the archaeological landscape at the site allowed me to trace its development as a Early Historic center, linked to its location in an early trade and (Buddhist) pilgrimage network. Second, my analysis of an 'assemblage' of elite inscriptions enabled a regional scale of analysis placing Banavasi within the context of shifting core areas of elite authority in the Karnataka region and allowing me to discuss the nature of political authority. Ultimately, my aims in this paper are two-fold: first, to discuss the early development and organization of the complex polity centered at Banavasi during the early centuries A.D. and second, to illustrate a larger

methodological point about the complementary use of archaeological and historical/epigraphic data.

Suyuc-Ley, Edgar [61] see Balcarcel, AnaBeatriz

Suzuki, Shintaro [161] see Paredes-Umaña, Federico

Svoray, Tal [65] see Winter-Livneh, Rona

Swanson, Steve [66] see Taliaferro, Matthew

Swarts, Kelly (Cornell University)

[207] *Preliminary Results from the Genomic Analysis of Southwestern US Maize Landraces*

Modern domesticated crop plants provide a unique resource for understanding past plant-human interactions, cultural preferences, and a proxy for interaction between human groups. Maize is arguably the most important domesticated crop plant in the Americas, and intricately woven into the food systems and cosmologies of New World peoples. In collaboration with Native Seeds/SEARCH, we grew out 108 landrace accessions on the NSS conservation farm in Patagonia, Arizona from across north Mexico and the Southwestern United States. We characterized these accessions phenotypically, collected parental genotypes, and generated hybrid seed by crossing individuals to a common inbred tester. The hybrids will allow us to sample haplotypes from these populations for population genetic and quantitative genetic inference.

[99] *Discussant*

Swartz, Ayme [78] see Bobbitt, Mary

Swavely, Ty [137] see Marinkovich, Erik

Swenson, Edward (University of Toronto)

[59] *Discussant*

Szpak, Paul (University of British Columbia), Jean-Francois Millaire (University of Western Ontario), Christine White (University of Western Ontario) and Fred Longstaffe (University of Western Ontario)

[113] *Camelid Husbandry Practices and Textile Exchange in Northern Peru*

This paper presents carbon and nitrogen isotopic compositions from South American camelid tissues and textiles composed of camelid wool from several archaeological sites in northern Peru spanning the Early Intermediate to Late Intermediate Periods (200 BC to AD 1476). Marked differences in isotopic compositions are present between camelids recovered from low altitude and coastal sites in comparison to high altitude sites, suggesting markedly different animal husbandry practices in these regions. Textiles recovered from coastal contexts present isotopic compositions that are consistent with distinct production strategies for materials according to spinning and weaving tradition. These results are discussed within the context of understanding variation in animal husbandry practices and the trade in camelid products in the region.

Szremski, Kasia (Vanderbilt University)

[38] *Tactical Power, Interaction, and Landscape Control during the Late Intermediate Period (1100-1470 C.E.) in the Huanangue Valley, Peru*

This paper examines the outcomes of interaction between Chancay settlers and local chaupiyunginos in the Huanangue Valley, Peru, during the Late Intermediate Period (1100-1470 C.E.). Drawing from Foucault and Eric Wolf, I will examine how social power was tied to interactions between people as well as between people and the landscape. Using data from the Huanangue Valley Survey, as well as from excavations at the chaupiyungino site of Campo Libre and the Chancay settlement of Salitre, this paper will argue that the local chaupiyunginos were able to leverage their superior knowledge of the landscape as well as their control of the irrigation intakes into organization/tactical power (*sensu* Wolf 1999). This, in turn, allowed them to improve their position vis-à-vis the wealthy Chancay settlers who had recently

established a foothold in the valley. This resulted in a situation in which there was little power asymmetry between groups in the valley, which in turn may have led to favorable conditions for the formation of an alliance between Chancay settlers and local chaupiyunginos.

Szuter, Christine (Arizona State University)

[1] *Discussant*

Szymanski, Ryan (Washington State University)

[40] *Detection of Human Landscape Modification Associated with Food Production Using Paleoenvironmental Proxy Evidence*

Regionally nuanced social interactions between agriculturalists, pastoralists and foragers have affected economic phenotypes through history in East Africa. Thus, documenting the pre-colonial production emphases of East African populations comprehensively is crucial to understanding the adaptive significance of variation in economic activities in this region. The integration of fungal proxy data with pollen and phytolith data as part of a comprehensive paleoenvironmental analytical strategy is an approach that is just beginning to gain momentum. If paleoenvironmental proxy evidence can be confidently aligned with known archaeological phenomena, significant insight into the ecological and cultural context of emergent agro-pastoral economies may be gained. Analyses of pollen, phytoliths, and fungi derived from sediment cores can produce valuable data, usable by archaeologists, concerning the geographic, temporal, and cultural scope of agro-pastoral economies in this region. Pilot data from Yala Swamp (Nyanza, Kenya) are discussed which confirm this potential and suggest the need for further exploration of the utility of multi-proxy paleoenvironmental data sets in landscape scale environmental and economic reconstructions. The potential for these proxies to produce conflicting sets of information may allow researchers to gain more detailed knowledge of the probable human and environmental activities producing paleoenvironmental assemblages.

Tainter, Joseph (Utah State University)

[75] *Discussant*

Takada, Akira (ASAFA, Kyoto University)

[73] *Deployment of Cultural Meanings in the Central Kalahari*

Two groups of San, the G|ui and G||ana, have lived in the central part of the Kalahari Desert, although Botswana's development program has encouraged them to live in permanent settlements and has had a major impact on their lifestyle. Their spatial cognition is complemented by a multi-scaled integration of folk knowledge that enables them to acquire ample bush food by moving frequently and flexibly within their immense living area, now encompassed by the Central Kalahari Game Reserve. When they move through the bushveld, they sometimes mark the environment. For instance, a hunter tracking an animal may leave twigs on the ground to communicate the direction of his movement to his followers. However, these modifications to surroundings are limited primarily to simple, practical signs and rarely reach the systematic articulation of sacred significance. This is because they are oriented to attuning their acute senses to the complicated spatiotemporal structure of their surroundings rather than to trying to control nature through grasping its entirety. For the G|ui and G||ana, n!oo (translated as "land") refers to a particular place in which a variety of cultural meanings operate. The cultural meanings are continuously constructed via unfolding social interactions embedded in the natural environment.

Talamo, Sahra [241] see Mannino, Marcello A.

Taliaferro, Matthew (University of Texas at Austin, Gila National Forest), Katy Putsavage (University of Colorado at Boulder), Steve Swanson (Environmental Planning Group) and Deb Huntley (Archaeology Southwest)

[66] *The Postclassic of Southwestern New Mexico: Regional Variation in the Mimbres Area ca. A.D. 1150-1500*

During the late 1970's, Mimbres Foundation archaeologists noted the presence of distinctive architectural styles and artifact assemblages on sites along the Mimbres River apparently post-dating the region's infamously heavily looted Classic period pueblos, proposing two new Postclassic phases: the Animas/Black Mountain phase (ca. A.D. 1130/50-1300) and the Cliff/Salado phase (ca. A.D. 1300-1450/1500). In this paper, we discuss how Mimbres Foundation work shaped decades of subsequent

Postclassic research in the greater Mimbres region (Mimbres Valley, Eastern Mimbres, and Upper Gila). That research suggests that, just as the Classic Mimbres was far more dynamic and variable than originally proposed, so too were developments in the Postclassic. With this dynamism and variability in mind, we provide a synopsis of recent research in the greater Mimbres region, highlighting variability in settlement patterns and social interaction. We discuss new survey and excavation data that are refining Postclassic chronology, and examine ceramic and obsidian sourcing studies to gain a more detailed understanding of the reorganization of Postclassic social connections. We call for a critical reevaluation of the Postclassic phase system that incorporates this variability.

Tallavaara, Miikka (University of Helsinki, Finland), Natalia Korhonen (University of Helsinki, Finland), Miska Luoto (University of Helsinki, Finland) and Heikki Seppä (University of Helsinki)

[201] Bioclimatic Modeling Approach and Long-Term Human Population Dynamics in Glacial Europe

Bioclimatic envelope or niche models have become standard tools in predicting future changes in the occurrence and abundance of plant and animal species, and a similar approach is increasingly used also to study past climate-related changes in species distribution. Given the fact that climate has an effect on human hunter-gatherer population densities, we argue that a bioclimatic modeling approach can be used to study human populations, as well. We show that by using an ethnographic dataset of terrestrial hunter-gatherers, model-based climate data, and bioclimatic modeling tools it is possible to simulate range and size dynamics of the human population in Glacial Europe between 30,000 and 13,000 years ago. Because this simulation is not archaeologically informed, it can be evaluated against the archaeological record. The simulated population size and range agree well with patterns in the archaeological population proxy based on ¹⁴C-dates. This correspondence indicates that the elementary climatic factors used in our simulation had a strong impact on long-term hunter-gatherer population dynamics. The consistency between our simulated patterns and the archaeological data is remarkable also because it suggests that the climatic envelope of terrestrial hunter-gatherers has remained more or less unaltered from the late Pleistocene to present.

Tallbull, Linwood [78] see Blecha, Erika

Tamanaha, Eduardo [243] see Neves, Eduardo

Tanaka, Yutaka (Ibaraki University)

[226] Progress in Land Transportation System as a Factor of the State Formation in Japan

Horses were introduced to the Japanese islands from the end of the fourth to the middle fifth centuries. The introduction was crucial in the development of land transportation system and eventually the state formation. Prior to the introduction of horses, water transportation was important. This was particularly the case because iron had to be imported from the Korean peninsula. In this sense, western Japan was advantageous in the acquisition of iron because western Japan was closer to the Korean peninsula and the Inland Sea that provided an important sea route was located in western Japan. On the contrary, eastern Japan was characterized by mountainous environment. A situation changed considerably when horses were adopted for transportation of goods by the central polity in the fifth century. Owing to this, iron became widely available in eastern Japan. Horse riding also made it easy to interact with distant or mountainous communities. This resulted in the development of spatial, rather than linear, network of communities, which made it easy for the central polity to gain control over more local communities than ever in the fifth century.

Tankersley, Kenneth (University of Cincinnati), Nicholas Dunning (University of Cincinnati), Vernon Scarborough (University of Cincinnati) and David Lentz (University of Cincinnati)

[158] Catastrophic Volcanism, Climate Change, and Ancient Urbanism in the Maya Lowlands

Maya urban centers in the southern Yucatan Peninsula were typically low-density "garden cities" largely dependent on their immediate environs for agricultural production. Catastrophic volcanism was a critical factor in the development and maintenance of Maya urban centers because it helped sustain the region's agricultural system by helping renew regional soils. Flourishing of ancient Maya cities in a difficult environment depended on a flux of volcanic material occurring within an optimal window. Wind patterns and rainfall are seasonal, linked to the shift in the Intertropical Convergence Zone (ITCZ). During the wet season, the ITCZ sits over the Yucatan Peninsula with Trade Winds and Easterly Waves predominating and blocking ash fall from reaching the Maya Lowlands. During the dry season, the southward shift of the ITCZ allows westerly and southerly winds to bring erupted ash over the region. Ash fall occurring during

the dry season posed a risk for ancient Maya that were dependent on capturing and storing rainwater to meet their water needs because of the problem of reservoir fouling. The Maya Lowlands experienced intermittent periods of increased aridity, which amplified drought frequency and severity, and likely contributed to periods of disruption in the course of Maya prehistory.

Tanna, Ruchika [228] see Giessler, Kalena

Tantalean, Henry [146] see Stanish, Charles

Tantaleán, Henry (Universidad Nacional Mayor de San Marcos, Peru), Alexis Rodríguez (Universidad Nacional Mayor de San Marcos), Abel Fernández (Universidad Nacional Mayor de San Marcos), Paolo Zorogastúa (Universidad Nacional Mayor de San Marcos) and Melissa Díaz (Universidad Nacional Mayor de San Marcos)

[146] Paracas at Chincha Valley: A View from Cerro del Gentil-El Mono Complex

In this paper we present recent data in our research in the middle valley of Chincha, which focused on settlements with occupations usually recognized as Paracas Andean archeology. The theoretical basis of this work focuses on understanding of the processes of state formation in the Early Intermediate Period in this region. In particular, we focus on the emergence of complex Paracas settlement in the middle valley. One of these, in particular, a pyramidal site known as Cerro del Gentil, was excavated and mapped. The data suggest that the pyramid was built in the time of Paracas and continued, subsequently, with a Carmen occupation. We also found numerous geoglyphs in the Pampa de El Carmen which align with several Paracas / Carmen sites in this part of the valley. Additionally, we present the preliminary results of the intensive survey in the middle valley of Chincha which also focuses on Paracas sites. Thus, in this paper we present a summary of the data retrieved in the research seasons 2012 and 2013, with which we hope to offer an idea of the nature of the occupation of Paracas in the middle valley of Chincha with implications for all the valley.

Taormina, Kelsey [173] see Krasinski, Kathryn

Tarrús, Josep [22] see Pique, Raquel

Tate, Carolyn (Texas Tech University)

[62] U-shaped Platforms along the Gulf Coast and beyond

Two apparently similar architectural features, a U-shaped platform and a U-shaped bench, appear at several sites along the Gulf Coast. First appearing at Formative sites, the U-shaped platform is also found at Classic Period Gulf Coast sites and at Teotihuacan as well. This paper explores the sculptures and features associated with these platforms and considers their significance in each context.

Taylor, Linda [28] see Welch, Katherine

Taylor, Ashley (Indiana University of Pennsylvania)

[233] Lost Graves at Hanna's Town Cemetery, Westmoreland County, Pennsylvania

Hanna's Town (36WM203), an 18th-century site located in Westmoreland County Pennsylvania, was a major settlement on the western frontier that was attacked and destroyed by a joint force of British and Native Americans in 1782. The town never fully recovered, and by the early 1800s, no buildings remained from the settlement, and the land was repurposed for agricultural use. Today, Hanna's Town has been reconstructed for tourism purposes. The site contains a cemetery that currently has six gravestones. The Westmoreland County Historical Society has several gravestones in their possession that are no longer associated with burials. These headstones provide evidence that the cemetery contains lost graves, but it is believed that they do not account for all the burials at the site. Geophysical investigations using ground penetrating radar (GPR), magnetometry, and down-hole magnetic susceptibility readings were undertaken during the winter of 2014 to examine the possibility of other grave shafts at the site. This poster summarizes the results of these investigations.

Taylor, William (University of New Mexico)

[301] Equid Cranial Remains and the Antiquity of Horseback Riding in the Mongolian Steppe

The adoption of horseback riding in the Eurasian Steppe is central to many models of political and social

development, but questions remain over the timing and sequence of equestrian practice in Mongolia. Equine crania and postcranial remains buried around “deer stones” and other monumental features from the Mongolian Bronze Age represent a primary, yet understudied dataset for establishing the antiquity of horsemanship in eastern Eurasia. On the basis of age, pathologies, and previously undocumented osteological features from cranial and mandibular remains from 29 Bronze Age horses in Mongolia, this poster argues that horsemanship was likely well established in the “Deer Stone-Khirigsuur” culture. Other archaeological and experimental evidence suggests the use of an organic bridle during this period, which might have failed to leave typical forms of “bit wear” and hampered the recognition of horseback riding in archaeological contexts. 3D scanning technology presents a novel and potentially valuable means of quantifying and comparing cranial information from Bronze Age Mongolian horses. Future research will focus on expanding the sample of Bronze Age skeletal material through excavation, as well as exploring skeletal traits of modern feral horses to establish an archaeological methodology for new lines of cranial evidence.

Teague Tucker, Megan (Kennesaw State University, University of Florida)**[155] Above Ground – Below Ground: Assumptions of Status and Mortuary Expenditure**

Cemeteries and burial markers are prominent, visible reminders of the lives that have passed before us. With painstaking effort, these landscapes and artifacts are being maintained and conserved by descendant populations, community organizations, churches, scholars, and other interested parties. Mortuary studies typically assume that large monuments have a positive correlation to the status of the deceased and to the below ground expenditure. This study will test that assumption through the use of funeral records and mortuary marker analyses. George W. Loudermilk and People's Undertaking Funeral Records dating between 1902 and 1927 will be compared to markers at Greenwood (White population) and Woodland (Black population) Cemeteries in Dallas, Texas. These funeral records provide a unique glimpse into actual funerary expenditures and detail individual information such as names, dates of death, cemetery, and occupation of the deceased. Using the funeral record data, a subsample of markers from known individuals were analyzed from Greenwood and Woodland Cemeteries. This will test the assumptions regarding status and socioeconomic cost in mortuary sciences.

Teetelli, Loren, Alicia Boswell and Jesus Briceno**[104] 3-D Modeling of Area 3 at Cerro Huancha, Sinsicap Valley, Peru**

Cerro Huancha, the largest archaeological site in the Sinsicap Valley a tributary of the Moche River in northern Peru sits in the desirable Chaupiyunga ecological zone between the lowland north coast of Peru and the Andes Mountains. Archaeological investigations at Cerro Huancha, from 2010 to 2012, inform the sociopolitical function of Cerro Huancha and its yunga residents' interaction with Late Andean polities. This poster presents a spatial analysis of architecture from Area 3 during its final occupation. Area 3 is a series of compounds constructed on terraces on the southwest side of the site. 3-D reconstructions supplemented with information from excavations reveals access patterns between architectural compounds in Area 3 and its relationship to other areas on Cerro Huancha.

Teeter, Wendy (Fowler Museum at UCLA)**[142] The Current Pimu Catalina Island Archaeology Project**

The Southern Channel Islands off the coast of California were home to the ancestors of the Gabrielino/Tongva for at least 10,000 years. The Pimu Catalina Island Archaeology Project was founded in 2007 as a collaborative undertaking between the Gabrielino/Tongva community, archaeologists, and the Catalina Island Conservancy to synthesize and expand upon the previous research conducted on the island for over fifty years. Many difficulties, including the finding of original documentation, collections, and original site locations, have been daunting, but successful. The field seasons of 2012 and 2013 have propelled the project forward in amazing ways. This presentation will discuss current research, programs, and overarching goals that help us to better understand the Pimu people and their way of life.

[142] Chair

Teeter, Wendy [316] see Hofman, Courtney

Terradas, Xavier [22] see Pique, Raquel

Terry, Karisa (Central Washington University), Masami Izuho (Tokyo Metropolitan University),

Noriyoshi Oda (Meiji University) and Ian Buvit (Central Washington University)

[223] *Adaptive Network Strategies and Landscape Use: Geochemical Obsidian Sourcing and Tool Consumption during the Last Glacial Maximum in Hokkaido, Japan*

The Last Glacial Maximum (LGM), roughly 20,000-17,000 14C BP, was a watershed in Japanese and NE Asian prehistory as humans were forced to reorganize themselves to cope with extreme ecological deterioration during one of the coldest time periods in human history. In this paper we explore adaptations during this time to both social networks and landscape use in the Tokachi and Ishikari lowlands of Hokkaido at the Shimaki, Kawanishi C, Kashiwadai 1 LC 11 sites. Specifically, we first compile XRF geochemical obsidian sourcing data on all formal tools to model social network analysis of exchange-based relationships of this resource at the sites. Next, consumption rates of these tools are compared to construct behavioral scenarios of how the obsidian resources were managed after procurement or exchange as well as group mobility patterns in relation to subsistence resources.

Terry, Richard (Brigham Young University), Chris Balzotti (University of Utah), Austin Ulmer (Brigham Young University) and Jacob Horlacher (Brigham Young University)

[252] *Geochemical Signatures of Contemporary and Ancient Maya Activities in Public Plazas*

Public plazas are the centers of important social activities in both contemporary towns and cities and at ancient Maya sites. Public rituals and celebrations likely involved feasting that required both food preparation and waste disposal. Marketplace activities required organization for the assignment of vending space for sellers, pathways for buyers and the trade of similar classes of merchandise. Public architecture at plazas included walls, causeways, water sources, low platforms and sometimes post holes and rock alignments that demarcate vending space. But the artifacts of ancient activities were either swept away or decomposed. Hence, it is important to gather the chemical residue evidence of plaza activities before they are contaminated or destroyed by modern activities. An equidistance triangular grid sampling method is proposed to help improve the resolution of geochemical results and increase the probability of capturing linear patterns of activities. Analysis of the invisible chemical residues of those activities enriches our understanding of ancient lives. These techniques should be incorporated into research investigations of ancient sites to enhance our interpretations of human activities, including economic activities in public spaces. Geochemical signatures of contemporary and ancient plaza activities at Telchaquillo and Coba, Mexico and Caracol Belize will be reported.

Terry, Richard [295] see Murtha, Timothy

Testa, Taylor [325] see Wolff, Christopher

Testard, Juliette (Paris 1 / UMR 8096 Archéologie des Amériques)

[112] *Nuevas identidades visuales en Cacaxtla-Xochitecatl, Cholula y Cantona: interacciones epoclásicas con Oriente mesoamericano*

Las interacciones interregionales en sitios del área cultural de Puebla-Tlaxcala se han abordado desde el siglo pasado; en Cholula (con Veracruz), pero sobre todo a partir del descubrimiento de los murales de Cacaxtla en los años 1970 (con Veracruz y área maya). Sin embargo, a pesar de una rica historiografía sobre la iconografía de estas representaciones, ninguna síntesis ha puesto en relieve una visión regional, abarcando un panel más amplio de materiales e testigos arqueológicos. Esta ponencia presentará los resultados de las investigaciones llevadas a cabo durante mi tesis doctoral. Estas subrayan las diferentes modalidades de fenómenos de interacciones culturales entre Cholula, Cacaxtla-Xochitecatl, Cantona, la costa del Golfo por una parte y el área maya por otra. Diferentes tipos de materiales ilustran estas diversas modalidades: en un proporción muy baja, materiales importados, pero mucho más frecuentemente, adaptaciones e hibridaciones iconográficas que dan cuenta de varias estrategias socio políticas de legitimación. Estas, a su vez, pueden insertarse en la teoría de "connection-disconnection" propuesta por Stone (1989). En un periodo de competitividad regional, también pueden entenderse como una voluntad franca de distanciarse de la identidad visual de Teotihuacan.

[60] *Chair*

Testard, Juliette [60] see Forest, Marion

Thacker, Paul (Wake Forest University)

[299] *The Early Upper Paleolithic at Espadanal: Contextualizing Gravettian Technological Variability in Central Portugal*

The stratified site of Espadanal aids resolution of two long-standing archaeological controversies in the Upper Paleolithic of Portuguese Estremadura. The earliest archaeological level at Espadanal exhibits the unusual combination of a large blade industry manufactured exclusively from chert with an EUP bladelet technology fashioned primarily on quartz. Integrated geoarchaeological analyses including fabric analysis facilitate a reconstruction of the site's depositional history. Detailed understanding of the site formation and postdepositional processes that impacted the artifact assemblage supports the conclusion that these two very different technologies indeed co-occur during the early Gravettian period. Both absolute dating (OSL and radiocarbon) and the geology of the floodplain landforms suggest a terminus post quem of 30,000 years BP for the nearby, disputed EUP site of Gato Preto.

Thakar, HB (University of California, Santa Barbara)

[284] Food and Fertility: An Evolutionary Context for Understanding Hunter-Gatherer Demographic Shifts This paper presents the recent results of research designed to elucidate the dynamic interrelationships between foodways, the environment, and human population growth in prehistory. Specifically, this case study evaluates temporal variation in how hunter-gatherers reduced food risk during a period of significant population growth on the Northern Channel Islands of California. The outcome of this research includes the most comprehensive integrated foodways research that has ever been completed on the California Channel Islands. Combined with a well-supported, rigorous chronological framework and reconstruction of seasonal mobility patterns this research revealed substantial shifts in how prehistoric people moved about and exploited the landscape immediately prior to the period of significant population growth.

[68] Chair

Thatcher, Jennifer J. [287] see Binning, Jeanne

Thebe, Phenyo (University of Witwatersrand and University of Botswana)

[58] Techniques, Style: An Ethnoarchaeological Approach to Understanding the Social, Ethnic and Linguistic Identity Boundaries of Pottery Production in South Eastern Botswana

In southern Africa, archaeologists have often used ceramics as a marker of ethnic and linguistic identity. However, the detection and understanding of various pottery types in the archaeological record is a problem that needs to be engaged further using ethnoarchaeology. Hodder's 1982 research suggested that not all material culture style boundaries reflect cultural/linguistic boundaries. They can also reflect other boundaries such as ethnic, social, linguistic, age, class, political and administrative among others. The purpose of this project is to elucidate the relationship between ceramic style, social groups, technology, learning patterns and how that can apply to archaeological situations. Some of the questions in this paper are: What aspects of social, stylistic and technological boundaries do ceramic styles reflect in southern Africa today? The purpose of this study is to clarify the current relationship between ceramic styles, technology and social boundaries in south-eastern Botswana. This aim is realized through an ethnoarchaeological study of ceramics produced by twenty modern potters from five different ethnic groups and/or merafhe (Bakwena, Bangwaketse, Bakgalagadi, Bakgatla and Nalete) in south-eastern Botswana and to map boundaries in: clay collection techniques, procedures, and processing/paste preparation; vessel forming, decoration and finishing, firing and post firing treatment and learning patterns.

Thiel, J. Homer [119] see Pavao-Zuckerman, Barnet

Thomas, David (American Museum of Natural History)

[23] Discussant

Thomas, Ben (Archaeological Institute of America) and Meredith Langlitz (Archaeological Institute of America)

[96] Facilitating Outreach and Education on a Grassroots Level

The nature of heritage education has changed tremendously in the 26 years since "Save the Past for the Future." While the idea of professionalizing heritage education is desirable, there are fewer opportunities for interested professionals and funding and resources are not easily available. At the Archaeological Institute of America (AIA) public outreach is part of our mission yet, with minimal human and financial resources we have had to be creative and flexible in order to design programs that have a significant and widespread impact. In 2004 the AIA established an Outreach and Education Program and since then has

been expanding its outreach efforts throughout the US, Canada, and around the world. These efforts are being done on a local level through our Local Societies, which are being supported by small Society Outreach Grants on a global level through International Archaeology Day, and by forming collaborations with like-minded organizations to present joint programs. In this paper we will discuss these initiatives and present our latest endeavor—participation in regional and national Science Festivals. Through this discussion we hope to highlight the effectiveness of facilitating grassroots efforts to reach the largest possible audience through a diverse array of activities.

Thomas, Jonathan [102] see Waterman, Anna

Thomas, Andrea (University of Texas at San Antonio) and Sonia Alconini (University of Texas at San Antonio)

[104] *La Ruta del Spondylus: The Role of Spondylus Shell in the Rise of Socio-Political Complexity in the Andes*

Archaeological interpretations on the rise in social, political, and economic complexity along the Andean spine posit an intricate history in which the environment, kinship ties, and socio-economic trade play significant roles. To evaluate this, researchers use a temporal and regional scale on one type of artifact or ecofact to trace its function and role, as well as the morphological shifts it experiences. One resource functioning as an artifact and ecofact, which can truly aid in archaeological interpretation of social stratification and structure is the thorny oyster, or Spondylus calcifer and Spondylus princeps shell, found in the Pacific Coast of South America, particularly along Ecuador's coastline. This research, under a practice theory framework, aims to employ Kopytoff's (1986) 'commodity chain analysis' model to the diachronic investigation of the role of spondylus shell as categorized within each of Binford's (1962) artifact classes. These classes will demonstrate the correlation between the rise in spondylus as a symbol of community ideology with the rise in complex socio-political organization throughout the Andes. To accomplish this, assemblages along the ruta del Spondylus from the Early Horizon time period onward will be analyzed, with particular interest in coastal, inland, and mainland sites within Ecuador and Peru.

Thomason, Allison (Southern Illinois University Edwardsville)

[162] *"I am a Lion/I am Virile": The Royal Hunt in Neo-Assyrian Images and Texts*

Ancient Mesopotamia, where complex dynastic culture developed at a very early date, is also one of the first spaces in the world where evidence of a proper "royal hunt" appears. From development of the Uruk culture in the 4th millennium to the Persian conquest in 539 BCE, the trope of the royal hunt of wild animals persisted in ancient Mesopotamian images and texts. This trope is most abundant during the Neo-Assyrian empire, based in northern Mesopotamia during ninth through seventh centuries BCE. The kings of Assyria frequently represented themselves as the masters of lions, wild bulls, elephants, deer, and other local and exotic fauna. The settings of these exploits could be in the open wild beyond the borders of their heartland or within bounded "game parks" adjacent to their capital cities. They displayed this taming of chaotic nature in images of the hunt on portable luxury objects and stone reliefs that adorned their palace walls as well as narrative texts that proclaimed their royal deeds. The excavated evidence from the Neo-Assyrian palaces allows us to explore how kings from the period constructed identities of physical power and virility by simultaneously associating themselves and dispensing with formidable animal foes at home and in the distant hinterland.

Thompson, Kevin, Thomas Motsinger and Joseph Tuomey

[18] *Navajo-Gallup Water Supply Project (NGWSP): Now We're Getting Somewhere*

Entering the third year of funding, NGWSP is gaining momentum. The water project will provide potable water to the Navajo Nation, Jicarilla Apache Nation, and the city of Gallup. PaleoWest Archaeology, under contract to Bureau of Reclamation, is providing cultural resource services for the giant waterline located in northwest New Mexico. Construction on the first pipeline reach is nearing completion. Analysis of materials recovered from sites is ongoing. Perhaps most importantly our Research Team, consisting of consultants, academics, and agency representatives, is focusing on a regional landscape approach to place our datasets in proper perspective.

Thompson, Kerry [78] see Lee, Rechanda

Thompson, Victor (University of Georgia) and Scott Fitzpatrick (University of Oregon)

[85] *The Fluid Histories of Island and Coastal Polities*

In this paper we provide an overview of the various ways social and political histories unfolded among

island and coastal societies. Our goal in presenting this overview is to explore some of the alternative paths that complex political relationships played out among such groups. We recognize that access to economic resources and other such characteristics (e.g., island size, proximity to mainlands, raw materials, biotic resources) play an important role in such histories. However, in our synthesis, we seek to illustrate how political and social actions and the materiality of quotidian activities articulate with larger economic structures that are often the focus of archaeological studies of complexity. To accomplish this goal, we draw on the studies presented in this symposium, case studies from our own research, and other global examples to explore both the regularities and unique histories of how complexity has developed among island and coastal groups.

[85] Chair

Thompson, Amy (University of New Mexico), Eric Fries and Keith Prufer (University of New Mexico)

[138] *Local Variation of Settlement Patterns at Uxbenká and Ix Kuku'il, Toledo District, Belize*
Uxbenká and Ix Kuku'il are neighboring Maya centers located in the southern foothills of the Maya Mountains, Toledo District, Belize. LiDAR data gathered in 2011 aided in the identification of the small center, Ix Kuku'il. In 2013, a 10-day survey of the area surrounding Ix Kuku'il identified 42 residential groups and eight civic/administrative groups spread across an area of 9 km². This poster will compare the pattern of settlements at Ix Kuku'il to that documented at Uxbenká, a Classic Maya center located 6.4 km to the southeast. GIS analyses were used to examine variations in the settlement patterns and residential group arrangements between the two sites. Analyses of surface artifact assemblages from households at Ix Kuku'il and artifacts excavated from residential groups at Uxbenká speak to potential economic ties within and between these peripheral Maya centers and the greater Maya region.

Thompson, M (Arizona State University)

[247] *Social Memories of the Dead in Prehistoric Hohokam and Zuni Communities*

This paper addresses the social memories and identities surrounding spirits of the dead in late prehistoric Hohokam and Zuni communities. I compare the performance of mortuary ritual in several Classic period Hohokam settlements of the lower Salt River valley with the performance of mortuary programs at Protohistoric era Zuni villages. The comparative mortuary analysis evaluates large, integrated mortuary data sets from three settlements on the north side of the Salt River and from the Zuni towns of Hawikku and Kechiba:wa. Here, I discuss a multivariate statistical approach that focuses on body treatment and spatial distribution in these villages; this approach also assesses construction of mortuary facilities and decommissioning of particular material objects. Interpretation of patterns references ethnohistoric and ethnographic records on relationships with spirits of the dead in the American Southwest. Analysis results highlight the identities that the living created for the spirits of the dead and emphasize the relationships that people maintained with these beings. The study encourages us to recognize that Prehispanic communities of the Southwest were composed of both the living and the spirits of the dead.

Thompson, Andrew (Department of Biomedical Sciences, West Virginia School of Osteopathic Medicine) and Kristen Hedman (Illinois State Archaeological Survey, UIUC)

[272] *Sacrificial Tribute Reconsidered: New Dental and Isotope Evidence of Biological Distance and Place of Origin for Sacrificial Burial Groups at Cahokia's Mound 72*

Many theories related to the significance of Mound 72 at Cahokia center on the importance of human sacrificial tribute as evidence of Cahokia's power and influence over surrounding communities. Two of the larger burial groups thought to represent sacrificial offerings are F105, a mass burial containing over fifty mostly female individuals, and F229-lower, a group of haphazardly deposited individuals with evidence of violent trauma that were interred beneath a row of presumably high-status burials placed on cedar litters (F229-upper). The unique burial context of F229-lower led to speculation that these individuals were non-local, warfare related captives. However, biodistance analyses conducted in the early 1970s provided unexpected results: while individuals in F105 stood out as being non-local, F229-lower burials did not. In this study, we reevaluate these findings using strontium isotope (⁸⁷Sr/⁸⁶Sr) and phenotypic dental data. Results of the dental biodistance studies contradict the earlier findings and suggest that F105 individuals were local to the American Bottom while F229-lower individuals are biological outliers. Preliminary strontium isotope data corroborate these findings. This new information provides an alternative perspective on the mortuary events that unfolded at early Cahokia.

Thoms, Alston (Texas A&M University)

[135] *Discussant*

Thornton, Erin (Washington State University)**[113] Ancient Maya Turkey Husbandry and Exchange: A Multi-Proxy Approach**

Large gaps exist in our knowledge of ancient Maya turkey husbandry and use. Among the questions that still need to be addressed are: 1) when and where was the non-local domestic turkey (*Meleagris gallopavo*) introduced to and adopted by the ancient Maya?; and 2) did the ancient Maya also rear captive or tame populations of the local ocellated turkey (*Meleagris ocellata*)? This paper presents preliminary results of an inter-disciplinary research project aimed at answering such questions. The research combines isotopic, morphological, osteometric and genetic analyses to reconstruct the history of turkey husbandry and exchange in the Maya Lowlands. Emphasis in this presentation will be on isotopic results from a subset of turkeys from the Postclassic site of Mayapan, where husbandry of ocellated turkeys has been suggested, but not tested. The results of this analysis will be contextualized within the framework of the larger project.

[113] Chair

Thornton, Erin [286] see Emery, Kitty

Thornton, Taylor (University of Illinois, Urbana-Champaign)**[340] Extra-moundbuilding Activities in the Floodplain: A Zooarchaeological Perspective from the Mound House Site (11GE7)**

Within the built landscape of the lower Illinois River valley, floodplain mound groups served as prominent spaces of multi-community interaction. Notable among these is the Mound House site (11GE7), which is best representative of the Middle Woodland (ca. 50 cal BC–cal AD 400) period. While monumental earthworks of the region have elicited considerable attention from scholars, little is known about these sites outside of their associated moundbuilding and mortuary programs. Associated habitation areas have rarely been the focus of archaeological investigation. In order to enhance our resolution of land use and subsistence strategies at these often overlooked components of floodplain sites, this study examines a portion of the faunal assemblage from an impressive Middle Woodland pit feature, presumably created through intensive seasonal use of the site. Results of this analysis are used to discuss the possible activities occurring at the site during the Middle Woodland period apart from moundbuilding.

Thorsgard, Eirik (Confederated Tribes of the Grand Ronde Community of Oregon)**[136] Discussant****Throgmorton, Kellam and Ruth M. Van Dyke (SUNY Binghamton)****[110] Vernacular Architecture in the Chacoan World**

Chaco Canyon, in the North American Southwest, was the center of the Ancient Pueblo world between A.D. 850 and 1150. Monumental architecture—great houses, great kivas, road segments, and earthworks—characterizes 12 major sites in Chaco Canyon and is found at approximately 100 outlying communities in the surrounding region. Monumental Chacoan buildings are massive, formal, symmetrical, and made of core-and-veneer masonry. The monumental structures are associated with communities of 20-40 small habitation sites characterized by informal, asymmetrical floorplans and a variety of construction materials. The vernacular architecture of small sites has garnered less archaeological attention than monumental Chacoan buildings, both within Chaco Canyon and in outlier communities. Chaco outlier communities have been identified through monumental architecture, and contemporaneous communities lacking this architecture have been overlooked. Furthermore, the similarities and differences in vernacular architecture between communities have not been explored. By adopting a comparative approach to small-site vernacular architecture, we hope to better understand interactions among Chacoan and extra-Chacoan communities.

Thurber, Hali (American University), Stephen Yerka (University of Tennessee, Knoxville), Ryan Smith (Vanderbilt University) and Steven Wernke (Vanderbilt University)**[188] What lies Just Below the Surface: Multi-Instrument Geophysical Study at Mawchu Llacta, Peru**

This paper details the results and interpretations of multiple geophysical survey blocks within a planned colonial town in highland southern Peru for the Proyecto Arquelógico Tuti Antiguo. The relict reducción, known today as Mawchu Llacta (Quechua for “old town”), is remarkable for its excellent architectural preservation and minimal looting disturbance. The site is known through abundant oral historical

testimony that suggests a relatively recent abandonment of the reducción in the mid-19th century. These attributes, together with the extensive documentary record, make it an ideal locale for investigating a number of issues related to resettlement and the emplacement of reducciones in the landscape, including construction, domestic life, and religious practices. Both geo-magnetic survey (flux-gate gradiometer) and ground-penetrating radar were utilized to assess the potential for buried cultural features and anthropogenic deposits. The wealth of information gained on site matrix characteristics from each instrument reinforces a multi-instrument approach. Survey areas were located in five distinct locales of the settlement each providing a unique context within the site. The surveys met with great success and difficulty equally, and both factors will be discussed in this paper.

Thurston, T. (SUNY Buffalo)

- [124] *Land Hunger, Pioneering, and Livelihood: Colonization, Abandonment and Reoccupation in a Marginal Swedish Upland*

In contemporary terminology, much of the landscape dubbed marginal, vulnerable, or barren has previously been densely occupied and intensively worked. A variety of circumstances both social and ecological have led alternately to the colonization and abandonment of such lands. The establishment of livelihood on marginal uplands and the strategies employed by those who successfully dwelt there are examined through examples from Sweden's Småland Plateau over a period of nearly 1000 years, between A.D 1000 and today.

Thurston, T.L. [240] see Barker, Heather

Tibbits, Tawny (University of Iowa)

- [138] *Assessing the Exchange of Granite Ground Stone Tools at San Estevan, Belize, through Portable X-Ray Fluorescence*

The Maya site of San Estevan has a varied assemblage of ground stone tools, dating to the Late Classic Period. These tools are constructed from igneous, metamorphic, and sedimentary materials. This study focuses only on the granite artifacts in order to assess the ability of portable x-ray fluorescence (PXRF) on a heterogeneous material. PXRF has previously been used for chemical characterization of homogeneous materials such as chert, obsidian, or ceramic. These studies have shown that PXRF is able to identify source locations for these materials. Fieldwork was conducted by the author in the summer of 2013 to collect outcrop samples of granite from the three distinct batholiths present in the Maya Mountains of Belize: Cockscomb Basin, Hummingbird, and Mountain Pine Ridge. Geochemical fingerprints were developed of each intrusive event. PXRF readings of the granite tools recovered from San Estevan generally group within known outcrops, indicating a specific region of origin within Belize. Locating a source region allows for the interpretation of potential exchange relationships between central Belize communities and northern communities such as San Estevan. In addition to locating potential resource areas, this study provides a new, nondestructive method for sourcing granite artifacts.

Tiesler, Vera [21] see Cucina, Andrea

Tiesler, Vera (Universidad Autónoma de Yucatán)

- [25] *Cultural Head Forms and Shifting Group Identity among the Western Maya during the Classic Period*

The modification of the infant's head through constriction and compression devices constitutes a form of physical embodiment that has been employed cross-culturally to signal ethnicity, social integration, and gender. This paper explores the emblematic roles of head shaping in publicly displaying individual and group identity (potentially ethnicity) across and beyond the Western Maya hemisphere. Here, Classic period cranial vault modification, as conferred by female folks to their offspring, was not only widespread but also noticeably diversified in its visible results. Conceptually anchored in the multi-layered native meanings of this deeply rooted body practice, this paper confronts the area's cranial record and head portraiture with the mosaic of vernacular languages in an increasingly divided political landscape. While narrow, inclined, and elongated heads were prominently displayed among the Western Cholan folk of the Usumacinta basin, bordering Tzeltalan and Zoque communities on and beyond the Maya western fringes sported visible broad and shortened heads, some of them bilobular. We discuss the shifting landscapes of head display in terms of identity vs. alienation, interaction vs. antagonism, within and among communities and urban neighborhoods, posing that head shapes were to attain new meanings for their human carriers, especially in the aftermath of political collapse.

[25] *Chair*

Tiesler, Vera [164] see Vazquez De Agredos Pascual, Maria Luisa

Till, Rupert (University of Huddersfield, UK)

[122] *Cave Art Soundscapes: Experimental Music Archaeology in the Painted Caves of Northern Spain*
Various sound-making tools, including bullroarers and bone flutes, have been found in caves that feature Upper Paleolithic decoration, such as painting and carvings. Such sounds, combined with the unusual acoustics of these spaces, their extreme quietness, and the restricted visual cues provided by small flickering light sources, must have made sound particularly important to those who visited them in the past. A recent multidisciplinary project in northern Spain explored the sonic culture of five caves that are part of the Cave of Altamira and Paleolithic Cave Art of Northern Spain world heritage site. Various appropriate sound making tools (such as voices, cow horns, bone flutes and percussion) were used to stimulate the acoustic response of the caves, to illustrate and assess what it may have sounded like to be there in the ancient past. A short film has been made to experimentally explore the spaces using audio-visual digital studio techniques including convolution and photogrammetric modelling, to attempt to better understand the archaeological context of the spaces experientially. The presentation will be illustrated with a number of audio and video examples. It will aim to better understand the role of sound in prehistory.

Timmerman, Gayle [13] see Cegielski, Wendy

Timon, Marné [325] see Wolff, Christopher

Timpson, Adrian (UCL)

[187] *European Neolithic Population Surface*

Recent work by the EUROEVOL team has included the use of summed probability distributions of radiocarbon 14 samples to infer demographic fluctuations, revealing unexpected boom-bust patterns in the European Neolithic. In this presentation we offer an extension of this work, presenting a dynamic population surface for the entire study area. This reveals demographic and migratory patterns at a fine spatial and temporal resolution, and we use statistical techniques to establish which fluctuations are significant. We further apply this method to other types of data in our unprecedentedly large database to build a picture of spatiotemporal fluctuations in agricultural practices, including animal husbandry and crop use.

Tipon, Nick (Graton Rancheria)

[135] *Discussant*

Todd, Lawrence (GRSLE)

[77] *Archaeology in a Smoldering Landscape: High Elevation, Post-Fire Research in the Greater Yellowstone Ecosystem, Wyoming*

As the frequency and intensity of wildland fires have increased in mountainous regions of the western United States, both the research potential and threats to archaeological sites have also seen a dramatic increase. For over a decade, research on sites ranging in elevation from 2500-3300m within a study area of over 211,000 ha along the eastern margins of the Absaroka Mountains in northwestern Wyoming's Greater Yellowstone Ecosystem has incorporated post-fire archaeological investigations into the study of regional Holocene land-use patterns. Much of this research has taken place within the Washakie Wilderness and has been conducted in collaboration with the USDA Shoshone National Forest. Multi-scale methods to document surface archaeological data from individual fires into broader, landscape patterns and to monitor fire impacts and changing site surface characteristics have been explored. Post-fire studies provide unique opportunities for surface survey to yield a picture of unprecedented resolution and complexity, but also pose vexing challenges at the interface between aspects of basic research, site stewardship, and applied/management process.

Todd, Larry [109] see Kay, Marvin

Toft, Peter Andreas (National Museum of Denmark)

- [15] *Modeling Complex Cultural Encounters in Contact and Colonial Greenland (1690-1900 A.D.) - Possibilities and Limitations of the Interaction Zone Model*

In the wake of increased European whaling in the late 17th century AD and the permanent presence of colonists and missionaries in the 18th and 19th centuries the historic Greenlandic Inuit were not only facing foreign people but also a new material culture in the form of European commodities. Trade was the main motivation for these cultural encounters Europeans, but the nature and duration of local encounters affected Inuit use and reception of foreign things. This cultural exchange cannot be reduced to the simple dichotomy of Inuit and Europeans as many groups were involved on both sides and the foreign commodities were accompanied by Europeans in some areas, whereas some Inuit groups acted as middle men in others. In this paper the strengths and limitations of using the interaction zone model are explored on a comparative regional and individual level focussing on the variable Inuit use and reception of European commodities in three Greenlandic regions: Disko Bay, the Nuuk Fjord and South East Greenland.

Tokovinine, Alexandre (Peabody Museum, Harvard University) and Barbara Fash (Peabody Museum, Harvard University)

- [154] *Epigraphy in 3D: Digital Photogrammetry and Publication of Classic Maya Inscriptions*
- The on-going decipherment and study of Classic Maya writing and iconography relies on timely publication of accurate line drawings and photographs of monuments and artifacts. Far from mere mechanical reproductions, such photographs and drawings reflect one's expert judgment and aesthetic preferences. Given that most monuments have suffered from intentional damage or erosion, line drawings constitute a key step between the epigrapher's initial interpretation of an inscription and/or imagery and its wider dissemination among scholars and wider academic and non-academic audiences. Digital photogrammetry offers a new level of precision and verifiability in the production of epigraphic illustrations, as it enables sharing of primary 3D data alongside its interpretation as renderings and drawings, potentially signaling a new era in the study of Classic Maya heritage. This presentation explores the emerging practice of digital epigraphy and its contribution to advancing our understanding of ancient monuments through a series of examples and case studies.

Tokovinine, Alexandre [154] see Fash, Barbara

Tomaskova, Silvia (UNC Chapel Hill)

- [240] *Clean Feminist Theory Meets Messy Practice*

When a dedicated feminist archaeologist encounters contradicting realities in the context of fieldwork or in the classroom that challenge core beliefs, she has several possible options. She can reflect on some of the basic tenets of her beliefs, or reexamine cultural contexts of the situation and ponder how easily feminism travels, or decide that we may have reached the ends of utility of "traditional feminism" and the time has come to move on. This paper will consider all these options in the context of fieldwork in Eastern Europe and South Africa, as well as the classroom in the 21st century North America. Translation, dissonance, and travel between different worlds will be key terms, suggesting that these may be simultaneously useful metaphors both for our practice in the present and for interpretation of prehistoric worlds.

Tomasso, Antonin (University of Nice - University of Pise) and Guillaume Porraz (CNRS / UMR 7041 ArScAn / AnTET)

- [16] *Embedded Procurement: Between Assumption and Facts. An Overview on the Upper Paleolithic from the Mediterranean Corridor (Provence and Liguria)*

Since the early 80s and the development of techno-economical studies, the analysis of lithic raw material sources have became central to infer on the territorial range and/or the mobility strategies of Pleistocene societies. Results have been positive but somehow repetitive. For this session, we discuss the "embedded procurement" perspective, which presumes that raw material acquisition was part of other subsistence activities rather than an autonomous technological task. We suggest here that this perspective is a theoretical assumption which requires to be demonstrated case by case. We argue that this assumption has contributed to undervalue the rock selection within the process of tool production and underestimate the role of indirect procurements. Once emphasized how critical the initial step of a chaîne opératoire is, the raw materials does not appear anymore to be a by-product of mobility but more

likely a structuring parameter for hunter-gatherer societies. As an illustration, we selected examples from (Proto-) Aurignacian to Epigravettian sites located on the Mediterranean corridor (Provence-Liguria) and underline their main characteristics in terms of raw material provisioning strategies. However, first, we insist on the reliability of petrographic studies and on the relevancy of these areas to discuss the patterns of raw materials transport and selection.

Tomasso, Antonin [201] see Naudinot, Nicolas

Tomka, Steve (Center for Archaeological Research-UTSA)

[119] *Identifying Change among Texas Mission Indians as Reflected in the Written and Material Record*

In the 1690s, the Spanish missionary wave began spilling across the Rio Grande and produced the first mission in south Texas, Mission San Antonio de Valero in 1718. By 1730, five missions dotted the upper reaches of the San Antonio River and were "home" to over 1,000 natives from South Texas. Nearly one hundred years later, in 1824, when the missions were fully secularized, only a few dozen neophytes were still living in the missions. Following secularization, native identity became virtually invisible in the archaeological record of nineteenth century San Antonio. This presentation focuses on the broader sociocultural processes that set identity change in motion even before the appearance of the first missions, the practices that have reinforced it in the missions, and the social conditions that cemented it after secularization. The archaeological and the ethnohistoric records are used to illustrate identity changes and their reflection in the material record.

Tomka, Marybeth (UTSA-CAR)

[237] *25+ Years Later: The Significance of the Great Kiva at the WS Ranch Site, Alma, New Mexico—A Reevaluation*

This paper will explore research completed under the direction of Dr. James A. Neely, Professor Emeritus, Department of Anthropology, the University of Texas at Austin. In 1988, my Master's thesis presented a theoretical viewpoint of the significance of the Great Kiva and the surrounding room block at the WS Ranch site (Tomka 1988). It summarized four field seasons worth of excavations (1977-1978 and 1984-1985), artifact analysis, and attempted to put the presence of a great kiva into theoretical context. In the 25 years since this work was completed, scholars have added to the literature in excavation results and social complexity-integration theory. I propose to reevaluate my original conclusions in the context of current models.

Toms, P [17] see Basell, Laura

Toney, Elizabeth (Gila National Forest, Silver City Ranger District), Robert Stokes and Aaron Woods (University of Nevada Las Vegas)

[66] *Social Contexts and Community Organizational Roles of Classic Period Small Sites*

The Mimbres Foundation's 1970s-era processualist approach to salvaging data from looted Classic period sites in the Mimbres Valley was a milestone in Southwestern archaeology. Their work demonstrated that significant archaeological data remained and that there was still much to learn about the people of the Mimbres region. Prior research focused almost exclusively on the large pueblos, but to address gaps in knowledge related to other site types, the Mimbres Foundation undertook systematic survey of the valley and its major tributaries, documenting a range of sites from the Early Pithouse to Salado periods. Although focusing much of their excavation activities at two large sites, Mattocks and Galaz, several smaller Mimbres pueblos were also investigated. Recently, a renewed effort towards understanding the social and economic roles of smaller Mimbres pueblos in relation to larger Mimbres community systems has produced significant results. This paper reviews the pioneering work of the Mimbres Foundation's studies of small pueblo sites and then presents recent survey, excavation, and GIS data that provide a new understanding of the multi-functional sociocultural roles of this often overlooked site type.

Tonko, Juan Carlos [57] see Rivera, Mario

Toohey, Jason (University of Wyoming)

[19] *Ceramic Exchange and Community Interaction in the Late Prehispanic Cajamarca Basin, Northern Peru*

Instrumental Neutron Activation Analysis (INAA) of a sample of both decorated and utilitarian ceramics from the site of Yanaorco illustrates possible patterns of ceramic production and exchange during the Late Intermediate Period (LIP; A.D. 1000–A.D. 1472). Yanaorco was a heavily fortified LIP village located overlooking the Gavilán Pass on the southern edge of the Cajamarca Basin. Measuring 14 hectares, it was one of the largest population centers in the region during the LIP. Excavation at the site recovered both elite and utilitarian ceramics in domestic and public contexts. Neutron Activation Analysis of a sample of 93 ceramic fragments recovered from excavated contexts has revealed patterns in compositional variation and homogeneity implying the local production of domestic wares and the possible import of many fineware types, probably produced on pastes whose sources are elsewhere in the basin. These exchange wares are believed to have been produced at other LIP Cajamarca sites and brought to Yanaorco within so far not well understood exchange networks—possibly within the context of periodic inter-community events at the site. This strategically located community may have been a spatial nexus for broader regional activity.

Topi, John (University of Missouri), Todd VanPool (University of Missouri), Christine VanPool (University of Missouri) and Gordon Rakita (University of North Florida)

[44] *Architecture and Archaeology at 76 Draw*

Excavations during the summers of 2009, 2010, and 2013 recovered over 80,000 artifacts and exposed architecture across 76 Draw, an Animas Phase site on the northernmost edge of the Medio period culture. Excavations were organized around 10 excavation units. A summary of the architecture and artifacts recovered from each excavation unit is presented here, including evidence for religiously and socially important features including extremely thick walls, platform hearths, and formal animal burials. Areas of the site display strong evidence indicative of looting activity, while other portions are less disturbed. These data taken together reflect integration with the larger Medio period world, especially the Ramos Zone that contains Paquimé and its neighbors. It also reflects integration with the larger Jornada Mogollon culture and the earlier Mimbres culture.

Topping, Peter (Newcastle University)

[82] *Chair*

Topping, Peter [82] see Gardiner, Julie

Torres, Paola (USAC)

[191] *Los juegos de pelota de Cancuén: un medio en el reforzamiento de la identidad cultural de un sitio fronterizo*

New theories concerning the competitive processes of political and economic power are based on the concept of "networks of identity" formed between communities, groups and individuals. The impact of such networks may stretch between closely-placed sites or also to distant ones. Recent research at Cancuén, a site located on the edge of the lowlands and highlands of the Maya area, as well as other sites presented in this paper, have demonstrated that Maya ball courts were important locations for the formation and consolidation of interregional networks of power during the Classic period. These networks of interaction provide us with new insight about the nature of the border highland/lowland Maya communities and the limits of the power of the rulers of the reigns of the political systems of the Maya Classic period.

Torres, Paola [191] see Burgos, Walter

Torres, Josh (National Park Service) and David Goldstein (National Park Service-St. Croix, USVI)

[213] *Lost in Paradise: Placing the African Diaspora in the Danish West Indies/United States Virgin Islands*

Diaspora research typically focuses on the maintenance of cultural traits of peoples from their points of origin. Equally important is the examination how displaced groups forged new social realities at their destination. In this paper we examine how individuals and social groups transitioned from enslavement to freedom on St. Croix in the Danish West Indies during the eighteenth century. Using archaeological data and historical records we trace trajectories of several African families and the legacies of those histories into the early 19th century. Ultimately we identify that the emergence of Crucian communities, as people and places, was intimately linked to the formation of local identities and the negotiation of

social and economic mobility within the contexts of Danish colonialism inasmuch as the "Africanisms" that are often the focal point of diaspora studies.

Torres-Rouff, Christina (UC Merced)

- [143] *Displaying Violence, Displaying Masculinity: Violent Injuries in Life and Death in Northern Chile's Atacameño Oases*

An understanding that violence is gendered pervades thinking about conflict. While violent actions are frequently attributed to men, these acts are not solely contingent on sex, but rather reflect social customs and practices. As a result, these acts of violence can have a performative element in the display of social identities, including masculinity. A close read of the remains of nearly 300 individuals from two Middle Horizon (A.D. 500-1000) cemeteries shows the intersection of gender, power, and violence. While women were not free of trauma, many men bore visible signs of violent engagement through an overwhelming bias towards direct confrontation reflected in sublethal facial fractures. Moreover, in life these individuals would have displayed these injuries in bloody form during conflict and afterwards in the misshapen appearance of their faces, clearly embodying the violence. Similarly, in death, individuals carried their weapons with them, wielding them as a form of power in the grave. Their conspicuous placement adjacent to the deceased suggests that they were clearly visible to the community during interment, a prominent part of the performance of the burial ritual. Together, these forms of evidence suggest the visible display of violence, in action and material, that was tied to masculinity.

Torres-Rouff, Christina [150] see Stovel, Emily

Torvinen, Andrea (Arizona State University)

- [200] *Developing regional Chronologies Using Ceramic Metatypologies: An Example from Northwest Mexico*

The formation of the northern frontier of Mesoamerica has been studied from the point of view of several individual polities. A comprehensive, accurate understanding of how and why polities developed in this frontier zone during the Classic and Epiclassic periods (A.D. 200-1000) requires synthetic analysis.

Synthetic analysis, however, requires a regional-scale chronology and a ceramic metatypology can provide the chronological control needed for accomplishing this task. The creation of a ceramic metatypology has recently been undertaken by a team of archaeologists working in seven occupation areas within the Zacatecas region of Northwest Mexico (i.e., the Malpaso, Bolaños, Tlaltenango, Juchipila and Verde Valleys, as well as the Chalchihuites and Ojocaliente areas). This paper presents the methodology used to develop a regional metatypology and "digital ceramoteca" housed on tDAR (the Digital Archaeological Record), as well as the preliminary results of an intensive workshop focused on documenting the timing and adoption of regional ceramic traditions and interpreting the chronological patterns of those traditions. The development and application of a ceramic metatypology to site assemblages will provide us with an understanding of the interaction dynamics within Northwest Mexico and their implications for the development of sociopolitical complexity in frontier zones.

[200] Chair

Toscano, Lourdes (CENTRO INAH YUCATÁN) and José Herrera

- [195] *Terminaciones Rituales en los Principales Edificios de La Región Puuc*

Durante las últimas exploraciones realizadas en varios de los principales sitios del Puuc, tales como Uxmal, Kabah, Sayil y Labná, hemos hallado innumerables evidencias de un tipo de destrucción intencional los edificios principales. Si bien los edificios prehispánicos fueron destruidos por diversas causas, algunos de ellos muestran huellas de destrozos que fueron realizados de manera cuidadosa y siguiendo un procedimiento similar en todos esos sitios, lo que nos ha permitido identificar un Patrón de Destrucción en que pudiera extenderse a la Región. Junto a estas destrucciones hemos hallado una serie de evidencias que nos permiten suponer que son el resultado de una actividad planificada y consensada entre los individuos de tales comunidades prehispánicas.

Tostevin, Gilbert (University of Minnesota)

- [193] *Indirect Identification of Adaptive Advantage: The Role of a Behaviorally Informed Approach to Cultural Transmission within Evolutionary Archaeology.*

While accepting the multi-causal nature of most questions, archaeologists nonetheless often rely on the greater ease of testing single-cause hypotheses when the preserved material record indicates that an

adaptive advantage could have been afforded by one artifact form (or behavioral trait) over another. The identification of lithic morphologies among Aurignacian assemblages as suitable for specific projectile delivery methods, allowing greater hunting success, is a case in point. Yet what of other cases when the actual cause of an adaptive change in hominin life-ways does not preserve and is not so obvious? How is such an adaptive change recognized as having happened? Evolutionary Archaeology's close reliance on population-level evolutionary theory, including cultural transmission (CT) theory, increases the likelihood that such "invisible" adaptive changes can be identified through the recognition of cultural transmission events in preserved material culture that could have resulted from a coattail effect (or indirect biased transmission in CT terms) from adaptive changes in "non-preserved" behavior. The present paper discusses how a behaviorally-informed approach to cultural transmission within Evolutionary Archaeology can uncover new evidence of an adaptive change and population pulse associated with the Bohunician technocomplex during the Early Upper Paleolithic in western Eurasia.

[255] *Discussant*

Towner, Ronald [176] see Kessler, Nicholas

Towner, Ronald (Tree-ring Lab, University of Arizona)

[323] *Watching for Roque: The Dendroarchaeology of La Jara Canyon, Dinétah*

At dawn on August 11, 1705, Mre. de campo Roque Madrid led a force of Spanish soldiers, civilian militiamen, and Indian auxiliaries into Dinétah, the Navajo heartland. This invasion resulted in the destruction of Navajo hogans, burning of Navajo corn fields, torture and murder of Navajo women, and two battles with Navajo combatants. Spanish documents, including Madrid's diary, indicate that similar entradas regularly entered the area via La Jara Canyon, over the next decade and subsequently engaged various Navajo groups in violent encounters throughout the eastern portion of Dinétah. These same documents hint at the Navajo responses to Spanish aggression, but tell only one side of the story. There are no known Navajo oral traditions concerning these specific events. Archaeology and tree-ring analyses provide more detailed data concerning the nature of these early eighteenth century conflicts. This paper discusses the Navajo archaeology and dendroarchaeology of upper La Jara Canyon and illuminates Early Navajo responses to not only the Spanish entradas, but other conflicts as well.

Toyne, Marla [28] see Epstein, Lori

Toyne, Jennifer Marla (University of Central Florida), Ismael Mejias Pitti (Proyecto Ukhupacha, Universitat Juame I, Castellon), Jordi Puig Castell (Proyecto Ukhupacha, Universitat Juame I, Castellon), Lori Epstein (University of Central Florida) and Armando Anzellini (University of Central Florida)

[105] *Going Vertical: Using Vertical Progression Techniques to Explore Complex Mortuary Spaces in Chachapoyas, Peru*

Most archaeological practice involves horizontal excavations of ancient occupations and cemeteries, but the Chachapoya of the eastern montane of Peru, built spectacular mortuary structures along narrow cliff ledges and in shallow caves. The mortuary complex of La Petaca includes more than 80 platforms, modified ledges, mausoleums, and caves containing human remains across one section of an exposed rock face more than 200 meters across by approximately 80 meters high. While the site has been looted and damaged due to various taphonomic processes related to the vertical space (including cultural, geological, and biological), we argued that there are many important details of these constructions that could still be recorded, especially in relation to how the ancient Chachapoya people created and accessed these vertical spaces. Through collaboration with Spanish spelunkers, we were able to identify and access many of the different constructions using specialized repelling techniques; including industrial harnesses, secondary safety lines, pendulum connections, rebelay, and suspended platforms. This valuable partnership between spelunkers and archaeologists allowed us safe access to these exceptional contexts to map, sample, and make detailed observations of building methods and burial contents. This research was sponsored by the Petzl Foundation.

Trabert, Sarah (University of Iowa)

[323] *Social Identity in Protohistory: A Case Study from the High Plains*

During the Protohistoric period in North America, many Native American groups experienced significant social, economic, political, and demographic disruption stemming from the European colonization of their continent. Previous research on this colonization has long focused on areas where direct contact took

place between Europeans and Native peoples. This paper explores the indirect effects that colonization may have had on groups living beyond the borders of colonial control; principally on the central and high Plains. Topics such as demographic change, migration, ethnogenesis, hybrid communities, and social identity will be explored using Dismal River aspect sites as a case study. The sites and objects that Dismal River aspect people left behind exemplify the fluid and dynamic nature of Protohistoric social identity and show how archaeologists must complicate previously held concepts of cultural boundaries and intraregional interactions.

[323] Chair

Trachman, Rissa (Elon University)

[292] *Economic Organization at the Site of Dos Hombres and its Hinterlands: A Multiscale Perspective in Northwestern Belize*

Recent investigations at the site of Dos Hombres in northwestern Belize combined with previous research both at the site and its hinterlands reveal interesting preliminary evidence towards economic organization. Trade of material culture both in the site proper and the nearby households is evidenced through obsidian, shell, and ceramics. Hinterland occupation data indicate much about the ways in which households negotiated their material world, access to goods, and their fluidity related to both social status and chronology. Within the Dos Hombres site center, investigations of an Early Classic tomb revealed a stratigraphic lens of obsidian artifacts above the tomb architecture. Preliminary sourcing along with lithic technological analysis indicates that Dos Hombres was trading for percussion cores from the sources at El Chayal and producing prismatic micro-blades from those cores locally at Dos Hombres. Recent architectural excavations in the large open Plaza A of Dos Hombres have revealed common architectural elements with those seen at other sites possibly indicating the exchange of technology and the possibility of an eastern Peten regional architectural style. The result of the analysis at these different scales demonstrates heterogeneity of ancient Maya economic organization as it relates both to chronology, context, and social organization multiple scales.

Trader, Patrick (Gray & Pape, Inc.)

[74] *Pioneering Archaeology in the Mountain State: The Career of Edward V. McMichael*

Between 1960 and 1967, Edward V. McMichael served as the Head of the Section of Archeology at the West Virginia Geological and Economic Survey in West Virginia. As West Virginia State Archeologist, McMichael was responsible for surveying, documenting, and excavating archaeological sites throughout the state; however, the focus of much of his work was concentrated on the central and southern portions, particularly the Kanawha River Basin. Through collaboration with members of the West Virginia Archeological Society, McMichael excavated significant sites throughout the region including Mount Carbon Village and the Buffalo Site. Equally important were a series of salvage operations at numerous mounds in Boone, Kanawha, and Putnam counties. Through these investigations, McMichael developed a chronological framework for the state, particularly the Woodland period, that has changed little over the past 40 years. McMichael's contributions to the archaeology of West Virginia and the surrounding regions were significant and are widely cited today.

[74] Chair

Trameri, Andrea (ISAW-NYU)

[257] *Preliminary Investigations at Ktnk Hoyuk, Southern Cappadocia: Middle and Late Iron Age; Earlier Phases*

The new chronology at Gordian and the recent investigations at Kerkenes are providing new insights into the archaeology of Central Anatolia during the Middle/Late Iron Ages. The first three years of archaeological campaigns (2011-2013) at the site of Ktnk Hoyuk, Southern Cappadocia (Turkey) have provided novel pieces to the puzzle, thanks to the investigation on the fortified citadel and the lower town. This presentation will focus on the Middle and Late Iron Age levels excavated on the summit and the slopes of the mound. The preliminary investigations show substantial material evidence for the Iron Age and a remarkably good degree of preservation of stone and mud brick architecture. Two contexts will be discussed within the presentation: the citadel fortification and a trash area on the N slopes. The important MIA fortifications of the citadel are extremely well preserved, and therefore a project of restoration was begun in 2013. A significant quantity of high quality material findings from the last campaign is associated with an area characterized by trash deposit layers on the N slope. The manufacture of uncommon animal shaped vessels and statues related to these layers, dating to the Achaemenid period, provide insights to a possible cultic practice.

Trask, Willa [137] see Meredith, Clayton

Trask, Willa (Texas A&M University)

- [155] *Life and Death in Rural Texas: Analysis of Biological Distance and Demography at Montgomery Hill Cemetery*

The skeletal remains excavated and analyzed from Montgomery Hill Cemetery represent a rare opportunity to gain insight into the life and death of a previously unknown and undescribed group of individuals who lived along the prairie margin in rural Texas during the latter part of the nineteenth century. In 2011 and 2012 the skeletal remains and associated cultural artifacts from 25 graves were recovered from the Montgomery Hill Cemetery. The demographic composition of the cemetery is unlike any other previously excavated in Texas in that it is predominately composed of sub-adults, thus representing subset of the late 19th century Texas population previously underrepresented in bioarchaeological investigations—poor, rural children. The present work uses osteological data collected from those individuals exhumed from Montgomery Hill Cemetery to better understand the life and death of these people through demography and basic indicators of health and trauma. Dental metric and nonmetric data is utilized to investigate biological distance between individuals. Geostatistics and spacial analyses is used to aid in identifying potential family units. From this we may expand our knowledge of underrepresented sharecroppers and tenant farmers, and their families in rural east Texas in the decades following the 1865 emancipation of slaves.

Traugott, Joseph (Curator Emeritus, New Mexico Museum of Art)

- [202] *Re-Viewing Ancestral Pueblo Design Strategies*

Linda Cordell was aware of the potential insights to be found through the study of design strategies and encouraged me to examine how design was used by Ancestral Pueblo peoples. While all pottery is both a work of art and a functional object, this is especially true for painted pottery. Ancestral Pueblo design motifs were often composed of paired, similar elements, in which unpainted negative space is as important as the painted elements that archaeologists have studied. This paired strategy created optical illusions that made the painted elements appear as backgrounds and the unpainted areas as the intended image. These optical phenomena have not been discussed previously. This design strategy cuts across pottery typologies and I describe it as “isomeric design” (Greek for “equal forms”). My research demonstrates that potters throughout the greater Southwest employed isomeric designs between CE 900 and 1350. However the use of isomers all but disappeared after major population movements throughout the region. In addition, I propose that “step and fret” or “lock and key” designs are actually simplifications of dual spiral motifs. This research would not have proceeded, or produced its unusual results, without Cordell’s interest and support.

Travina, Anastasiya (University of Texas at Austin), Anastasiya Travina (University of Texas at Austin) and Daniel Woodie (University of Texas at Austin)

- [336] *Fibers, Statistics, and Communication: an Exploration of Structural Patterns and Numerical Properties of the Inka Khipu*

The writing system of the Inca Empire was called khipu. Khipu is comprised of sets of yarn, containing numerous knots, which are tied along the length of the fiber. The patterns of khipu structure represent accounting and narrative information encoded in double-entry method of input. Using historical and statistical analyses, this paper explores non-numeric properties of colonial and Inca khipu preserved in several museums and published in the Khipu Research Database. We apply two non-parametric methods, correspondence analysis and Kolmogorov-Smirnov test, to studying such categorical properties of khipu as cord termination, attachment, and color. The paper also discusses the question of how environmental and preservation factors affected the shades of dye and what statistical methods could be used to address this issue. Finally, the paper attempts to understand the differences of these properties across various regions of the Inca Empire and hypothesize how the Incas were able to establish and monitor labor assignment and distribution through the Andes.

Travina, Anastasiya [336] see Travina, Anastasiya

Traxler, Loa (University of New Mexico)

- [68] *After the Apocalypse—Engagement with Maya Cultural Heritage through Archaeology, Collections, and Museums*

The world did not end in December 2012 with the turn of the Classic Maya calendar, and neither did the

challenges faced by archaeologists and museum professionals working to preserve the material culture and cultural legacy of Maya people. The need for archaeologists, along with others, to serve as public interpreters of cultural heritage is growing, especially given collections and sites around the world that remain endangered. Under pressure to economize in stewardship practices while increasing the impact and accessibility of collections for diverse communities, archaeologists are responding with innovative projects, collaborations and public programs.

Trein, Debora (University of Texas at Austin)

- [224] *Close the Door When You Leave: Termination Deposit at a Temple Structure at the site of La Milpa, Belize*

This paper examines ancient Maya ritual termination practices in monumental contexts. These practices are understood to consist of commemorative events in which ritually and politically significant structures are abandoned, destroyed or buried. In particular, attention will be given to termination events that were quickly followed by site abandonment or reorganization. It is argued that a study of termination deposits may be used to understand the character of socio-political organization of communities on the cusp of major societal change. This examination will be illustrated by the material record present at Structure 3, a large temple building at the site core of La Milpa. La Milpa suffered extensive socio-economic instability at the end of the Late Classic period, which resulted in the large-scale dispersal of the population. Archaeological material uncovered in the 2013 excavations of Structure 3 suggests that this building was subjected to a complex set of termination events over an extended period of time immediately before the core of La Milpa was abandoned. These termination events entailed a considerable level of organization of labor and resources, which implies that the abandonment of La Milpa may have been a planned process that entailed some level of community participation.

- [224] *Chair*

Treloar, James and David Chicoine (Advisor)

- [104] *Early Horizon Fortified Settlements and Defensive Strategies in the Lower Napeña Valley, Peru*

This poster examines patterns of defensive architecture in the lower Napeña Valley, north-central coast of Perú during the Early Horizon (800-200 B.C.). Results of systematic surface surveys and excavations at several sites indicate the increased importance of armed conflicts and intercommunity violence, mostly during the second half of the first millennium B.C. While warfare is likely to have played a major role in shaping local sociopolitical and ritual landscapes, spatial and architectural data have yet to be systematically collected and analyzed. This paper presents results of mapping operations at the centers of Caylán, Huambacho, and Samanco. Ancient conflicts are materialized in the presence of fortified walls, observation posts, and hilltop forts. The formal and spatial characteristics of these features are described to shed light on defensive architecture. Using GIS tools, we explore the distribution of defensive features, evaluate viewsheds, and delineate the intensity and direction of potential threats with the objective of understanding local defensive strategies.

Tremain, Cara (University of Calgary)

- [164] *The Art of Dressing: An Iconological Approach to Ancient Maya Identity*

Outward appearances, as a visual form of communication, are one of the principle ways in which identities can be expressed. The exploitation of a wide range of materials and the ability to construct different dress styles allowed the ancient Maya to express identities in a variety of ways. Despite the hindrance that a humid environment plays in the recovery of direct evidence of organic dress materials, the wealth of pictorial evidence available allows for a reconstruction of identities expressed through dress. This presentation will outline a methodology for better understanding dress in the Central Maya Lowlands during the Late Classic period (600-900 C.E.), and will explore initial research results from several museum collection investigations.

- [164] *Chair*

Tremain, Cara [302] see Haines, Helen

Tremayne, Andrew (University of California Davis)

- [23] *An Ideal Free Distribution Model for Hunters in Northern Alaska: Implications for Arctic Small Tool Tradition Coastal Settlement*

A long standing debate in archaeology concerns the ranking of coastal versus terrestrial habitats. One

camp argues maritime resources are technologically expensive and riskier to harvest than terrestrial resources. The opposing camp argues that aquatic resources provide a greater amount of calories, fat and nutrients, and that the abundance and stability of these prey make coastal habitats more attractive to hunter-gatherer populations. This paper uses an Ideal Free Distribution model to rank coastal and interior habitats in northern Alaska. Ideal Free Distribution theory holds that animals colonize habitats with highest suitability first and only move into lower ranked habitats after competition reduces suitability of the first. My rankings are based on the sum of potential calories for all prey found in each habitat that is included in the diet. Seasonal fluctuations in prey population densities are estimated to refine rankings. I test the model by using radiocarbon dates from Arctic Small Tool tradition (ASTt) sites to determine 1) if the settlement patterns of northern Alaska by ASTt hunters follows predictions made by Ideal Free Distribution theory and 2) if ASTt coastal settlements post-date or coincide with occupations of interior habitats.

Triadan, Daniela [61] see MacLellan, Jessica

Triadan, Daniela (University of Arizona) and Takeshi Inomata (University of Arizona)

[252] *Preclassic Ritual and Community at Ceibal, Guatemala: Excavations along the Center Axis of the E-Group in the Central Plaza of Group A*

Our recent excavations along the center axis of the E-Group in the Central Plaza of Ceibal revealed that this space was a ritual focus of this community since its founding. Starting around 1000 B.C., caches were placed in this area until at least the Late Protoclassic, indicating the continuous use of this area as a public ritual space. However, changes in the configuration and contents of these caches show changes in ritual practices and regional interactions through time. While ritual practices in the Early Middle Preclassic seemed to be linked to those of sites in Chiapas and the Gulf Coast, by the Late Middle Preclassic Ceibal appears to have become part of the interaction sphere of the Maya lowlands.

Trimble, Michael (U.S. Army Corps of Engineers)

[151] *The Development of CRM and Its Relationship with Archaeological Collections Management*

Archaeological collections and associated records are the raw data that endure from our scientific endeavors, not reports. The data we have gathered as professional CRM archaeologists over the past forty years are impressive. However, the care afforded these collections and records has been at best uneven, despite the comprehensive definitions, standards, procedures, and guidelines issued by the Department of Interior in 1991. Resources to care for the data, priorities of agencies and their personnel, private sector interests, public and private museum policy, and the attitudes of our own discipline have all shaped and contributed to the status and care of our national collections. However, in many areas of the nation there have been constructive and successful initiatives that have led to new approaches for care and access to large scale collections. Several successful curation paradigms developed over the last forty years include, regional curation approaches, engagement of the public/private sector, non-profit endeavors, and the use of Veterans. These approaches are successful because they have adapted to the changing landscape of interest in our cultural patrimony. Finally, the future use of our collections will most likely come from the public and education community, not purely researchers.

Trocolli, Ruth (D.C. City Archaeologist), Christine Ames (D.C. Historic Preservation Office) and Chardé Reid (Assistant D.C. City Archaeologist)

[77] *Collections Crisis in the Nation's Capital*

The Washington, D.C. Historic Preservation Office (HPO) is dealing with a collections crisis over 30 years in the making. The HPO has no provision for a repository to curate collections generated from federal or local compliance projects. No City Archaeologists have made progress. Fiscal and physical realities have the HPO in perpetual reaction mode, hampering their ability for long-term curation planning. This poster outlines the current state of the collections crisis and ongoing activities to remedy the situation. While the HPO collections are organized and managed using a PastPerfect museum software database, they are physically spread across numerous locations that are environmentally uncontrollable. Some local federal agencies also fail to meet federal curation standards (36CFR79) or delegate curation to the HPO. One federal entity secretly discarded collections rather than curating them, forcing the HPO to verify the locations of collections from all previous archaeological surveys and determine whether the responsible agencies, federal or private, are meeting their curation responsibilities. In the process, the HPO has accepted collections that were marginally curated, and/or in danger of discard. We seek advice and suggestions from others who are dealing with their own collections crisis.

Trombold, Charles (Washington University in St. Louis) and Ryan Schuermann (Texas State University, San Marcos)

[200] *Assessing Accuracy of Historic Archaeological Survey Maps: A Case Study of the La Quemada Hinterland, Middle Malpaso Valley, Zacatecas, Mexico.*

Maps created from archaeological field surveys are important records that reflect spatial and temporal interaction of features on a landscape. Historic maps, those created before development of GIS in the 1990's, have the potential to be useful sources of spatial information. Assessment of this information includes an understanding of the relationship between map maker and map user, and the ability to quantify the data's positional accuracy. In this paper, we examine two historic maps of the Malpaso Valley: the 1833 map of Carl de Berghes and the 1974 map by Charles Trombold. Through an analysis of variance (ANOVA) between five standard rectification models found in ESRI's ArcGIS software, we compare the positional accuracy of site locations within the Trombold map to site location data acquired by GPS. We show that this process is paramount, yet potentially under-utilized in establishing confidence in quantitative analyses of landscape morphology and settlement location employing historic maps as a source of spatial data.

Trombold, Charles D. [322] see Schuermann, Ryan

Troufflard, Joanna (University of Florida)

[234] *Contextualization of Two Portuguese Museum Collections from the Marajó Island (Pará, Brazil)*

The last two centuries saw numerous expeditions to the Amazonian Marajó Island which resulted in an impressive presence of Marajoara ceramics in museums worldwide. While the collection of material from the so-called "primitive" cultures was mainly done for comparative purposes in the 19th century, some of the 20th century collections represent clearly colonial or neocolonial practices. This poster aims to demonstrate the archaeological potential of the study of museum collections generally neglected by archaeologists due to lack of contextual information. It focuses on the past and present contexts of two Portuguese museum collections of funerary artifacts from the Marajó Island stored in Portugal. The methodology involves the creation of a descriptive catalogue with detailed drawings of the objects as well as functional and iconographic analyses based on parallels between these archaeological remains and archaeological data from current studies of the collection's likely site of origin. Finally, an interview with one of the collectors provides new information on the non-scientific excavations. In sum, the compilation of all these lines of evidence allows us to contextualize these museum collections and increase our knowledge of the Marajoara culture.

Trout, Lukas [23] see Morgan, Christopher

Trowbridge, Meaghan (Statistical Research, Inc.) and Robert Heckman (Statistical Research, Inc.)

[294] *Results of the Ceramic Analyses from the New Mexico Department of Transportation U.S. 491 Highway Project in the Southern Chuska Valley, NM*

Analysis of ceramic artifacts offers an avenue through which many questions pertaining to regional interaction throughout the Southwest can be addressed. The San Juan Basin was an incredibly active place in terms of social interaction and migration during prehistoric times, and ceramics recovered from sites in the southern Chuska Valley indicate that local groups had significant social and/or economic ties to other regions, such as the northern Colorado Plateau. Data recovery of more than two dozen archaeological sites by Statistical Research, Inc. as part of the New Mexico Department of Transportation US 491 highway project produced more than 60,000 ceramic artifacts. Ceramics analyzed represent a span of occupations from Basketmaker III through Pueblo III periods, and include wares and types from both local and non-local geographic contexts. This paper presents an overview of results from the ceramic analysis, and touches on interesting patterns and observations noted through time at the sites investigated.

Trubitt, Mary Beth (Arkansas Archeological Survey)

[30] *Identifying Ceramic Exchange and Interaction between Cahokia and the Caddo Area*

Historically, native peoples of Arkansas interacted with communities in the Southeast as well as in the Plains and Southwest. Ouachita Mountains novaculite, igneous rocks, and minerals were transported beyond the region during the Archaic and Woodland periods. Some movement of ceramic vessels took place during the Mississippian period, as shown by a growing body of studies of ceramic paste

composition using petrography and neutron activation analysis. Here, we focus on differentiating locally produced ceramics from non-local wares using instrumental neutron activation analysis (INAA). We compare fine wares from the Cahokia site in Illinois and the Caddo Area in Arkansas, Louisiana, Oklahoma, and Texas to address the question of the source of fine grog-tempered vessels found at Cahokia. Describing local ceramic traditions is a first step towards identifying technological styles and communities of practice in both the Central Mississippi Valley and the Caddo area. Explanations for interactions and the movement of ceramics that may include transport, trade, gifting, emulation, or migration, can then follow.

[30] Chair

Trussell, Suzanne (Allegany Museum)

[111] *Wilderness Conquest:Community Development in Western Maryland in the Nineteenth Century*
During the nineteenth century, aided by the development of transportation infrastructure, Western Maryland went from an isolated and densely wooded mountain area to a bustling town. The examination of the development of Mexico Farms from a large agricultural estate to a neighborhood highlights the shifts in land ownership, farming, ethnicities, and commercial access of Allegany County residents. A series of test units were excavated in 2011 to determine when a Greek Revival house in the neighborhood was constructed. The excavations encountered a thick, construction layer of shale capping two distinct features: a sandstone alignment and a thick brick fill layer as well as diagnostic artifacts from the 1820s-1830s. In addition, we analyzed 54 fragments of lead-glazed redware ceramic vessels. Interestingly, the tradition of redware pottery was carried from Germany, to Pennsylvania and by mid-nineteenth century had reached an industrial level of manufacturing in the Shenandoah Valley/Great Valley. The use of redware, despite the toxicity associated with lead glazes, shows a cultural tie to German heritage. This paper will discuss the cumulative investigations undertaken at Mexico Farms, detail the results of the archival history, and correlate how this neighborhood serves as a microcosm of rural Maryland in the early nineteenth century.

Tryon, Christian (Harvard University) and Nick Blegen (University of Connecticut)

[26] *Levallois Origins and Variability in Africa*

Levallois technology is an important component of many late Acheulian and Middle Stone Age (MSA) lithic assemblages across Africa. By 300 ka (and likely earlier), diverse Levallois methods were used by early Homo sapiens and ancestral taxa. Regional variation in the frequency and types of Levallois core preparation and flake production is central to many key arguments in human evolution. These include population dispersals out of Africa, inter-regional variation among MSA hominin populations, cognitive evolution and habitat preference. Current evidence is consistent with multiple independent origins of Levallois approaches to the production of flakes, points, and blades. However, whether Levallois variation results from population dispersal (as might be the case with the Nubian methods), population-specific approaches resulting from independent invention, isolation and drift, or adaptation to local environments needs to be tested. Doing so requires detailed technological studies of the Levallois concept at African sites comparable to those in Europe or the Levant and increased chronological control. Although data are fewer, the antiquity and diversity of Levallois lithic technology in Africa equals or exceeds that seen in neighboring Eurasia.

Tschinkel, Khristyne (Durham University) and Rebecca Gowland (Durham University)

[241] *Differentiating between Residual Rickets and Osteomalacia: An Analysis of Existing Macroscopic and Radiological Techniques Using Three Post-Medieval Skeletal Populations*

Vitamin D deficiency can manifest in the body depending upon the age of the individual. A vitamin D deficient child can develop rickets and carry the features obtained into adulthood, known as residual rickets. On the other hand, vitamin D deficiency in adults develops into osteomalacia. The manifestations of residual rickets and osteomalacia are similar; however, differentiation focuses on the presence of a few pathognomonic features. The identification of vitamin D deficiency in archaeological skeletal material provides important environment, socio-economic, and cultural information for past populations. Understanding the skeletal manifestations of residual rickets and osteomalacia will create a higher level of accuracy in diagnosis and differential diagnosis. Three post-medieval skeletal populations from the UK will be utilized in assessing previously determined macroscopic and radiographic techniques in identifying residual rickets and osteomalacia. This project assesses each pathological feature's usefulness for diagnosis, as well as additional possible skeletal indicators. Results show residual bending as a key feature to identify residual rickets while the key features of osteomalacia are pelvic buckling deformities

and pseudofractures. The pathognomonic features of residual rickets and osteomalacia manifest only in severe cases, therefore an underrepresentation of vitamin D deficiency in the archaeological literature exists.

Tserendagva, Dr. Yadmaa [92] see Hadel, Patrick

Tsesmeli, Evangelia (Southern Methodist University) and Catrina Whitley (Office of Archaeological Studies, Museum of New Mexico)

[268] *Finding What Is Not Expected: The BaahKu Archaeological Project, Arroyo Seco, NM*

BaahKu (LA 37627) is a small site within a privately owned one-acre lot, located near Arroyo Seco in the Taos Valley, New Mexico. Surface collections from archaeological surveys in the 1980s indicated a single pithouse/unit pueblo occupation in the northeastern quadrant of the site. Augering and test pitting in 2010, however, revealed evidence of occupation across the property. Further excavations from 2011 to 2013 at areas where no artifacts or cultural features had been identified on the ground surface, yielded roomblock and pithouse walls representing multiple occupations, as well as artifacts suggesting contact and exchange with other communities in the northern Rio Grande Valley. At the southwest quadrant, outside the bounds of surface remains, a possible shrine area was excavated containing flagstone capped turquoise, caches, and upright quartzite. The presence of extensive architecture and a possible shrine outside the area of the site where artifacts are visible on the ground surface indicates that traditional survey approaches may not be adequate for identifying important evidence of domestic and ceremonial activity. This paper discusses recent finds at BaahKu and reconsiders assumptions about the way we identify site size and settlement layout based on surveys and testing.

Tsukamoto, Kenichiro (School of Anthropology, University of Arizona)

[224] *An Analytical Approach to Termination Ritual at the Classic Maya center of El Palmar, Campeche, Mexico*

Termination ritual has been broadly reported throughout the Classic Maya centers, but its analytical approach needs to be refined. During fieldwork from 2010 to 2012, we recovered a large amount of termination deposits at the Guzmán Group, the north periphery of El Palmar archaeological site. In the field we documented the spatial context of termination deposits with a total station and plotted them on a map. In the laboratory we attempted to refit all recovered sherds and then analyzed their spatial distributions to examine whether vessels were broken in situ or elsewhere. Moreover, the maximum diameter of refitted vessels was estimated to assess if changes in vessel size are correlated with the transformation of the plaza. The results suggest that some vessels found after the remodeling of the plaza were designed for feasting and during termination ritual performers broke vessels in different places and brought these fragments to cast in and around the structures.

Tucker, Bryan [12] see Krigbaum, John

Tucker, Tim

[70] *The Map of Cuauhtinchan II and the Valley of Teotihuacan*

Since 1997 the Mesoamerican Research Foundation has investigated ritual cave use in Central Mexico relating to the Map of Cuauhtinchan II (MC2), a 16th century historical cartographic or ethno-geographic document. Extensive ground investigations over several years have allowed us to correlate locative glyphs (pre-Hispanic sites) depicted on MC2 with locations on modern maps. This presentation analyzes the northeast corner of MC2 along a line that begins in Veracruz on the north flank of Pico de Orizaba, and passes on the north side of La Malintzi to Atlahuatzia, Tlaxcala. The line then passes by the headwaters of the Rio Zahuapan, to pass by Calpulalpan. The important point is that, if our identifications are correct, the journey illustrated in MC2 begins in the Valley of Teotihuacan, not the Valley of Mexico. In other words, at the northwest corner of MC2, we enter the Valley of Teotihuacan and find a hill named Chiconautla - candidate for the legendary Chicomoztoc, Place of the Seven Caves. This hill is several miles west of the archaeological site of Teotihuacan.

Tucker, Bryan (Georgia Department of Natural Resources), Jennifer Bedell (Georgia Department of Natural Resources), Rachel Black (Georgia Department of Natural Resources), Aimee Bouzigard (Georgia Department of Natural Resources) and Jennifer Weber (Georgia Department of Natural Resources)

[308] *A Summary of Excavations at a Late Archaic Coastal Shell Midden on Ossabaw Island, GA*
Ongoing excavation of the Cane Patch site (9CH35) on Ossabaw Island, Georgia has provided new data on the deposition and formation of the site. Though much of the site was destroyed by shell mining in the 18th and 19th century, current excavations demonstrate substantial intact portions remain. Our investigations confirm the site is a Late Archaic mounded shell midden with a majority of decorated fiber tempered pottery. When compared to Late Archaic shell rings, shell mounds are relatively rare along the Atlantic coast and the social functions that resulted in their formation likely differ from those that formed the shell rings. The combined results of the 2011, 2012, and 2013 field seasons are compared to Crusoe and Depratter's excavations in 1971. Though laboratory analysis of the artifacts and fauna is ongoing, new data from stratigraphic profiles, AMS dating, and LiDAR mapping are presented. Ultimately, these data may suggest the different social actions responsible for the formation of Archaic shell bearing sites along the Atlantic coast.

TUMEN, Dashtseveg [41] see Fenner, Jack

Tune, Jesse (Texas A&M University)

[133] *What is Cumberland? A Lithic Technological Organization Study*

Cumberland fluted points are a distinctive full-fluted point form from the Midsouth United States, and are frequently recovered from a surface or disturbed context. Historically, they have been valued for their aesthetic appeal. However, Cumberland fluted points have received comparatively little academic study. As a result, there are many unresolved questions regarding Cumberland fluted point technology. What does Cumberland biface production look like in the archaeological record? Do Cumberland fluted points represent a discrete late Pleistocene point type with distinct morphological variability? Did the people who used Cumberland fluted points develop a unique settlement strategy, or did they exploit the same landscapes as people who used Clovis fluted points? The research presented here formally addresses the question, "What is Cumberland?" from the perspective of lithic technological organization and regional distributions.

[133] *Chair*

Tung, Tiffiny (Vanderbilt University, Department of Anthropology)

[103] *Characterizing the Victims of Lethal Violence after the Collapse of the Wari Empire:*

Bioarchaeological and Isotopic Analysis of Massacre Victims at Huari, Peru

The decline of the Wari Empire led to significant increases in perimortem cranial trauma, indicating a rise in deadly violence. This study compares how those with perimortem trauma differed from those without perimortem trauma in terms of their skeletal health and isotope characterizations. We document carbon and nitrogen isotope ratios from bone collagen, and carbon and oxygen isotope ratios from enamel apatite. Preliminary carbon and nitrogen isotope data from bone collagen are statistically similar between adults with lethal cranial trauma vs. those without, suggesting that both groups had similar adulthood diets. In contrast, the carbon and oxygen isotope ratios from enamel apatite, which reflects childhood diet/water, are significantly different (T-test, $p = .033$; $p = .011$, respectively) between those with lethal head wounds (mean $\delta^{13}\text{C} = -3.46$; mean $\delta^{18}\text{OSMOW} = 22.31$) and those without (mean $\delta^{13}\text{C} = -5.46$; mean $\delta^{18}\text{OSMOW} = 21.23$). (Early forming teeth were used in both groups.) This suggests that those who died from lethal attack had distinct childhood experiences, at least in terms of diet and access to particular water sources. These differences were smoothed over in adulthood, but the childhood differences may point to distinct social or geographical groupings that could have had lasting impact in terms of who was targeted for deadly violence.

[28] *Discussant*

Tung, Tiffiny [103] see Winburn, Amanda

Tuomey, Joseph [18] see Thompson, Kevin

Tuomey, Joseph (US Bureau of Reclamation) and Ernie Rheaume (US Bureau of Reclamation)

[18] *Perspectives on NGWSP from the Bureau of Reclamation:*

The NGWSP has many interesting and complex components. Beginning a large, complex project of this sort required Reclamation staff to develop a number of new and/or different approaches to move the

project along. The San Juan Basin, where the project is located, has some of the highest archaeological site densities in the country. The project area is a patchwork of varying land ownership. Working on Reservation lands as well as on other federal agency lands meant Reclamation staff had to consider multiple requirements for submission of reports and consultation requests. We discuss some of the challenges we have faced and some of the lessons we have learned in the first few years of this twelve year undertaking.

Turck, John (University of Georgia) and Victor Thompson (University of Georgia)

[216] *Measuring the Impacts of Past Behavior on the Present Environment: A Case Study from the Georgia Coast*

Although human activity may be restricted on or even absent from the landscape (e.g., due to migration, being wiped out by disease, the establishment of wildlife areas or national reserves, etc.), the effects of past activities are still felt on the present environment. Our case study from the Georgia coast reveals that 5,000 years of human behavior are still influencing the structure of the present ecosystem. Examples include depositing shellfish remains on upland surfaces, dumping ballast, dredging, certain agricultural practices (e.g., rice plantations), digging ditches, piling up soil, clearing fields, and building structures. Our findings have implications for studies of future environmental change, namely that the past must be taken into account to understand the present environment and make predictions about the future.

[216] Chair

Turkon, Paula (Ithaca College), Marco Antonio Santos Ramirez (Centro INAH, Zacatecas), Sturt Manning (Cornell University), Carol Griggs (Cornell University) and Katherine Seufer (Cornell University)

[200] *Contributions of Dendro-14C-Wiggle-Matching to Chronology at Epi-Classic Malpaso Valley Sites, Zacatecas, Mexico*

The Epi-Classic is one of the most turbulent periods in Mesoamerican prehistory, and also one of the least understood. Theories to explain the mass movement of Mesoamerican peoples and their lifestyles into the north during this period, which include political disintegration in the Mesoamerican core, climate change in this arid region, and the development of exploitative activities and trade networks, are difficult to assess due to imprecise chronological control. This paper reports preliminary findings that simultaneously address the chronology issue, and set the stage to examine the climate change theory. We employ the "dendro-14C-wiggle-matching" method on existing collections of archaeological wood from La Quemada and Los Pilarillos, two Epi-Classic archaeological sites in the Malpaso Valley, one of the northernmost regions on the frontier. The wiggle-match method fits 14C dates, from tree-ring segments with a known number of rings, onto the 14C calibration curve, producing substantially more precise dates than radiocarbon dating alone. We illustrate the utility of this method, both for a cultural understanding of the sites themselves, but also as a way to understand settlement dynamics between this region and outlying ones.

Turner, Jocelyn [30] see Fritz, Gayle

Turner, Andrew (University of California, Riverside)

[37] *East Meets West: Borders and Boundaries in Central Mexico After the Collapse of Teotihuacan*

The collapse of Teotihuacan, around AD 650, caused a ripple effect that lead to a reordering of borders, boundaries, and networks across Mesoamerica. Several polities, including Xochicalco, Cacaxtla, and Teotenango, emerged in Central Mexico to fill the vacuum left by the great Early Classic metropolis, and seats of power shifted to areas that had been politically marginal. While emulating and adapting certain conventions and practices established by Teotihuacan, these sites also claimed to have far-reaching ties to other parts of Mesoamerica. The authenticity and nature of their relationships to distant regions is a matter of debate, but it is likely that a network of social actors developed intraregional political and economic ties as a means of making claims to the power and authority that Teotihuacan had. Interpolity relationships and trade agreements were solidified through the institution of a religious ideology, a suite of iconographic conventions, and a common writing system that superseded ethnic affiliations and territorial borders. This ideology emphasized a division of eastern and western regions in Mesoamerica as a primary means of organizing the broader cosmos. This division is also mirrored on a microcosmic scale in the site plans and features of these emergent polities.

[37] Chair

Turner, Michelle (Binghamton University)

[56] *Frontiers Reconsidered at Chimney Rock*

Recent archaeological theory, drawing on work in other social sciences, is redefining the notion of the frontier. Theorists increasingly recognize that contemporary understandings of frontiers and borderlands, structured by colonialism generally and by the American experience specifically, may not accurately reflect the reality of such places in prehistory. In particular, archaeologists have begun to question traditional notions of an active, dynamic core and a passive periphery. The Ancestral Puebloan community of Chimney Rock Mesa lies at the northern frontier of the Chacoan world. Archaeologists have often viewed the site as a place where a preexisting local community faced an influx of people from distant Chaco Canyon, whether as invaders or as welcome new arrivals, and where society was transformed as Chacoan ways and ideologies arrived. This paper reconsiders Chimney Rock, long seen as an example of Chacoan hegemony, as a case study for reevaluating traditional core-periphery understandings of this region. It seeks to reposition Chimney Rock as a place where indigenous traditions persisted alongside Chacoan ways, as a locale of syncretic development, and as a frontier community that may have had a profound influence on Chacoan society.

Turner, Katie (Indiana University of Pennsylvania)**[233] *An Examination of Late 18th Century Forts: A Pennsylvania Typology***

As battlefield archaeology continues to grow in interest, there are an increasing number of topics that must be addressed. Likewise, as professionals discover that battlefield archaeology is more than examining the nation's historic battlefields the demand has arisen to study other components of conflicts. One such component is the study of forts, and the key role that these structures played in battles and conflicts. To date, no typology of Pennsylvania forts has been completed so for the purpose of this study only forts from Pennsylvania will be examined. To fill this void research will be conducted to develop a typology of late 18th century forts. This typology will examine roughly 60 forts from the French and Indian War and the Revolutionary War. Some of the attributes included in the typology will be the plan and layout of the fort, duration of occupation, purpose for the fort's construction, location of the fort, access to trade networks, and construction materials. A comparison will also be conducted in an attempt to understand the evolution of forts.

Turner, Sara (Georgia State University) and Niels Lynnerup (University of Copenhagen)**[241] *Dietary Patterns in Holbæk, Denmark during the Medieval Period***

The medieval period in Denmark (11th-16th century) was a time of great social and economic change. In this paper I discuss the dietary patterns of individuals from a medieval site in Holbæk, Denmark who lived during this historically dynamic period. This study compares existing isotopic data with collected data from dental macrowear and caries in order to provide a more complete picture of diet and subsistence patterns of these individuals during their latter years. Specifically, changes in dietary patterns are analyzed pre and post the Black Death (AD 1348-1350) due to historical evidence of changing food and agricultural systems in medieval Denmark that occurred after the plague. The demographic decline greatly reduced the production of grain in Denmark, and supposedly diets became more reliant on livestock and animal products. Results suggest that there was a surprising lack of change in diet over time that run counter to expectations given the historical record. This study contributes a better understanding of human variation in medieval European populations.

Turner-Pearson, Katherine (Central Texas Archaeological Resources)**[231] *The Stone Site (41ML38): A Contact Period Waco Indian Village Frozen in Time***

The Stone Site (41ML38), referred to as "El Quiscat's Village" by Frenchman turned Spanish Explorer, Athanase de Mézières, is located on the horseshoe bend of the Brazos River, north of present day Waco, Texas. It is the last remaining of several documented Waco Indian village sites in the area in the 1770s. The personal journal of de Mézières confirms his visit to the village in 1772, 1778, and again in 1779. But in 1786, the explorer found the village abandoned. All the other known Waco Indian village sites have been destroyed by urban expansion, while this site remains relatively untouched; this gives archaeologists a rare chance to study the impact of European contact over a short time frame and the lifeways of an aboriginal group that is somewhat obscure. While studying the archaeological record of both trade and native made goods from the site, researchers found almost equal amounts of French and Spanish goods, including large quantities of weaponry parts as well as articles for ornamentation. But as important as the trade goods recovered, was the lack of certain objects such as pottery and cookware.

Tushingham, Shannon (Washington State University) and Robert Bettinger (UC Davis)

[316] Why Foragers Choose Acorns before Salmon: Storage, Mobility, and Risk in Aboriginal California and Beyond

Despite the enormous potential of anadromous fish, foragers do not mass extract and store salmonids until very late in the archaeological record of California. Acorns, by contrast, were intensively used quite early in the record. Salmon are traditionally viewed as a low cost, high ranking resource, and acorns as a high cost, low ranking resource. The question thus arises: why were salmon not used and stored en masse much earlier? We offer a solution using a simple foraging model--the front-back loaded model--that distinguishes resources on their storage capabilities as well as overall cost, making it possible to calculate the risk of resource caching, which appears to have delayed intensive salmon procurement in California and the southern Pacific Northwest Coast.

Twiss, Katheryn [84] see Wolfhagen, Jesse

Twiss, Katheryn (Stony Brook University) and Amy Bogaard (Oxford University)**[194] Coping With Abundance: The Challenges of a Good Thing**

Abundance may be a generally good thing, but in a delayed-return society with any pretense to egalitarianism it also brings myriad challenges. Individuals or groups who produce or acquire an abundance of resources must determine how to physically preserve and/or socially deploy that abundance, while maintaining at least some appearance of equality and integration with other members of society. In this paper we explore possible strategies for coping with resource abundances at Neolithic Catalhoyuk in central Anatolia: these strategies plausibly included concealment, dispersal within a production group, and distribution across broader segments of society.

Two Bears, Davina (Indiana University, Doctoral Student)**[230] Intertwined Histories of the Navajo and Japanese at the Old Leupp Boarding School Historic Site**

This poster will delve into the intertwined histories of the Navajo and Japanese that occurred at the Old Leupp Boarding School Historic site in the first half of the 20th century. The Old Leupp Boarding School was built to address the United States Government's treaty commitment to support the education of Navajo children. Later, after the closure of the Old Leupp Boarding School due to flooding by the nearby Little Colorado River, it was re-used as a Japanese Isolation Center during World War II to imprison innocent Japanese American citizens. The intertwined and complex histories of both the Navajo and Japanese at the hands of the U.S. Government will be revealed and explored in the context of the Old Leupp Boarding School Historic site.

[97] Discussant

Tychkowsky, Katie [79] see Coons, Aaron

Tykot, Robert [102] see Waterman, Anna

Tykot, Robert (U. of South Florida)**[249] Fifty Years of Obsidian Sourcing in the Central Mediterranean: Quantitative Assessment of Transportation Routes, Chronological Changes and Intra-Site Variation**

Since early studies indicated that the four island sources in the Central Mediterranean could be distinguished by their elemental composition (Cann & Renfrew 1964; Hallam, Warren & Renfrew 1976), considerable research has been done on the geological sources; many obsidian artifacts have been analyzed; and socioeconomic interpretations made about transportation routes, chronological changes, and intra-site variation. Following my detailed studies of the sources, obsidian artifacts may be attributed to specific subsources on Lipari (2), Palmarola (3), Pantelleria (5), and Sardinia (7). Artifact analyses have been facilitated by the use of a portable non-destructive XRF spectrometer, which enables analysis to be conducted in museums and storage facilities, while decreasing the per sample cost of conducting such research. Overall, I have analyzed nearly 5000 artifacts, with at least 10 each for 90 sites in Sardinia, Corsica, peninsular Italy, Sicily, Malta, and Croatia, and along with the 3200 analyzed by other scholars. This large data set enables interpretations to be made about issues such as source access and territorial control, craft specialization, and the modes, frequency, and directions of material movement. Furthermore, this supports socioeconomic hypotheses made at both small and large scales, as well as addressing changes over time and space.

[287] Discussant

[249] Chair

Uc, Enice [52] see Russell, Bradley

Ugan, Andrew (Far Western) and Jeff Rosenthal (Far Western)

[125] *Planorbids, People, and Paleolakes: Freshwater Molluscs and their Implications for Late Pleistocene and Early Holocene Human Occupation*

No other locality in California has produced as large and diverse a record of terminal Pleistocene and early Holocene human occupation as the China Lake Basin, northwestern Mojave Desert. Recent research conducted on behalf of the U.S. Navy at Naval Air Weapons Station China Lake has revealed a robust record of early human use. Why this small basin harbors such a record, and numerous other larger and better-studied basins in the Mojave Desert do not, can only be resolved through a detailed understanding of the paleoenvironment and the types of subsistence resources which may have attracted early foraging groups to China Lake Basin. In this talk, we use various kinds of mollusks to examine the paleohydrology and pluvial lake history of China Lake Basin during the terminal Pleistocene and early Holocene and discuss implications for the timing and nature of the earliest human occupation in the northwestern Mojave Desert.

Ulewicz, Kaitly

[285] *Pyramids and Households during the LIP at the Lurín Valley: The Case of Panquillma*

The focus of my paper will be one of comparative analysis from both Sector 1 and Sector 2 of the site Panquillma; focusing on the differences between building styles, settlement patterns, and spacial distribution between public and domestic areas. I will be identifying, comparing, and contrasting the elements mentioned in order to better understand the distribution of wealth between these areas, and to also hold a greater understanding for the economics of the area.

Ullah, Isaac (University of Pittsburgh, Center for Comparative Archaeology)

[71] *From a World of Compasses, Paper, and Pencils to the Digital Era: How to integrate "Pre-GPS" Survey Data into a Modern Research Paradigm*

Early archaeological surveyors collected site location information using mental feature matching, triangulation, and estimation with manual survey instruments, topographic maps and/or raw aerial photos. Despite their (not insignificant) level of technical expertise, site coordinates recorded in that era are subject to a host of errors that make them seemingly incompatible with the kind of high resolution GIS-based spatial analyses that are common in modern landscape-scale archaeological research. The data recovered from early surveys, however, are vital components of the archaeological record for many regions around the world, especially in regions not currently accessible due to political instability or diplomacy. Furthermore, they may contain the best - or only - record of sites that have since been damaged or destroyed. What, then, should be done with older survey data? Using the site location data from the "pre-GPS era" Wadi Hasa Survey (undertaken by Burton MacDonald in 1979-1982) and the "GPS era" Wadi Hasa North Bank Survey (undertaken by Geoff Clark in 1992-1993) as case studies, I present a GIS-based routine that "reconstructs" and corrects (as much as possible) locational errors in early survey data, so that they may be integrated in a research agenda requiring high precision site location information.

Ullah, Isaac [335] see Banning, Edward

Ullyott, Stewart [58] see Nash, David

Ulmer, Austin [252] see Terry, Richard

Umbelino, Cláudia (CIAS, Department of Life Sciences, University of Coimbra, Portugal), Célia Gonçalves (Núcleo de Arqueologia e Paleoecologia, University), Olívia Figueiredo (Núcleo de Arqueologia e Paleoecologia, University), Eugénia Cunha (CENCIFOR, Instituto Nacional de Medicina Legal, Un) and Nuno Bicho (NAP, FCHS, University of Algarve)

[116] *Health and Diet in the Late Mesolithic: A Paleobiological Perspective through the Analysis of the Human Skeletons Retrieved from the Cabeço da Amoreira Recent Excavations*

The archaeological work that took place in 2011 and 2012 in Caberço da Amoreira Muge shellmidden uncovered three human skeletons: an infant and two adult individuals, a male and a young female. In this

paper we will present the results of the anthropological and isotopic analysis and highlight the possible inferences that can be drawn in what concerns health and diet. Caries and some physiological stress indicators, such as dental enamel hypoplasias and cribra orbitalia were observed on the female individual. Severe dental wear, trauma and osteoarthritis were noted on the male. The carbon and nitrogen stable isotopes of bone collagen points to a mixed diet of marine and terrestrial origin, with a slight predominance of marine resources, in accordance to the site location, in close proximity to the coeval Tagus estuary.

Umbelino, Cláudia [116] see Figueiredo, Olívia

Unger, Jiri [299] see Kvetina, Petr

Unruh, David [294] see Murrell, Monica

Unruh, David, Phillip Leckman, Richard Ciolek-Torello and John Douglass

[294] *Architectural and Household Evolution along the Southern Chuska Slope*

Domestic architectural change through time has been observed to be an important window into larger social, political-economic, and ritual venues. Across time and space, the transition from round or circular, below-ground structures to rectangular or square, above-ground structures is seen as representative of fundamental changes in household economic and social organization. At the same time, some aspects of former architectural styles persist. Our paper focuses on this transition and persistence from the perspective of a sample of households dating between the Archaic and Pueblo III periods investigated as part of the US Highway 491 project. Through a close examination of domestic activities and structure function using architecture, floor assemblages, and features, we will develop models of the processes involved in this important, pan-cultural phenomenon, via a perspective from the American Southwest.

Upton, Andrew (Michigan State University), William Lovis (Michigan State University) and Gerald Urquhart (Michigan State University)

[261] *An Empirical Test of Shell Tempering as a Proto-Hominy Processor*

It has been argued that the shift to maize based diets across much of the Eastern Woodlands ca. A.D. 1000 was the primary catalyst for the rapid population increases, technological innovations, and fundamental shifts in social and cultural organization characteristic of Mississippian and Upper Mississippian peoples. However, raw maize kernels alone are known to be a nutritionally inadequate subsistence staple. Nixtamalization, or the alkaline processing of dried raw maize to produce hominy, yields a more readily digestible and therefore healthier food resource. Such processing is ubiquitous amongst maize-based societies in the Americas. The timing of the shift to maize agriculture was also closely associated with the adoption of shell tempered ceramics. As a result, the hypothesis has been offered that burned and crushed mollusc shell aplastic may act as an alkaline agent in a proto-nixtamalization process. The research reported here provides a formal empirical test of this hypothesis, and an evaluation of shell tempering as a potential hominy processor.

Ur, Jason (Harvard University), Bjoern Menze (ETH Zurich) and Matthieu Murdoch (Engineering Research and Development Center, US Ar)

[65] *LIDAR and the Structure of an Assyrian City: A Case Study from Erbil, Kurdistan Region of Iraq*

Urban structure presents a tremendous challenge to traditional excavation techniques, so a variety of digital remote sensing applications have been brought to bear in recent years. LIDAR has been particularly successful. It has mostly been used to strip away vegetation to reveal subtle topographic traces in tropical regions. In this case study, an ancient city is obscured not by trees but by the buildings of a modern city. The Assyrian provincial capital of Arbail (ca. 900-600 BC) is nearly completely buried beneath the man-made features of modern day Erbil, capital of the Kurdistan Region of Iraq. LIDAR collected over the Erbil has presented the opportunity to strip away the modern city. We co-register the LIDAR-derived surface model with high-resolution satellite images and topographic maps to identify "bare earth" locations in a semi-automated fashion. These locations are used to interpolate a terrain model devoid of modern structures. Methods and representation in topography, ortho-rectified aerial photos, remote sensed imagery, and computational modeling enable collaborative research to reconstruct the shape and extent of this ancient city. Preliminary results are presented.

Urana, Lauren (Mercyhurst University), Edward A. Jolie (Mercyhurst University) and Thomas F.

Lynch (Brazos Valley Museum of Natural History)

[336] *Discriminating Warp- and Weft-faced Plainweave Textiles without Edges: A Guitarrero Cave Test Case*

Situated in the Andean highlands of Peru, Guitarrero Cave, has yielded a large array of perishable artifacts that span more than 12,000 years of human occupation. Included are the earliest directly dated textiles in the Americas as well as the putatively earliest examples of plainwoven cloth from the Andes. The latter technology, dated as early as about 8,100 cal B.P., provides the foundation for the later and technically more sophisticated textiles that prehispanic Peruvian weavers are renowned for. The earliest plainweave fragments from Guitarrero lack selvages, however, and so a consensus as to whether the pieces are warp- or weft-faced has been elusive, blurring our understanding of the mechanics of production of these early fabrics and the development of this weaving technique. This presentation reports the results of the direct AMS radiocarbon dating of some of the earliest plainweave fabrics from the site combined with metric and experimental analyses undertaken to assess whether warp- and weft-faced plainweave fabrics lacking selvages can be differentiated. The study's results enhance our understanding of the chronology of a major Peruvian weaving technique and may contribute to our ability to differentiate warp- and weft-faced textiles in the absence of edges at other archaeological sites.

Urban, Patricia (Kenyon College)

[128] *Whose "Border," Whose "Periphery"? Looking at the Maya World from Southeast Mesoamerica*
Core-periphery models often assume that the movement of ideas and materials between cores and peripheries is largely dominated by the former. Border studies, on the other hand, suggest that core-periphery dealings occur in permeable zones where members of various groups interact, creating novel cultural configurations. While power differentials may figure in these encounters, there is no assumed directionality in the flows nor is it likely that core-periphery interactions will yield similar cultural consequences even in neighboring areas. A similar position is advanced by interregional interaction perspectives. Allowing for the creativity and diversity of cross-border interactions is one thing, describing and explaining them based on archaeological remains is quite another. This paper examines the diverse natures and cultural outcomes of past interactions processes involving agents of so-called cores (in this case the Classic period [600-900 CE] Maya) and indigenous societies in four areas of Southeast Mesoamerica: the middle Ulúa, lower Cacaulapa, and Naco valleys of northwest Honduras and the lower Motagua valley of northeast Guatemala. Attention is specifically paid to the models or theories that may best account for similarities and differences in these processes.

[128] *Chair*

Urban, Patricia [161] see Schortman, Edward

Urbina, Simón [27] see Adán, Leonor

Uriarte Torres, Alejandro (Instituto Nacional de Antropología e Historia), Lane Fargher (CINVESTAV-IPN MÉRIDA) and Verenice Heredia Espinoza (El Colegio de Michoacán, A.C.)

[112] *The Cholula World View and Tlaxcallan in the Postclassic*

Historically, our vision of the Puebla-Tlaxcala Valley in the Postclassic has been strongly colored by the chroniclers' obsession with Quetzalcoatl as a Christ like figure, revisionist nationalistic histories that portrayed the Tlaxcalteca as traitors, PR from a marginalized colonial Cholula recalling its "glorious past", an unexplainably enormous pyramid, and wild speculation. The result of which has contributed to a Cholula-centric vision of this region during the Postclassic. Yet recent work at Tlaxcallan makes necessary a reassessment of the comparative importance of Cholula, as well as the nature of regional-scale economic, political, and ideological processes during the Late Postclassic. In this paper, we present new data from Tlaxcallan that indicate that Cholula may not have been the largest nor most important city in the Puebla-Tlaxcala Valley at contact and consider the implications of these findings at the regional scale.

Uriarte Torres, Alejandro [130] see Fargher, Lane

Uribe, Mauricio [19] see Vidal Montero, Estefania

Uribe, Mauricio

[121] *La cerámica incaica del norte de Chile: actualización y perspectivas*

A mediados de 1970 surgió la conocida discusión si el dominio incaico en el norte de Chile había sido directo o indirecto, a partir de la aplicación que se hizo del modelo de Murra. De acuerdo con esta propuesta, la situación se dirimía en términos de que cuán abundante era la materialidad del Inca, especialmente cerámica, en los territorios conquistados y cuánto se atenía ésta al estilo del Cusco. De acuerdo con las incipientes investigaciones de aquella época, predominó y mantiene cierta vigencia la hipótesis de la ausencia de una conquista propiamente tal y que más bien se trató de un dominio indirecto. Aprovechamos este simposio para discutir estos planteamientos a través una síntesis y actualización de nuestros estudios sobre la cerámica incaica, aportando con nuevos datos estilísticos, tecnológicos, funcionales y cronológicos de Arica, Tarapacá y Atacama.

Urquhart, Gerald [261] see Upton, Andrew

Uruñuela, Gabriela [254] see Plunket, Patricia

Usher, Bethany and Jaimin Weets (State University of New York at Potsdam)

[291] *Identifying Kinship Patterns in Anabaptist Cemeteries: Modeling Archaeological Graveyards*
Archaeological theory suggests that the relative spatial locations of individuals in cemeteries can convey information about kinship, but opportunities to test this have been rare. To understand how relationships influence burial placement in cemeteries, modern and historical Anabaptist cemeteries in Central Pennsylvania were surveyed. By matching individuals to historical records, we find that the main determinant of burial location was the location of spouse, parent, or other members of the household. Since households are organized by kinship, patterns of shared patrilineages and matrilineages appear in the cemetery. To determine how these patterns could be interpreted in archaeological contexts where basic skeletal information (age and sex), fairly reliable ancient DNA markers (Y chromosome and mitochondria), and burial coordinates are available, we assigned these attributes to the known burials from three Anabaptist cemeteries. Using SatScan (www.satscan.org), a freely available program originally written to interpret epidemiological data, we were able to identify clusters of related individuals, and, in some cases, households. Larger cemeteries and those used over a century had fewer individuals who were found in kinship clusters. These methods could be used to identify related individuals in archaeological contexts, especially in smaller cemeteries.

Usherwood, Elizabeth (University of Massachusetts, Amherst)

[232] *A Giant's Strength: A Multisited, Spatial Biography of 19th Century Florida*

This poster is the culmination of my undergraduate senior thesis research, which uses a case study of Luis Fatio Pacheco's homespaces, or the places he would have considered home, to argue for a new methodological approach in historical archaeology. Through a multisited spatial biography, this research was able to trace Pacheco, a 19th century African American male, through time and space. By understanding how this individual lived and moved through the world, this research illustrates how methodology can contribute to a vindicationist approach of African Diaspora archaeology while simultaneously illuminating the historical record. Through this case study, I argue that such methodology enables us to connect individual life experiences to the larger collective memory of "African America." Moreover, utilizing a multisited spatial biography alludes to the dynamic movement of the past by eliminating site boundaries through a landscape approach while also exploring multiple places as connected through an individual's experiences.

Usman, Aribidesi (Arizona State University)

[108] *Recent Archaeological work in the Niger-Benue Confluence, North Central Nigeria*

The Niger-Benue Confluence is an ethnic frontier zone of approximately 200 km². The region is home to a number of different ethnolinguistic communities including the Igala, Yoruba-Okun, Ebira, and smaller groups like the Nupe, Kakanda, Gw'ari and Bassa-Nge. The Confluence has had a long history of trade, immigration, slave raiding, overlordships, resettlement, and intermarriage, making it a very complex social and cultural landscape. The Igala, located east of the Confluence, were middlemen in the exchange of the products of the forest and savanna regions. This situation is thought to have stimulated the formation of states in the area in ways similar to the emergence of kingdoms in the Western Sudan. My research is aimed at understanding the network of interaction that tied together many of the communities in the Niger-Benue Confluence and how it changed through time. A fieldwork program combining oral-ethnohistoric and archaeological data will allow for an assessment of local sociopolitical organization – a necessary step toward understanding regional interaction. Our recent work in Idah, the political center of the Igala kingdom, provided the first attempt at addressing these issues. This paper reports the recent

archaeological work at Ojuwo Atogu and Okete Kakini sites in Idaho.

Vaarzon-Morel, Petronella (NYU, Sydney)**[73] Continuity and Change in Warlpiri Practices of Marking the Landscape**

Drawing on long-term ethnographic research in Aboriginal central Australia, this paper explores how, when and why Warlpiri and neighboring people mark the landscapes within which they live. A primary concern of the paper is the dynamics of change in landscape marking. As is well known, cosmological significance was, and continues to be, inscribed in topographical features—including rock formations, hills, watercourses, trees and other forms of vegetation: potentially all are signs in this religious landscape. Physical markings of the land ranged from stone arrangements and rock art to more temporary markings, for example, footprints, fire scars, ceremonial ground paintings, branches placed at strategic points to indicate direction of travel and/or areas to which spatial prohibitions applied. Whilst customary ways of marking country endure, transformations also have occurred as a result of factors such as sedentarisation, people's adoption of new technologies and thus new modes of inscription, changes in practices of memory and mobility, and modifications to the landscape made through the establishment of European infrastructure. Attending to continuities in people's socio-cultural practices through time, the paper will consider the relationship between ancestral and contemporary Aboriginal practices of marking landscape in the creation of meanings in place and management of space.

Vadala, Jeffrey**[123] Monumentalizing Solar Zenith Events at Cerro Maya, Belize**

Since Cerro Maya was first excavated in the 1970s, its Late Preclassic architecture has been analyzed symbolically in order to comprehend ancient Maya cosmology and its relationship to kingship. While symbolic approaches have enabled understanding of Maya ideological systems, they tend to isolate archaeological features from their local landscapes. Using 3d visualizing techniques together with an approach inspired by North-Whitehead and Latour, I consider Structure 5C-2nd and the surrounding landscape as "events" that were expressed differently through varying practices each year, while generating historical significance over time, creating a palimpsest. 5C-2nd and other built and natural landscape features are better seen as an assemblage of local, historical, social, material, and temporal relations, none of which can be understood in isolation. Between 50 BC-AD 150, Structure 5C-2nd marked a point on the landscape where the first biannual solar zenith event was observed through a conjunction of landscape features. Structure 5C-2nd can be viewed as a generative event that created a set of temporal and historical relationships between people and landscape that played a significant role in the eventful process of rapid monumental construction at Cerro Maya's site core.

Vail, Gabrielle (New College of Florida)**[192] Relating Aquatic Imagery and Themes in Late Postclassic Maya Contexts to Creation Mythology**

Although fishing is not commonly portrayed in Late Postclassic Maya sources such as painted codices and murals, aquatic themes and offerings of fish do occur relatively frequently, and stingray spines are a common component of bloodletting rituals depicted in Late Postclassic contexts. Moreover, several deities seem to have a special connection to the sea, including the rain god Chaak and the elderly creator deity Pawahtun. This paper examines the relevant iconography and hieroglyphic texts and places them within the context of creation mythology related to the birth of the sun and the moon, and of the present race of humans.

[25] Discussant

Valadez, Raúl [63] see Sugiyama, Nawa

Valdez, Fred [31] see Buttles, Palma

Valdez, Fred (University of Texas At Austin) and Palma Buttles (SEI, Carnegie Mellon University)**[33] From Pink Polychrome to Underground Chambers: A Journey of Scholarship?**

Approximately 25 years ago on the Rio Azul Project, Brady and Valdez identified a Late Classic Maya Polychrome and called it "Pink Polychrome." With this discovery they were quite excited to describe, define, and justify the new ceramic type. Time, distance, distractions, and other research led them

(Brady and Valdez) in different directions, always intending to get back to the Pink Polychrome. This paper explores the beginnings of Brady's work with Valdez at Rio Azul and recent research collaborations in NW Belize.

Valdez, Jr. , Fred [292] see Sullivan, Lauren

Valdos, Yanina (San Diego Community College District)

[275] *Daring to be Different: Aztec Tula and the Triple Alliance's Relationship with Its Northern Hinterland*

Although the archaeological site of Tula, Hidalgo in Central Mexico is best known for its early Postclassic Toltec fluorescence, recent ceramic analysis has revealed chronological and socioeconomic insights into Late Postclassic Aztec occupation of the Tula archaeological zone. Comparisons of Aztec III/IV black-on-orange design elements found on pottery at Tula, with those typically found at sites in the North and South Basin of Mexico, were successfully employed to distinguish Tula's unique design elements. Subsequent analysis of the predominance of "Tula-style" designs suggests that Aztec Tula had a dynamic economic and political relationship with Tenochtitlan. Using these data, I will explore the diachronic nature of these dramatic changes in the Triple Alliance's relationship with its northern hinterland.

Valdovinos, Victor H. [200] see Martínez, Pablo

Valentin, Frédérique [242] see Lilley, Ian

Valentine, Benjamin (University of Florida)

[64] *Finding Community in the Contrasts: A Bioarchaeological Methodology for Theorizing Community*

Archaeologists in search of past communities must move beyond the identification of shared practices, and towards understanding the way that shared practices created social differences between groups. Contrasting patterns in aggregate data sets show where individuals' narratives of place, practice, and history were woven into complex social landscapes. Bioarchaeological methods offer unique access to individual life histories, and therefore provide essential tools for understanding the ways in which bodies were referenced in the construction of community. A bioarchaeology of community must begin by finding the shared references, the correlations between data sets, and then identifying contrasting patterns of variation. Presumably produced by enduring practices of social differentiation, such contrasts between groups must be linked to broader archaeological contexts if their past social meanings are to be understood. Methods of biogeochemical provenience can prove especially useful by connecting communities to particular source regions. Once contrasting communities are associated with histories of place, past perceptions and goals can be theorized and models of archaeological communities can be operationalized as political, economic, and cultural interactions with material outcomes. An Indus Civilization case study using isotopes of lead and strontium is offered in support of the proposed methodology.

Valentinsson, Signe (Hunter College), Matthew C. Sanger (Columbia University, American Museum of Natural Hi) and Anna M. Semon (University of North Carolina at Chapel Hill, Ameri)

[10] *Large-scale pXRF Survey of Archaeological Ceramics from the American Southeast*

While the chemical analysis of pre-Contact ceramics from the American Southeast has been an important research direction for more than three decades, on the Atlantic coast it has been deployed irregularly as it is often prohibitively expensive and destructive. The development of portable X-ray fluorescence (pXRF) technology, particularly the increased resolution and sensitivity offers an opportunity to conduct large-scale surveys of archaeological assemblages without significant destruction or financial expenditure. In this study, we use the newest generation of pXRF technology to analyze the chemical makeup of a large collection of pre-Contact ceramics from multiple sites located on the Georgia coastline. This poster discusses the advantages and disadvantages of using pXRF as a tool for surveying large assemblages and recognizing broad chemical patterns across time and among site collections. Interpretations of past social conditions and events are also offered, along with suggestions for future research. The results of this research are both of broad interest as they offer a critical test of an important emergent technology, as well as being locally relevant as they speak to regional questions of trade, migration, and developing social institutions.

Valese, Imma [251] see Kelly, John

Vallejo-Càliz, Daniel [305] see Lamb, Celine

Vallieres, Claudine (University of Florida)

- [38] *The Role of Camelids in Tiwanaku Society: Human-Animal Relationships within the Private and Public Spheres of an Andean Urban Center*

This presentation examines human-camelid relationships at the ancient urban center of Tiwanaku (c. AD 500-1100), in the highlands of Bolivia. Camelids participated in the production and reification of Tiwanaku's status as a ritually-charged center with a widespread sphere of influence. They were integrated in ceremonial events, ingested through daily culinary practices and integral components of the surrounding landscape. Results from the recent faunal analysis of excavated contexts from the Akapana Pyramid, a central monumental feature of the site, are presented and compared to faunal data from the non-elite residential neighborhood of Mollo Kontu. It is suggested that through their multiple roles in spectacles and ceremonies, camelids were entrenched in Tiwanaku's emblematic ritual life, while the use of their products in all aspects of daily life wove these animals into a sense of local identity for the urban residents. A look at the roles camelids held in both the private and public spheres at Tiwanaku blurs the common conceptual line between the ritual and the mundane and paints these animals as socially valued components of Tiwanaku's urban landscape and identity.

van Beynen, Philip [158] see Dunning, Nicholas

Van Buren, Mary (Colorado State University), Erin Parsons (Colorado State University) and Brendan Weaver (Vanderbilt University)

- [121] *Provincial Inka Ceramics after the Spanish Conquest*

Provincial Inka ceramics have long been regarded as evidence of interaction with the Inka state as well as convenient temporal markers indicating late 15th to early 16th century occupations. Excavations in early colonial contexts, however, have revealed that such ceramics were employed, and most likely produced, for at least two generations after the Spanish conquest. This paper describes the provincial Inka ceramics recovered from colonial deposits at two sites – Torata Alta, in Moquegua, Peru, and Ferro Ingenio, in Potosí, Bolivia – and considers the reasons for their continued use as well as the methodological implications of their persistence in the archaeological record long after the fall of the Inka empire.

- [256] *Discussant*

Van Den Bos, Elisha (VU University Amsterdam)

- [127] *(Re)building Histories: House Replacement and Intergenerational Strategy in the Neolithic of Western Anatolia and the Southern Balkans*

In a sense, the Neolithization of the Eastern Mediterranean is a subject where grand narrative and daily life meet: while the temporal and spatial scale of the story of the expansion of farming from the Near East to the Balkans seems far removed from the scale of human experience, in recent years scholars have increasingly referred to the Neolithic as a 'way of life,' incorporating ideas about domesticity, households, and the social organization of settled communities. While this seems a welcome shift of focus in a field otherwise very much preoccupied with the big picture, this terminology in fact obscures regional variability between Neolithic lifestyles. The challenge for Neolithic studies is to make a more explicit connection between changing pathways of Neolithization and the short-term and local histories of Neolithic communities, which in the end inform us about what a Neolithic way of life actually entailed. In this paper I explore the possibility of using settlement and architecture as a temporal and spatial framework for studying variable Neolithic lifestyles. I suggest that house replacement practices constitute particularly significant moments in time, which evoke ideas about choice, durability, mobility and sedentism, social reproduction, and the variable pace of change.

Van Der Leeuw, Sander (SHESC)

- [75] *Learning from the Past, but for the Future*

The paper will make the argument that archaeology's long-term, material culture and environment

oriented perspective is essential to the design of a sustainable future for Earth, but that in order to optimize the impact of archaeology, we need to shift our perspective from a, a-posteriori or ex-post perspective (looking back in time) to an a-priori or 'ex ante' perspective (looking forward in time). This requires a shift in thinking from cause-and-effect and 'certainty' to 'possibilities, probabilities, and unintended consequences. The paper will illustrate this mainly based on European archaeology, but with examples from elsewhere included.

[229] *Discussant*

van der Plicht, Johan [201] see Akkermans, Peter

Van Dyke, Ruth M. [77] see Schulze, Luke

Van Dyke, Ruth (Binghamton University)

[237] *The Day the Lizard Died*

My career as a Southwest archaeologist is Jim Neely's fault. I studied Southwest archaeology with Dr. Neely as an undergraduate at the University of Texas from 1982-1986. It was Jim Neely who first put a trowel in my hand and a New Mexico green chile enchilada on my plate. It was Jim Neely who first took me to Chaco Canyon. At the WS Ranch Site, I excavated in a great kiva, dug a trash-filled pueblo room, and hiked across wilderness mountains in a county with more bears than people. Watching Jim, I learned how a liberal archaeologist could navigate successfully within a politically conservative landscape where many locals had little use for archaeology beyond the dollar value of a looted pot. First field experiences are formative field experiences, and just about everything I've ever accomplished can be traced in some way back to my time at WS Ranch. And once I'd graduated, it was Jim Neely who inspired me to enter the doctoral program at the University of Arizona, because that's where he had gone. I offer this brief homage in gratitude for Jim's mentorship and friendship.

[333] *Discussant*

Van Gelder, Leslie (Walden University)

[115] *The Role of Children in the Production of Finger Flutings in Four Upper Paleolithic Caves*

The presence of children, through evidence of their hand and footprints, has long been noted in many Upper Paleolithic decorated caves. Previously there was little hard evidence of children as participants in art making. However, recent research focused on forensic studies of finger flutings in four Franco-Cantabrian caves -- El Castillo, Las Chimeneas, Gargas, and Rouffignac -- has yielded evidence of children as active participants in the creation of finger fluted panels. This paper examines the nature of their engagement by examining the places in which children are present and absent, the types of lines they make, their capacity for engaging in symbol-making, their relationships with other members of their groups, and considers questions of why children are present as finger fluters in some Upper Paleolithic caves and not others.

Van Gemert, Courtney (Texas A&M University) and Alyisia Leon (Flagler College)

[285] *A Comprehensive Analysis of Looted Skeletal Remains from the Site of Panquilma in the Lurin Valley of Peru*

Panquilma is a 13th-15th century pre-Hispanic community of the Lurin Valley in Lima, Peru and is located in the hinterland of Pachacamac, an important religious center of the ancient Andes. Sector 03 is composed of hundreds of burial cists, most of which are arranged in clusters and have been heavily looted. Because of this, there is no longer any original context of burial substance.

This paper addresses field and lab methodology as well as serves as an examination of osteological and artifact data collected over a period of one month in a superficial cleaning of Unit 14, a burial cist located in Funerary Sector 03 of the Panquilma archaeological site. This area was chosen due to a large concentration of visible artifacts and human remains. The purpose in the superficial cleaning was to recover as much information as possible in a short time frame. Without a superficial cleaning or excavation of an alternate cist for comparison, only speculations can be made as to status of the individuals buried there and their burial rituals. Data collected for this paper specifically targets questions of the number of individuals, demographic composition, social identity, age range, trauma and pathologies of individuals buried there.

Van Gemert, Courtney [285] see Leon, Alyisia

Van Gijn, Annelou (Leiden University) and Aimée Little (Leiden University)

- [22] *Plant Microwear Traces on Flint and Bone Tools from Dutch Wetland Sites: Comparing Late Mesolithic and Neolithic Plant Use*

Microscopic analysis of wear traces on flint and bone tools from the Late Mesolithic and Early-Late Neolithic wetland sites in the western part of the present-day Netherlands is revealing valuable information about the use of plants. Obtaining insight into diachronic developments in plant-based craft activities can contribute towards a better understanding of the extended neolithisation process in this area. For example, transversely orientated siliceous plant polish on regular, unretouched blades is known from several Dutch Late Mesolithic wetland sites, but curiously disappears sometime around the Middle Neolithic. Is this due to a change in subsistence and related craft objects? In contrast, bone tools, especially awls, display a strong functional continuity from Late Mesolithic to Late Neolithic: many are used on plant materials. Some of these awls, on the basis of extensive experimentation, can be related to specific products. Other bone tools, like the needles and spatulas which could be associated with netting, basketry and possibly weaving, have not been encountered in Neolithic context so far. These observations will be discussed in the light of experimentation and finds of cordage and textiles to understand developments in wild plant use from Late Mesolithic to Late Neolithic from a tool's perspective.

Van Gijseghem, Hendrik [27] see Vaughn, Kevin

Van Gijseghem, Hendrik (Université De Montréal)

- [110] *The Social Life of Houses: Variability in Dynamics of Occupancy on the North and South Coasts of Peru*

In this contribution I explore the ways in which construction practices and the dynamics of occupancy (e.g., who dwells where, with whom, for how long?) reveal variability in household composition and post-marital residence practices. The comparison of two distinct but analogous case studies from the Paracas and Moche cultures suggest that such variability may exist in the ancient world and that they are broadly delineated by socio-economic conditions. I argue that architecture and associated archaeological remains reflect different strategies of household social reproduction, intergenerational relations, and group membership. Moreover, similar patterns of dissimilarity are encountered in vastly different cultural, economic, and political contexts. Still, evidence exists in both cases to suggest that this variability in residence patterns may be relatively unstable and short-lived, resulting in more uniform and normative practices. This comparison highlights among other things the diversity in residence patterns that sometimes exists within a single community.

Van Keuren, Scott (University of Vermont) and William Graves (Statistical Research, Inc.)

- [159] *Cosmology and the Mundane in Hohokam Experiences of Place*

Hohokam communities were among the longest-occupied ancient settlements in the American Southwest. Archaeologists have highlighted the links between mountains, caves, and other sacred locations and the placement of "high profile" features such as ball courts, plazas, platform mounds. This paper explores how ritual practices in pits and other "low profile" or mundane features may have played an equally important role in evoking cosmological beliefs, situating communal social relations, and transcribing the potency of specific locations. From an archaeological standpoint, such ritual loci are discrete but nonetheless central to (re)marking historically-charged places in these societies.

Van Peer, Philip

- [26] *What Is Levallois?*

This question has been asked many times throughout the history of lithic studies. Under this heading, I present an analysis of Levallois from a mechanical and technical point of view. Based on such insights, I shall consider the question if Levallois as used in our present systematics represents one and the same approach to lithic production or if it is an umbrella concept which comprises several distinct procedures. Such formal questions are of utmost importance because lithic taxonomy must be taken as the grammar with which historical process has been written.

Van Pool, Christine [44] see Lieber, Mallary

Van Pool, Todd (University of Missouri)**[44] *Medio Period Ceramic Traditions and the Northern Ramos Zone***

Chihuahuan Polychromes are characteristic of the Medio period, but the ceramic types are not uniformly distributed across the Casas Grandes region. Researchers such as John Carpenter have argued that the different concentrations of ceramic types reflect intraregional social differentiation within the Casas Grandes world. Two of these ceramic zones reflect high levels of Ramos polychrome, a pottery type that appears to be tied to hierarchical leadership and integration with the preeminent site of Paquimé, Chihuahua. The southern Ramos Zone is around Paquimé, and is generally considered the Medio period heartland. The northern Ramos Zone is in the Animas Area of New Mexico. Here, we consider the ceramic and non-ceramic evidence linking the two Ramos Zones, focusing especially on evidence from 76 Draw. We conclude that the two zones reflect close cultural affiliations despite the presence of intermediate ceramic zones that are less integrated with Paquimé and the rest of the Medio period core. We suggest that the northern Ramos Zone acted as a cultural and economic outpost for the Medio period elites to engage other Southwestern peoples.

[44] Chair**Van Tilburg, Jo Anne (Cotsen Institute of Archaeology at UCLA)****[211] *Easter Island Statue Quarry: Recent Excavations and New Views on Boundaries, Identity and Resource Stewardship***

Rano Raraku Quarry, Rapa Nui (Easter Island), East Polynesia is the ancient "production center" of monolithic sculpture (moai), a large number of which still remain in situ. Recent excavations, when combined with scientific testing of selected artifacts, geological mapping, and image-based three-dimensional technologies, along with ethno-historical documentation and iconographic analyses, suggest the reflexive interactions of socio-political structure and stone resource management c. A.D. 1200-1400. The apparent intent of previously undetected, formalized boundaries was to separate quarries into spatially discrete, identity-linked loci. The Rano Raraku quarry is thus still "inhabited," and the sculpture remain within a luminous landmark one function of which was to provide a sense of place, status, and history.

Van Voorhis, Laura (Florida Atlantic University) and Valentina Martinez (Florida Atlantic University)**[103] *Paleopathologies of Site 35 in Salango, Ecuador***

This report describes the findings from a standard osteological analysis of human skeletal remains from three burial vessels unearthed at Site 35 in Salango, Ecuador by the Florida Atlantic University Field School. Based on years of archaeological continuity, it has been established that this site is associated with the Manteno culture, which flourished from A.D. 800 – A.D. 1532, the later part of the Integration Period. A standard analysis of human skeletal remains consists of collecting both metric (measurements) and non-metric (other observations, such as disease and trauma) data, the results of which can later be used to make more detailed conclusions about the daily lives of the individuals. The three urns at Site 35 collectively contain the remains of approximately 700 skeletal elements and fragments, which compose approximately 12 individuals. The observed age range is infant to adult (over 35 years), with remains from numerous juveniles (under 21 years). Several pathologies observed are general indicators of poor nutrition (cribra orbitalia, enamel hypoplasias, and dental caries) and malnourishment (porotic hyperostosis, which is a condition related to anemia and iron deficiency). Additional observations include intentional cranial modification, or binding, a practice of the upper class for religious purposes.

Van West, Carla (SRI Foundation)**[202] *Using Tree-Ring Data to Explore Community Formation in Fourteenth-Century Central New Mexico***

Tijeras Pueblo is 200-room fourteenth-century Ancestral Pueblo settlement on the east side of the Sandia Mountains outside Albuquerque, New Mexico. Although its founders likely came from the Albuquerque Basin, craniometric studies indicate a heterogeneous population. Ceramic analysis supports this and suggests ties to people from the west (Zuni-Acoma region) and south (Rio Abajo region). Using three independent tree-ring chronologies from west-central and central New Mexico and 300 tree-ring cutting dates from Tijeras Pueblo, research indicates the site was not founded or refurbished during periods of local or regional drought and suggests factors other than climate-motivated immigration.

Van Zandt, Tineke (Pima Community College)

- [237] *Hot Air Balloons, Looters' Holes, and Pink Flamingos: Teaching the next Generation of Archaeologists with Lessons Learned at WS Ranch*

When Jim Neely hired me as a TA at WS Ranch, I had never worked on an archaeological site in the Southwest and I did not plan on becoming a college professor. Two summers working at WS Ranch set me on the path to becoming a teacher of Southwest archaeology, and what I learned in working with Jim remains important to how I teach archaeology today. Jim Neely's contributions as an educator are thus being passed on to future generations of archaeologists. This presentation will discuss how lessons learned at WS Ranch are still relevant in teaching four broad topics within archaeology: Mogollon archaeology, the impact of looting on Southwestern sites, field methods, and life in a field camp.

VanderVeen, James (IU South Bend) and Rebecca Gibson (Fisher College)

- [111] *There Is More Than Corn In Indiana: An Examination Of Gendered Artifacts From The Late 19th Century*

Where two major roads came into being, and crossed, lives shared an intersection as well. A locally owned pharmacy and a duplex house once stood at the corner of Washington and LaPorte Streets during the early days of the industrial town of South Bend, Indiana. Among the eroded bricks and broken dishes recovered during a recent excavation, many other artifacts of interest came to light. Uncommon, yet simple, objects like a glass doll's eye, a spangle from a belly dancer's belt, and an imported tube of lipstick were examined with a focus towards reconstructing the complex interplay in everyday people's everyday lives. We explore the physical and cultural origins of these objects, as well as what their presence implies about traditional and non-traditional gender roles in Northern Indiana in the late 19th century.

VanderVeen, James [139] see Nixon, Sarah

VanDerwarker, Amber (UCSB), Gregory Wilson (UCSB), Steven Kuehn (Illinois Archaeological Survey) and Hannah Haas (UCSB)

- [192] *The Dangers of Fishing: The Impacts of Warfare on Subsistence Pursuits in the Mississippian-period Central Illinois Valley*

This paper considers how villagers altered their subsistence systems when faced with the intensification of chronic and violent inter-group warfare. Specifically, we address changes in fishing strategies, including shifts in technology (e.g., lines and nets) and preferred location of capture (e.g., river channels, backwater sloughs, etc.), as inferred through species representation, relative abundance, and metric data on fish vertebral centra from five AD 1100-1350 sites in the Central Illinois River Valley. We argue that increasing violence led villagers to decrease the time spent outside of the protected limits of their palisade walls, which would have impacted their foraging activities.

VanEssendelft, Willem (Tulane University)

- [295] *Chair*

VanPool, Christine [44] see Krug, Andrew

VanPool, Christine (University of Missouri-Columbia)

- [144] *Fashion and Meaning in Medio Period Human Effigies*

Casas Grandes Medio period (A.D. 1200-1450) human effigy vessels are unique in the American Southwest and Northern Mexico in that they frequently depict primary and secondary sexual traits, making determination of sex and gender roles possible. We have elsewhere suggested that Medio period symbolism for males and females was influenced by other aspects of Casas Grandes worldview and social life. Gender roles were defined by males' and females' differential association with serpents and birds: males with serpents and females with birds. Furthermore, Casas Grandes cosmology and rituals were based on gender complementarity that combined the productive, reproductive, and ritual activities of men and women within a single system of shamanic ritual practices. Missing from our previous discussions was a consideration of depictions of clothing (e.g., belts and sashes) and personal adornments (e.g., necklaces and bracelets). As with other aspects of Casas Grandes gender roles, there is overlap between what is depicted on males and females (e.g., arm bands), yet women and men appear to be wearing different types of clothes (e.g., women wear string aprons). The role of clothing and

adornment in the development of social identity, gender, and ritual will be examined.

[44] Chair

VanValkenburgh, Nathaniel [231] see Kennedy, Sarah

VanValkenburgh, Parker (University of Vermont), Sarah Kennedy (University of Florida), Carol Rojas Vega (Proyecto Arqueológico Huacas de Moche) and Gabriel Hassler (Washington University in St. Louis)

[245] *"El Contrato del Mar:" Forced Resettlement and Maritime Subsistence at Carrizales and Conjunto 131, Zaña Valley, Peru*

In this presentation, we analyze the effects of Spanish colonial forced resettlement (*reducción*) on maritime subsistence in the Zaña Valley, on Peru's north coast. While our archaeological survey reveals substantial continuity in maritime settlement in the Zaña Valley between the 6th and 17th centuries CE, our excavations of households and middens at two sites (a *reducción* settlement named Carrizales and an adjacent prehispanic fishing village, Conjunto 131) outline marked shifts in species presence and diversity before and after forced resettlement (ca. 1572 CE). We examine several hypotheses that might account for these differences, including demographic decline, environmental change, and increased tribute demands placed on indigenous communities by the Spanish administration. In the context of this symposium, our presentation serves to underscore the dynamism of coastal Peruvian lifeways under changing political-economic conditions and provides a crucial link between ethnohistoric and archaeological scholarship on late prehispanic and early colonial coastal communities in Peru.

Vargas, Benjamin [119] see Dietler, John

Varien, Mark [194] see Potter, James

Varien, Mark (Crow Canyon Archaeological Center)

[289] *The Introduction of Agriculture and the Beginning of Pueblo Indian Settlement in the VEP North and South Study Areas*

The Village Ecodynamics Project (VEP) examines the long-term interaction between Pueblo Indian people and their environment, linking the distant ancestral Pueblo past to the formation of historic-period Pueblo towns. This is accomplished by modeling Pueblo settlement between A.D. 600 and 1760 in two study areas: one in the Mesa Verde region of southwestern Colorado and the other in a portion of the northern Rio Grande drainage of New Mexico. As an archaeological culture, Pueblo Indian society first becomes visible with the introduction of agriculture and the shift from a subsistence economy based on hunting wild animals and gathering wild plants to an economy based on domesticated food production. This paper examines the introduction of agriculture in the two areas examined by the VEP in order to better understand the initial period of settlement period in each area. Although general similarities characterized the adoption of agriculture in the two study areas, the specific processes that led to the initial period of settlement by large numbers of Pueblo farmers appear to be quite distinct.

Varney, R.A. [267] see Scott Cummings, Linda

Vasquez, J. Javi (Statistical Research, Inc.), Vance T. Holliday (Statistical Research, Inc.), Arthur H. Harris (University of Texas at El Paso) and Susan M. Mentzer (University of Texas at El Paso)

[14] *An Overview of Investigations at Sierra Diablo Cave, Texas (2008-2013)*

Excavations at Sierra Diablo Cave, located in Trans-Pecos, Texas, have continued every year since 2008. The site is a now-dry, stratified cave and exhibits excellent overall preservation of cultural and faunal materials. In addition to documenting a well-expressed Archaic occupation, the project has focused on in situ Pleistocene deposits which contain late Pleistocene vertebrate fauna [e.g., (Equus (horse), Capromeryx (miniature pronghorn), Stockoceros (Stock's pronghorn), Nothrotheriops (Shasta ground sloth), Desmodus stocki (Stock's vampire bat), Aztlanolagus agilis (Aztlan rabbit), Coragyps occidentalis (Western Black Vulture), Gymnogyps californianus (California Condor), and Panthera atrox (American lion)], stone and bone tools, and charcoal. Archaic items recovered from the cave (during and prior to the last five years of documented work) include atlatls, projectile points, sandals, basket fragments, corn cobs, and various other textiles. Lower deposits, associated with Pleistocene fauna, include stone tools, a bone point, debitage, and various other items. Biogenic, geogenic, and

anthropogenic processes influenced the current state of stratigraphic continuity and composition throughout the site. The older sediments include eolian fines, abundant mammal dung, some roof fall, and water-lain deposits, probably from former seeps in the cave.

Vasquez, Augusto (PUCP)

- [285] *Domestic Archaeology in Panquimla. A Comparison of Central and Peripheral Household Compounds.*

The objective of this presentation is to compare the status between the inhabitants of the two groups of household compounds, the central and peripheral, in Panquimla's domestic sector.

The central household compounds are adjacent to the pyramids and people who lived there could be involved in the activities of the public sector. The occupants would have had a higher status, and archaeological materials should reflect this social dynamic. In contrast, the peripheral compounds were built later and are located more distant from the public sector; these occupants should not have the same status. Through the analysis of ceramics, I will identify the variety in the types to recognize domestic activities that may be developed in the household compounds. In addition, the quality and quantity of ceramics suggest differences in accessibility when contrasting the households compounds. I will focus on two patios characterized by continuous use located within the domestic area of Panquimla.

Vaughan, Andrew (Georgia State University) and Jeffrey Glover (Georgia State University)

- [295] *Geospatial Data and Dialog: Perspectives from an Interdisciplinary Project Along Quintana Roo's North Coast*

Members of the Proyecto Costa Escondida have been conducting interdisciplinary investigations along the northern coast of the Yucatan Peninsula since 2006. Our team consists of archaeologists, a coastal ecologist, a hydrogeochemist, and a geoarchaeologist. In attempting to understand coastal adaptive strategies over the past 3000 years, project members have collected and used many datasets – from sediment cores and traditional archaeological materials to various remotely sensed platforms. This paper focuses on the challenges encountered when trying to integrate these remotely sensed datasets –LiDAR, and SRTM elevation data; ASTER, GeoEye, IKONOS, Landsat VII and Landsat 8 multi-spectral satellite imagery and aerial photos from INEGI – into our investigations of the complex coastal geography. We examine the development of project specific data standards to facilitate dialogue in an interdisciplinary setting while also navigating the needs of other project stakeholders including local communities, national governments and federal funding agencies.

Vaughn, Kevin [19] see Gorman, Alicia

Vaughn, Kevin (Purdue University), Verity Whalen (Purdue University) and Hendrik Van Gijseghem (Université de Montréal)

- [27] *Plazas and Pilgrimage in the Upper Ica Valley*

Documented plaza use in the Southern Nasca Region (SNR) has demonstrated that communal plazas were absent at residential sites during the Early Nasca period. Indeed, communal rituals and performance were limited to the pilgrimage center of Cahuachi and associated features of the built environment such as the Nasca geoglyphs. Building on this previous work in the SNR, in this paper we report on evidence for the use of plazas and related communal spaces in the Upper Ica Valley during the first few centuries of the Early Intermediate Period (EIP). Specifically, we report on two sites in the Upper Ica Valley with early EIP components: Cerro Soldado and Cerro Tortolita. While Cerro Soldado lacks plazas and communal architecture, the built environment at Cerro Tortolita features platform mounds and several associated communal plazas. Using architectural and ceramic evidence, we suggest that the differences are attributable to Cerro Soldado's engagement with the Cahuachi pilgrimage system in the SNR, while residents of Cerro Tortolita focused locally on community ritual.

Vavrecka, Petr [299] see Kvetina, Petr

Vawser, Anne (National Park Service)

- [77] *Does Archeological Site Monitoring Work? The National Park Service's Midwest Region's Ranger Monitoring Program*

The Midwest Region of the National Park Service developed a program that uses park protection officers to monitor archeological sites on an annual basis. The program just completed its fifth year of operation

and has provided archeologists with an immense amount of data about the threats to, and state of preservation of, the park's archeological resources. But, does the program work? Has the effort resulted in better protection of archeological sites or has it simply been an exercise in bureaucratic paperwork? Data collected over the last five years is compared to data about the sites prior to the program to analyze the value of the program. Benefits include improved documentation and knowledge about the sites, better communication between park staff and regional archeologists, and buy in from park rangers that resulted in an increased interest in protecting the resources in their parks. Additionally, threats that have been identified by rangers have been addressed to limit future damage. Both add up to better protection for the regions important sites.

Vawser, Anne [343] see Schilling, Timothy

Vázquez, Ricardo (Museo Nacional de Costa Rica) and Robert Rosenswig (University at Albany)

[197] *The Las Mercedes site: The Emergence of an Important Sociopolitical Center on the Central Caribbean Watershed of Costa Rica*

This paper presents new architectural data and radiocarbon dating gathered from Las Mercedes in 2009 and 2012. Las Mercedes was recognized as an important center during the 19th-century, before any other complex site of Lower Central America. New investigations begun in 2004 provide evidence of the site's layout and chronology indicating that an intensive building project started at the onset of Period VI (900-1550 CE). During this period, Las Mercedes was a gathering hub with formal accesses along two expansive causeways (each longer than 1 km) that meet at a system of monumental architecture that include a 6 m high central mound and a reflecting pool. Period VI construction consists of earthen fill faced with river cobble transported from nearby waterways. Construction of this Period VI architecture incorporated Formative-period remains as well as denser deposits from Period V (300-900 CE) occupation of the area. We propose that a population rise before 900 CE and geo-environmental factors played a role on the emergence and placement of Las Mercedes as a regional center.

Vazquez De Agredos Pascual, Maria Luisa (Departamento de Historia del Arte, Universidad de Valencia), Cristina Vidal Lorenzo (Departamento de Historia del Arte, Universidad de), Patricia Horcajada Campos (Departamento de Historia del Arte, Universidad de), Vera Tiesler (Facultad de Ciencias Antropológicas, Universidad A) and Patricia Quintana Owen (CINVESTAV, Mérida, México)

[164] *Body Paint and Rites of Passage in Maya Culture*

The ancient Maya considered physical death as a rite of passage to another state. This explains the high symbolic value of many of the elements forming parts of the funeral ceremonies of royalty in which the deceased was prepared with the purpose of aiding this sacred passage. From very ancient times, one of these elements was that of color, particularly red, though this was not the only color, whether introduced as part of the burial offerings inside different types of vessels, to cover the funeral bundle, or even to shroud the corpse. Recent archaeometric results gathered at University of Valencia and Polytechnic University of Valencia suggest that many of the pigments used were perfumed ointments with cosmetic properties. What were the raw materials used in the preparation of these intensely scented body paints used in Maya death rituals? In what way did the color and the aromatic excipient combine in highly technical recipes with profound symbolism destined to be spread over the corpse and head of the deceased king? This paper aims to tackle these and other questions on the basis of an interdisciplinary study combining the different fields of history of art, history and the chemical analysis.

Vega, Marina [253] see Lopez, Xulieta

Vehik, Susan [79] see Drass, Richard

Vehik, Susan (University of Oklahoma)

[220] *Mother Moon, Father Sun and the Little River Focus Council Circles of Central Kansas*

The council circles are unique structures on the Plains. They are comprised of four semi-subterranean structures organized to form a circle. Over the years many different explanations have been created for the circles. Some of these are quite fanciful, including Celtic Israelite temples. Most often though they are suggested to be religious centers, residences of elites who dabbled in religion, forts, men's lodges, and solstice monitors. Their symbolic significance, however, has never been investigated. A survey of

Caddoan ethnography provided possible symbolic meanings for council circle shape and for each of the structures comprising the council circle. From this, material manifestations of potential symbolic meanings were defined and investigated. The council circle shape may represent the cross and circle motif of a tripartite world, while the structures appear to be associated with both medicine and warrior aspects of the sun and moon.

Veit, Heinz [69] see Lombardo, Umberto

Veit, Richard and Mark Nonestied (Association for Gravestone Studies)

[155] *Cemetery Reform In 19th-Century Puerto Rico: Enlightenment Principles in a Colonial Setting*
Puerto Rico's 19th century cemeteries are incredible repositories of mortuary art. Resembling the famous cemeteries of New Orleans, Louisiana, they contain a wide array of family monuments and finely executed marble statuary. They are cultural and historical treasures. However, they have seen only limited attention from scholars. Most are organized on a cadastral grid, are walled, have gatehouses, family tombs or pantheons, niches for individual burials, autopsy buildings, and ornamental statuary. They were built outside of and downwind of the communities they served. The markers in the cemeteries were produced locally, or were imported from Spain, Italy, or South America. In their designs, they reflect Enlightenment ideas common in late 18th century Europe. Interpreted and codified by the Bourbon rulers of Spain, these new "rational" ideas about how cemeteries should be designed were imposed on the colonies. They provide an important alternative to the romantic Rural Cemetery Movement seen in North America which inspired by northern European cemeteries such as Pere Lachaise in Paris. Rationally designed, they placed an emphasis organization and hygiene, highlighted the family rather than the individual, and remain important sites of commemoration and community pride today.

Velasco, Matthew (Vanderbilt University)

[150] *Biosocial Affinity and Differentiation at a late Prehispanic Chullpa Cemetery (Colca Valley, Peru)*
During the Late Intermediate Period (AD 1000-1450), novel mortuary traditions involving entombment in above-ground funerary structures (chullpas) proliferated across the south-central Andes. Chullpas are most commonly interpreted as monuments to the social and territorial integrity of competing kin groups, or ayllus. These interpretations, linking ayllu, territory, and open sepulchers invoke classic structural-functional hypotheses, in which formal burial or tomb building serves to legitimize resource rights of segmentary social groups, especially in the context of population stress and resource competition. Well-preserved human remains from the cemetery site of Yuraq Qaqa in the Colca valley (Peru) provide a rich body of evidence to examine the applicability of these approaches to above-ground mortuary traditions during the late Prehispanic period. In this paper I explore the relationship between chullpa construction, boundary maintenance, and lived experience in the ancient Colca valley using preliminary data on biological affinity, cranial vault modification, and skeletal morbidity. Rather than approach Late Intermediate Period chullpas as a singular material phenomenon, this study suggests that the degree to which chullpa monuments promoted social exclusion or integration may vary by region and cultural context.

[150] *Chair*

Velasquez, Erik [61] see Balanzario, Sandra

Velchoff, Nancy (Gault Project Texas State University), Tom Williams (Texas State University), Robert Lassen (University of Tennessee) and Jennifer Gandy (Texas State University)

[318] *Lithic Technological Trends of Clovis and the Older-than-Clovis Components at the Gault Site, Bell County, Texas (41BL323)*

As one of the largest multi-component archaeological sites in North America, the Gault site (41BL323), located in central Texas, provides a unique opportunity for researchers to analyze changes in technological traits and attributes both spatially and temporally from a workshop setting as well as an inter- and intra-cultural perspective. Controlled excavations at the Gault site since 1999 have recovered flaked stone tools, along withdebitage and faunal remains in situ from Clovis and well below the known Clovis horizon. These older deposits are ~ 80 cm deep and are referred to as the Older-Than-Clovis (OTC) horizon. This poster will present a macroscopic analysis of these artifacts focusing on the technological trends and attributes of the OTC flaked stone tool assemblage compared to the Clovis age assemblages through diagnostic and individual flake analysis. These trends and attributes will provide sought after insights into the technology and reduction sequence of the OTC flaked stone tool

component. This poster will also demonstrate the on-going investigations and provide brief discussions outlining the results from the analysis of the OTC assemblage as well as providing the similarities and differences as compared to Clovis industries.

Vellanoweth, René L. [163] see Brown, Kaitlin

Venter, Marcie (University of Kentucky) and Christopher Pool (University of Kentucky)

[128] Late Classic Boundary Interactions in the Southern Gulf Lowlands

Borders and frontiers constitute poles on a continuum of cultural boundedness, the former as closed, rigid demarcations, the latter as permeable, fluid zones of interaction. The establishment and maintenance of either kind of boundary proceeds through definition of difference and negotiation of position, both internally and externally. These principles are well illustrated in the Classic and Postclassic archaeology of the Gulf lowlands in southern Veracruz and western Tabasco. Bounded by a fluctuating ethnolinguistic divide between Maya to the east and Mixe-Zoqueans to the west, the southern Gulf lowlands nurtured precocious sociopolitical complexity and distinctive stylistic and arquitectonic expressions; exported widely distributed fine-paste ceramics, and served as a conduit for exogenous materials, styles, and ideological complexes. We explore frontier interactions and internal boundary negotiations during the Late Classic period (A.D. 600-900), when the southern Gulf lowlands experienced peak population levels and the proliferation of a multitude of modest centers. Distributional patterns of ceramic complexes and civic- ceremonial layouts suggest maintenance of relatively open political boundaries internally, while participation in a Gulf Coast-Maya tradition of hollow mold-made figurines, export of local ceramics, and transshipment of Mexican obsidian to Maya centers underscore the multidimensional character of frontier interactions.

Vera, Jaime (Zona Arqueológica de Monte Albán- INAH)

[238] Los Sistemas Constructivos del Conjunto Monumental de Atzompa

A lo largo de las excavaciones de los edificios monumentales, las unidades habitacionales y los diferentes espacios bajo la investigación arqueológica, se han encontrado variados sistemas constructivos que cumplen propósitos diferentes. Esta diferenciación constructiva es muestra del entendimiento de los materiales usados para la construcción así como del entorno sobre el cual este conjunto monumental fue construido que va ligado con las variadas funciones que los espacios del Conjunto Monumental tuvo para cada caso. Esta exposición es sólo una muestra de esas variaciones de uso de los espacios apoyados con los sistemas constructivos y como el entendimiento de su entorno les permitió generar un satisfactor a algún tipo de demanda social.

Verano, John (Tulane University)

[25] Afterlives of the Decapitated in Prehispanic Peru

Isolated human skulls and headless bodies appear sporadically in the archaeological record throughout the world. These discoveries frequently provoke debates about the context and cultural meaning(s) of practices leading to the intentional separation of head and body. While archaeological context suggest that headless bodies frequently receive only limited attention (abandonment or prompt burial), disembodied heads often experience a more complex “afterlife”—one that may involve treatment to preserve the facial features and hair, or modifications of the skull such as defleshing, perforation, sectioning of the cranium, surface decoration, and the attachment of suspensory cords. These elaborate treatments of the head underline its symbolic importance, whether it represents a specific individual or a member of a particular social group. Disembodied heads (mummified and skeletonized), are known from many Prehispanic cultures of Peru. Determining the origins, method of preparation, and possible ritual/political function of these heads continues to be a challenge for archaeologists and biological anthropologists—one that clearly requires a multidisciplinary approach.

Verdugo, Cristina (California State University, Los Angeles), Toni Gonzalez (California State University, Los Angeles) and Helen Haines (Trent University)

[70] An Analysis of Skeletal Material from Chultuns C-1 and B-2 at Ka'Kabish, Belize: A Reconsideration of the Mortuary Function of Chultuns

Excavation of Chultuns C-1 and B-2 by the Ka'Kabish Archaeology Research Project during the 2012 and 2013 field seasons has yielded the remains of at least five individuals. Although the context of Chultun C-1 was heavily disturbed, the context in Chultun B-2 demonstrates that the chamber had been used for deliberate interments. The mortuary function of chultuns has long been recognized in the southern Maya lowlands by such early investigators as Tozzer, Gann and Ricketson but the use is described as

"occasional" and "secondary". Puleston's 1971 analysis is seriously flawed by his assumption that the concentrations of chultuns in residential areas suggested a secular rather than ceremonial function. He also cites the "occasional" occurrence of burials to eliminate the mortuary use as a primary function and this allows him to dismiss the burial data from speaking to the wider issue of chultun function. It is obvious that mortuary ritual was being carried out in a subterranean space. The presence of multiple individuals suggests the repeated performance of rituals which constitutes a process of sacrilization of that space. Even as a secondary function the implications of this activity cannot be ignored in a discussion of a feature's function.

Verdugo, Cristina [70] see Solano, Adam

Vernon, Kenneth (University of Utah Department of Philosophy)

[316] Defending Ethnographic Analogy

This project addresses theoretical and methodological issues surrounding the use of ethnographic analogy. The immediate aim is to clarify and expound on the various forms ethnographic analogy may take, the specific problems facing each, and proposed solutions. Part of the project aims at drawing out useful comparisons and contrasts between the theoretical and methodological debates concerning the reliability of ethnographic analogy in archaeology and epistemological debates in the philosophy of science over the nature of empirical observation. The ultimate goal is to defend ethnographic analogy as a reliable mode of inference for reconstructing human behavior in the past.

Verostick, Kirsten (UTSA-CAR)

[199] Fine-grain Diet Reconstructed from Stable Carbon and Nitrogen Isotopes in Prehistoric Hair: A Case Study from the Lower Pecos Region in South Texas

Stable isotope research has experienced refinements in analytical techniques and interpretations allowing complex reconstructions of prehistoric diets at variable temporal scales. This paper presents a fine-grained analysis of hunter-gatherer diet in the Lower Pecos region using stable carbon and nitrogen isotopic data extracted from human hair. Isotopic analysis of hair from a desiccated Late Archaic (ca. 1200 cal B.P.) individual recovered in the 1930s from a shelter illustrates a monthly diet reconstruction. Critical to this reconstruction is the establishment of the early summer as an approximate season of death for this individual, called the Skiles Mummy. This early summer period is inferred based on previous analysis of intestinal contents. Assuming a rate of hair growth at roughly 1 cm a month, the approximate period of death allows a monthly determination of stable carbon and nitrogen isotopic values in hair segments for roughly the last 1.5 years of life for this individual. These data show dramatic seasonal shifts over a single year, with a 2.9‰ difference in $\delta^{13}\text{C}$ values and a 1‰ difference in $\delta^{15}\text{N}$ values. When combined with ecological data on resource availability, the results of this fine-grained reconstruction allow us to address questions about seasonal resource use in the region.

Verostick, Kirsten [265] see Mauldin, Raymond

Versaggi, Nina (Binghamton University (SUNY))

[304] Beyond the Artifact: Teaching Consultation within the Academy and CRM

An important goal in the training and mentoring of the next generation of CRM professionals is the production of competent participants in the complex process of consultation with descendant communities and others. In my dual role at Binghamton University as director of the Public Archaeology Facility (PAF) and as a faculty member, I have many opportunities to mentor young archaeologists, both staff members and graduate students. I stress the importance of looking beyond the artifact to the heritage embedded in the material item. The same is true for the practice of CRM. Looking beyond the checklist to the constituents, stakeholders, and advocates (which also includes project engineers and sponsors), and conducting open dialogues ensures the success of a project from multiple perspectives. I co-teach a graduate level course on Heritage Resource Management and Practice at Binghamton University. The class balances instruction with case studies drawn from work in CRM and other heritage projects. In this paper, I will discuss the concept of consultation, and illustrate the use of case studies in educating the next generation. The PAF case studies I will use include the historic Gilboa Dam reconstruction project, and two Binghamton downtown projects rich in Native American heritage.

Veth, Peter (The University of Western Australia)

[156] Dating Kimberley Rock Art: the long and the short of it

The rock art corpus of the Kimberley region of NW Australia is famous for the diversity of art schema culminating in the Wandjina repertoire dating to the last 4,000 years. While terminal Pleistocene dates have been obtained for Gwion (Bradshaw) motifs the question of how old the earliest figurative pigment art is remains open. With an increasing number of occupation sites now dated in the Kimberley to circa 50,000 BP it can be reasonably posited - was art part of the colonising repertoire? This paper reviews the current evidence and looks at the theoretical basis for an earlier body dating back to before the Last Glacial Maximum.

[244] *Discussant*

[244] *Chair*

Veth, Peter [244] see Placzek, Christa

Vicari, Mary Ann (Washington University in St. Louis) and Victor Villagran (SWCA Environmental Consultants)

[316] *Determining the Effects of Bioturbation on Prehistoric Great Basin Sites*

Previous studies have indicated that surface artifact diversity is typically not representative of overall site assemblages at many prehistoric sites in the Great Basin. This study investigates in more detail the effects of bioturbation on the post-depositional mobility of lithic artifacts at 20 excavated prehistoric sites located in eastern Nevada. This analysis focuses on identifying modal patterning in subsurface debitage distributions consistent with the formation of stone zones, accumulations of large clasts that collect immediately below the zone of maximum rodent disturbance. Results indicate that excavated lithic assemblages exhibited distinct vertical patterning with respect to cultural and natural depositional processes. Units in which artifact frequencies peaked at 30-50 cmbs also had corresponding peaks in natural inclusions, suggesting artifacts in these areas had been significantly displaced post-burial. The prevalence of stone zones appears to vary on the intra-site scale, suggesting bioturbation intensity is a factor of variability in sedimentary texture, vegetation growth, and soil compaction. These findings reveal that many Great Basin sites may actually contain large subsurface components as a result of post- depositional downward displacement of artifacts, even in actively erosional or stable geomorphic environments.

Vicente Cruz, Ismael Gabriel [83] see Whittington, Stephen

Vidal, Cinthya (Centro INAH Sinaloa)

[339] *Pottery-Making Practices, Cosmology, and Interaction of Social Agents: the Chalchihuites-Aztatlán Connection Revisited*

The implementation of earth science techniques has helped us to know the origin of Aztatlán pottery from the Mexican states of Durango and Sinaloa. The results of this work suggest that these objects were produced on both sides of the Sierra Madre Occidental, on the coast and in the highlands. This has certainly changed the way we understand the Chalchihuites-Aztatlán interaction. Not only does a microscopical study of pottery help us to know its origin, but it also provides us with some evidence about ceramic manufacture. By contextualizing our results with other archaeological, ethnohistorical, and ethnographical data, we can obtain some evidence about the cosmology of the ancient inhabitants of northwestern México. Using thin section analysis as a base, in this paper I suggest an interpretation of the method and techniques employed in the Aztatlán chaine operatoire. In addition, I propose that the inhabitants of the Guadiana Valley in Durango, and those in southern Sinaloa and northern Nayarit, shared a set of cosmological beliefs based on the observation of the path of the sun.

[8] *Chair*

Vidal Aldana, Cinthya [140] see Sandoval Mora, Cindy Cristina

Vidal Guzman, Cuauhtemoc [140] see Farstad, Kendra

Vidal Lorenzo, Cristina [154] see Muñoz Cosme, Gaspar

Vidal Lorenzo, Cristina [164] see Vazquez De Agredos Pascual, Maria Luisa

Vidal Montero, Estefania (Fulbright-CONICYT Scholar, Department of Anthropology, University of Chicago) and Mauricio Uribe (Department of Anthropology, Universidad de Chile)

[19] Pottery and Social Complexity in Tarapacá, Atacama Desert (Northern Chile)

Based on multiple studies, it has been suggested that the earliest pottery producing communities in Tarapacá (Northern Chile) appeared c. 900 BC, in conjunction with a process of exploration, settlement, and exploitation of resources that intensified between 200 and 900 AD. In this scenario, agricultural and ceramic innovations, among others, were developed in an environmental setting that is at present extremely arid, associated with local coastal populations and with independence from external agents. Thus, this region of the South Central Andes developed its own social complexity, which was affected by other populations only during later periods. In the present study, this particular situation is exemplified through our investigation of regional ceramics using petrography, thermoluminescence, and neutron activation analysis (NAA), as well as chronological and stylistic approaches (FONDECYT 1080458 y 1130279).

Vierra, Bradley (Statistical Research Inc)

[294] Land Use and Social History in the Southern Chuska Valley

Movement has always been a critical part of life for the prehistoric people residing in the Southwest. This movement involves periods of relative residential stability with some households emphasizing a greater degree of mobility and others aggregating into communities with more complex occupational histories. Therefore the discussion has shifted to cyclic patterns of regional movement that provide for a much larger scale of residential mobility than previously imagined. Both foragers and agriculturalists traveled over great expanses of the landscape during their lifetimes and across successive generations. The knowledge of this history would have become an integral part of their lives and cultural identity.

[294] Chair

Vierra, Bradley [294] see Ciolek-Torello, Richard

Vietti, Laura [208] see Chisholm, Linda

Villagran, Victor [316] see Vicari, Mary Ann

Villagrana Prieto, Citlallitl [60] see Macias, Juan Ignacio

Villalpando, Elisa (Instituto Nacional de Antropología e Historia, Sonora)

[293] La construcción de arqueologías transnacionales en el Noroeste/Suroeste

Durante la última década hemos intentado llevar a cabo en el Noroeste de México la construcción de arqueologías transnacionales debido al hecho de que nos enfrentamos con una realidad bastante diferente a la de los arqueólogos mesoamericanos. La existencia de una frontera internacional que divide un espacio que estuvo integrado en el pasado, comunidades indígenas separadas por esa misma frontera y una legislación federal para México que enfatiza la condición de monumento de los vestigios arqueológicos, nos han llevado a plantearnos una visión amplia de los procesos históricos y culturales que han existido en este espacio que llamamos Noroeste/Suroeste y que no debería estar artificialmente limitado por fronteras políticas, culturales o lingüísticas. Nos encontramos en la construcción de arqueologías transnacionales que deberán ser arqueologías de emplazamientos múltiples, no obstante que los investigadores trabajen en diferentes "naciones", siempre y cuando se encuentren comprometidos con la necesidad de re-examinar las contribuciones que la disciplina puede aportar a la sociedad y expandir la arqueología del Noroeste/Suroeste tanto lingüística, como cultural y regionalmente.

Villalpando Canchola, Maria Elisa [103] see Jones, Ashley

Villaluenga, Aritz [278] see Hutson, Jarod

Villanueva, Jose [158] see Stahle, David

Viñas Vallverdú, Ramon [156] see Ruiz, Juan

Vincent, Matthew (University of California, San Diego)**[65] OpenDig: Digital Field Archaeology, Curation, Publication and Dissemination**

OpenDig is a platform for recording, editing, managing, and publishing archaeological data. It comprises three related applications, one for data entry in the field using hand-held mobile devices, another as a light-weight utility to view and edit data during an expedition, and finally a full web application with complete tools for research and analysis. The OpenDig framework relies on open source tools that allow for easy data sharing using standard web-based protocols. This allows for new tools to built on the existing application programming interface (API) for extendibility and collaboration. Through CouchDB, Apache's NoSQL database, OpenDig is able to adopt a flexible data structure which can be easily modified to fit any particular project, whether it is excavation, survey, or other cultural heritage management systems. The three tiered approach also allows for deployment in areas where there is little or no Internet connectivity, allowing for any laptop to act as a portable server for the database and each device acting as a redundant copy for maximum data protection.

[65] Chair**Vincent, Monique (University of Chicago)****[127] Last Moments at 'Umayri: Daily Life in Early Iron Age Transjordan**

Tall al-'Umayri is a multi-period site located in the central highlands of modern Jordan. The Early Iron Age (ca. 1200 BCE) settlement at 'Umayri was a small, agro-pastoral village that was short-lived, destroyed in a massive conflagration less than a century after its construction. The fire and resulting collapse sealed in the last moments of the inhabitants, preserving artifacts scattered on the floors and in the tumble of five domestic structures. These artifacts, excavated by the Madaba Plains Project over the past twenty years, represent everyday activities related to food preparation and consumption, and the production of lithics, textiles, and seals. These daily activities integrated locally produced artifacts as well as regional ceramics, basalt tools, and Egyptian imports. This paper explores how these various artifacts lend insight into the activities of these households during their final days. The larger context of my research is understanding the social identity of the small, highland villages located on the fringes of the collapsing Egyptian empire. I argue that understanding social identity as practiced every day at the household and community levels at 'Umayri contributes to a better understanding of the diversity of social expression in the Early Iron Age.

Vines, Patrick (Louisiana State University), Heather McKillop (Louisiana State University) and E Cory Sills (University of Texas-Tyler)**[138] 3D Digital Reconstruction of Salt Production Ceramics Used by the Maya in Paynes Creek National Park, Belize**

The 3D digital reconstruction of Maya pottery vessels provides valuable insights for study, teaching, and exhibits. We made 3D scans of pottery rim sherds using a Next Engine scanner. The rim sherd 3D images were imported into Rhinoceros 4.0 NURBS modeling software where we reconstructed complete digital pottery vessels. We also used profile drawings of rim sherds drawn to scale in Rhino software to make complete digital vessels. Our case study is the Paynes Creek Maya Salt Works, where brine was evaporated in pots over fires to make salt. Digitally reconstructing complete pots from sherds helps calculate vessel volume and hence estimates of salt produced. The digital vessels provide a permanent record for research, teaching, sharing, and for 3D printing.

Vining, Benjamin (Wellesley College)**[34] Agent-Based Geo-Spatial Approaches to Understanding Prehispanic Pastoralist Ecology in the South-Central Peruvian Andes**

One of the challenges for a settlement ecology approach in archaeology is parsing the influences of environmental, cultural, and human behavioral/biological factors on settlement distributions. Spatially-contingent agent-based modeling (S-ABM) provides one fruitful avenue for understanding these relationships. I apply S-ABM to late prehispanic settlement shifts among high-elevation sedentary pastoralists in the Suches basin of southern Peru. Parameters include household demographic and nutritive requirements; herding reproductive and stocking dynamics; and fluctuating environmental conditions. Different scenarios evaluate the relative importance of subsistence-, optimizing-, and maximizing-strategies within various socio-cultural and physical environments. Results suggest shifts in settlement criteria from strategies that were principally environmentally-sensitive to strategies that increasingly prioritized socio-cultural considerations such as production for non-local consumers and ties to transportation routes. These shifts coincide with increasing anthropogenic intervention in natural ecological systems, and human niche construction through the legacy of land use impacts. S-ABM helps

to differentiate important transitions in socio-ecological relations, and it helps to identify human behavioral tipping points that have led to the creation of anthropogenic settlement-ecological systems.

Vining, Benjamin [295] see Saturno, William

Vogel, Melissa (Clemson University)

[150] Redefining the Late Intermediate Period on the North Coast

As more research is conducted and the catalog of absolute dates increases, the traditional Andean chronological framework based on alternating periods of political unity and fragmentation continues to lose practical relevance. This is certainly true for Peru's north coast, where recent fieldwork has taken a more nuanced approach to characterizing sociopolitical organization and dramatically changed our understanding of the events that took place during the Middle Horizon and Late Intermediate Period. Specifically, investigations at several sites have clarified the lesser, more indirect role of the Wari Empire, the later dates and diverse strategies of Chimú imperial expansion, and the previously ignored but significant presence of the Casma polity. Using evidence from the Casma capital city of El Purgatorio, this paper examines Casma influence on coastal cultural development during the Late Intermediate Period and the implications for reinterpreting the regional culture history. The data suggest that while the Middle Horizon witnessed myriad changes in coastal political structure and religious practice, much of the Late Intermediate Period appears to have been dominated by three large coastal polities (the Casma, Chimú and Lambayeque) that participated in interregional exchange and coexisted peacefully for centuries.

Voigt, Eric [211] *Chair*

Vokes, Arthur and Erika Heacock (Arizona State Museum, University of Arizona)

[32] Pithouse Period Shell Games: The Shell Assemblage from the Harris Site

The presence of extensive trade networks, which linked the Mimbres region of southwestern New Mexico with the Hohokam and other cultural groups to the west and south--ultimately extending to the coastal regions of the Sea of Cortez and California--has long been recognized. The structure and nature of the network during the Pithouse period is explored through the lens of recently excavated shell materials from the Harris site, which is augmented through a re-evaluation of the legacy collections from the 1930's excavations by Gila Pueblo.

Vollmer, Karl [77] see Nyers, Alex

Volta, Beniamino [52] see Folan, William

Von Gunter, Sean Cary (The University of Tennessee)

[132] Forward to a New Biological Paradigm in Human Behavioral Ecology: The Potential of Epigenetics on Archaeological Theory & Practice

Over the course of the last two decades, researchers working on the frontier of biological inquiry have been forced to reconsider our fundamental understanding of evolutionary mechanisms, through the lens of "epigenetics"-- here, defined as the study of bio-chemical phenomena that lead to functionally relevant changes in behavior and gene function. Epigenetic changes generally occur "outside" the function of the genome, proper; often as a direct result of environmental interaction. More importantly, such changes mostly take place without altering the underlying DNA sequences; but nonetheless, appear to be transmittable, even from one generation to another. This presentation seeks to explore the more profound implications related to the adoption of an epigenetic biological paradigm to frame the study of Human Behavioral Ecology-- specifically, as it relates to archaeological theory and method. For example, studies indicate that even slight changes to the proteome (not completely genomic, in origin) can produce profound changes in behavior and phenotypic expression. An emergent ability to identify species-specific protein molecules in archaeological context, may soon allow researchers to better quantify theories that purport to explain the degree to which ecological factors affect human diversity, behavior, and culture.

von Nagy, Christopher (UNR / FSU), Eliseo F. Padilla Gutiérrez (Instituto de Investigaciones Antropológicas (IIA)) and Mary D. Pohl (Florida State University)

[128] Entwined Communities and Enmeshed Polities: La Venta and the Middle Formative Greater Tabasco Plain Region

Middle Formative La Venta, Tabasco is a paramount representative of the Mesoamerica-wide movement

toward urbanization well underway by the middle centuries of the first millennium before the Common Era. It is also something of a misplaced city, offset from extensive regions of prime maize and yucca growing soils. We combine multi-mode and multi-scale (spatial) landscape and settlement analysis of the Tabasco Coastal Plain, Plan Chontalpa, and La Venta polity using high resolution satellite and region-wide LIDAR data with recent and historical archaeological data to explore networks of interaction linking La Venta with communities and polities across the coastal plain and into the adjacent Southern Veracruz, Chiapas, and Maya regions at various spatial scales. This study integrates a developing, region-wide unified artifacts database with formal settlement and landscape-based network analysis. The heterogeneity of data require multiple approaches, thus we test various approaches to formalizing spatial-governed measures of interaction. We incorporate a Bayesian analysis of recent, unpublished radiocarbon dates from the La Venta polity and adjoining Plan Chontalpa region to fine tune chronologies of interaction.

von Nagy, Chris [156] see Russ, Jon

Von Schwerin, Jennifer (German Archaeological Institute)

[154] *The MayaArch3D Project: An Open Source 3DWebGIS for Archaeological Research*

The MayaArch3D Project is an interdisciplinary, international project that is developing an open source research tool, a 3DWebGIS, that will allow scholars to combine 3D-Models (from laser scanning, photogrammetry, or CAD programs) with the functions of GIS in order to document and analyze archaeological sites in a single internet platform. Using this tool researchers can visualize, search and query, in real time, segmented 3D models of multiple resolutions that are integrated in a Geodatainfrastructure (GDI), linked to attribute data stored in a spatial database. This enables online, 3D analysis of maps of settlements, their access and visibility, topography, architectural and landscape alignments, and spatio-temporal distribution of features. Information and objects that are housed in disparate collections around the world can be documented, geo-referenced, virtually combined and analyzed on this one platform according to international data sharing and data security standards. The test data in the tool is from the ancient Maya kingdom and UNESCO cultural heritage site of Copan, Honduras. The tool is a prototype that can be adapted for use at other complex archaeological sites worldwide. Beta tests indicate the potential of this tool to assist collaborative research and to develop new analytical methods in the humanities and social-sciences.

[154] *Chair*

von Schwerin, Jennifer [154] see Richards-Rissetto, Heather

Voorhies, Barbara (University of California, Santa Barbara)

[277] *A Ritual Location at the Rear of The Entrance Chamber of the Las Cuevas Cave*

Project members placed a lateral excavation (Cave Unit 3) that spanned the width of the passageway (8 x 5 m) at the rear of the Las Cuevas Entrance Chamber, just in front of an ancient Maya wall restricting access into the deeper recesses of the cave. Removal of an overburden of water lain silt revealed two low plaster encased platforms resting on a plaster floor that extends across the width of the passageway. Many small objects, in addition to copious potsherds and dense charcoal fragments are scattered on this floor, especially in front of one platform that contains abundant freshwater snail shells (jutes) within its construction fill. We think that these objects are in primary context where they were placed as offerings, and that deep cylindrical holes chipped into the floor in various places appear to be offering holes. Two associated fire features document habitual burning at this location. The incorporation of highly symbolic jute shells within the focal platform may hold a clue regarding the nature of the former ritual.

Voss, Barbara (Stanford University)

[240] *Discussant*

Vranich, Alexei (Cotsen Institute)

[27] *Plazas in the High Andes*

Primary ritual and public spaces at Tiwanaku held sacred idols, and while they were the controlled setting for choreographic interactions with high status and important residents, these spaces were both conceptually and experientially very different from plazas in the modern, developed world. Tiwanaku plazas or courtyards had panoptical qualities, but rather than placing local residents or visitors under

scrutiny, they fixed the surrounding landscape under its gaze. This spatial and visual effect was fashioned by dropping the floor deeply into the ground until the surrounding ground surface fell from view. Pillars and gateways around the boundaries of the plaza created visual points of reference to frame landscape features and astronomical bodies, and they contributed to sacred landscape narratives by changing visual relationships between the earth and sky.

Vranich, Alexei [107] see Berquist, Stephen

Vrydaghs, Luc [39] Discussant

Vusovic-Lucic, Zvezdana [278] see Boric, Dusan

Waber, Nicholas (UBC)

[160] Customizing Microblades: A Design-Theory Analysis of Microblade Production and Alteration Practices on Early Holocene Haida Gwaii

This paper examines an early Holocene microblade assemblage from Haida Gwaii, British Columbia, in order to assess how the microblades were hafted, and thus used. The Richardson Island site in southern Haida Gwaii yielded a substantial microblade assemblage and tremendously fine-grained stratigraphy, allowing a unique view into the earliest adoption of microblade technology in the area. Following the principles of design theory, the microblade assemblage was analyzed in order to identify morphological patterns that would provide indications of how the microblades were implemented in a composite tool setting, and how they were integrated within the broader toolkit. The findings suggest that microblades were used as side-hafted insets in slotted point hunting weapons, and that a regimen of deliberate microblade alteration was employed in order to fit each bladelet to its setting. This paper will discuss this alteration practice, what makes an ideal Haida Gwaii microblade, and how to "find" slotted points without finding a slotted point.

Waddington, Clive

[17] Paradise lost, Paradise Regained: Mesolithic Resettlement of the North-East British Coast after a Catastrophic North Sea Tsunami

The Northumberland coastline on the north-eastern seaboard of the British Isles contains a well-preserved sequence of Holocene sedimentary and archaeological deposits that are currently being eroded as a result of rising sea levels. Recent investigation of an extraordinary sequence of archaeological remains interbedded with catastrophic inundation deposits has yielded evidence of early and mid-Holocene hunter-gatherer occupation interrupted by a tsunami event thought to be the '8.2 event', followed by a return of hunter-gatherer settlement. The impact of this tsunami on the geography of the North Sea is briefly discussed together with the substantial lithic assemblage, carbonized plant remains and settlement structures that document the post-tsunami use of this landscape by subsequent generations of hunter-gatherer-fisher groups. This unusually preserved site provides an insight into dynamic landscape change through the Holocene, and one in which humans eventually returned after a catastrophic environmental event - a case of paradise lost and paradise regained.

Wagner, Friedrich E. [13] see Wagner, Ursel

Wagner, Ursel (TU-Muenchen), Rupert Gebhard (Archaeological State Museum, Munich), Zsolt Revay (FRM-II, Technical University of Munich), Peter Albert (Archaeological State Museum, Munich) and Friedrich E. Wagner (Physics Department, Technical University of Munich)

[13] Chlorine Determination in Iron Artifacts by Prompt Gamma Activation Analysis (PGAA)

Archaeological iron artifacts often suffer from severe corrosion after their excavation. The presence of chlorine in the material is thought to play a major role in this process. Efforts to conserve such artifacts include treatments to remove any chlorine in the rust layer or in the iron itself, mainly by prolonged leaching in alkaline solutions or by heating. It is therefore important to determine the chlorine content of the finds before and after treatment in a non-destructive manner. Prompt Gamma Activation Analysis (PGAA), which determines the element content of objects by bombardment with thermal neutrons and observation of the promptly emitted gamma rays is unique in allowing such determinations for rather large objects. We report on first PGAA experiments yielding chlorine contents between 100 and 1500 ppm with excellent accuracy. The method can yield information on the efficiency of leaching methods, on the exact

location of the chlorine in the artifacts, and on the effect of Cl removal by heating in reducing atmospheres. PGAA may also be a useful general tool for archeologists to test recently excavated iron artifacts for their chlorine content in order to facilitate a prompt and appropriate conservation treatment.

Wagner, Mark

- [74] *Longhouses and Peace Medals: Elaine Bluhm Herold and the Beginning of Contact Period Archaeology in Illinois*

Investigations of the various types of cultural entanglement that occurred between late eighteenth to early nineteenth century Native and Euro-American societies in eastern North American have increased over the past two decades. Elaine Bluhm Herold began investigating such sites in Illinois as early as the 1950s, long before other researchers in the state recognized their importance. This paper reviews her contributions to the development of contact period archaeology in Illinois, including her excavations at the Crawford Farm site, a major Native village associated with the famous Sac leader Black Hawk.

Wagner, Stephen (CEMML/CSU)

- [258] *Social Media and the Process of Archaeological Commentary*

The proliferation of blogging and other social media platforms have allowed archaeologists to increase communication with the public as well as within the professional community. Blogs tend to follow certain themes including archaeological news, project updates, and archaeological methods. Despite our continuous calls that archaeology is more than just fieldwork or old things, many of our online presentations seem to focus around these topics.

The Process Archaeology blog and twitter accounts were created as a way of discussing archaeological methods beyond the usual suspects of fieldwork basics. In the years since beginning this project, much has changed. The target audience has shifted from an advanced avocational public to entry-level post-graduate professionals, while the preferred delivery structure has changed from the soapbox blogging strategy to one considerably more conversational. As it stands now, the project may not reach its original goals, but the observations since its start can provide guidance for similar projects in the future.

Wahl, David (USGS), Roger Byrne (University of California, Berkeley), Lysanna Anderson (USGS) and Richard D. Hansen (FARES, Idaho State University)

- [158] *Holocene Climate Change in the Southern Maya Lowlands*

The modern climate of the circum-Caribbean region, including the Yucatan Peninsula, is determined by complex interactions of ocean-atmosphere systems from both the Atlantic and Pacific. Elucidating spatial and temporal patterns of past climate variability is essential to assessing the role of these interacting forcing mechanisms. Holocene climate reconstructions from the Yucatan peninsula are particularly useful in understanding how extreme climate events, specifically multi-decadal droughts, may have negatively impacted the Maya civilization. Here we present an 8700-year record of environmental change based on stable isotopes, pollen, charcoal, and magnetic susceptibility. These proxy indicators enable us to distinguish anthropogenic from climate-induced environmental change and estimate the relative importance of each. Results from this study indicate a more humid climate during the mid-Holocene. A transition to drier conditions beginning around 6000 BP likely resulted from changes in solar radiation (precession effects). Higher frequency (\geq centennial) variability appears to be driven by climate dynamics originating from both the North Atlantic and the Tropical Pacific oceans. During the period from -4600 to 1000 BP, human activity was the primary cause of vegetation change and accelerated soil erosion.

Wahler, Emily [295] see Hlubik, Sarah

Wakabayashi, Kunihiko (Doshisha University)

- [226] *Society during the Yayoi Period of Late Prehistoric Japan*

This paper discusses a model of societies during the Middle and Late Yayoi Period of late prehistoric Japan (first century B.C. to second century A.D.). Numerous Japanese archaeologists regard Middle and Late Yayoi Period societies at the level of chiefdom, but such a simplistic model ignores considerable degree of regional differences at that time. It is likely that in fertile plains, where several large, core settlements and clusters of burial mounds existed, societies achieved some degree of social ranking. In these societies, however, there were few individuals who may be considered as chiefs from a mortuary perspective. In several small plains where only one core settlement existed, we see a simple hierarchy between the core settlement and small temporary camps, but such a hierarchical relationship did not last

long. As a whole, Yayoi societies varied considerably in terms of degree of social evolution. This lack of social structure common to the Japanese islands makes it extremely difficult to apply neo-evolutionary model of band, tribe, chiefdom and state to the Yayoi societies. It is urgent to develop a model that can account for considerable differences in social complexity and simplicity from a region to another.

Wake, Thomas (Cotsen Institute of Archaeology at UCLA)**[320] Formative Period Fisheries of Soconusco**

Fish represent an important source of protein for human populations able to exploit them. Fisheries can also be affected by human extraction practices, sometimes quite rapidly. Fish remains from several Formative Period sites in SE Mexico and adjacent Pacific coastal Guatemala (Soconusco) are described and discussed with emphasis on species diversity, environments represented and resource extraction practices. Evidence of the cumulative effects of fishing in the region over time is presented. The future of Soconusco's fisheries is discussed with reference to archaeologically derived evidence indicating which species appear sustainable.

Walde, Keary [323] see Mooney, James

Walder, Heather (University of Wisconsin-Madison) and Laure Dussubieux (Field Museum of Natural History)**[10] Identifying American Native and European Smelted Coppers with pXRF: A Case Study of Artifacts from the Upper Great Lakes Region**

In North America, archaeologists now routinely use archaeometric methods to investigate native copper ore sources and metalworking techniques of past peoples. Native copper was not smelted, unlike European copper objects that later became available to Native Americans during trading encounters. Differentiating the compositions of Native and European copper allows the recognition of possible "protohistoric" sites, where smelted European copper might be the only trade item present in the assemblage, likely obtained through down-the-line trade. Identifying native copper objects from sites later in time provides information about the persistence of traditional copper-working technology among Native American peoples who also were obtaining items originally manufactured in Europe. This paper assesses the reliability of portable x-ray fluorescence (pXRF) as a fast and effective method of identifying coppers, as compared with laser ablation – inductively coupled plasma – mass spectrometry (LA-ICP-MS). The technique was applied to artifacts from two archaeological sites in the Upper Great Lakes region. Results indicate that for differentiation between native and European copper types, pXRF can be used reliably, without sample preparation and despite surface corrosion, providing a non-destructive way to clarify European trade item distribution and continuity of native copper object use.

Walker, Christopher [16] see Churchill, Steven

Walker, Steven (The University of Cape Town)**[86] Discussant****Walker, Debra (University of Florida)****[123] Life and Afterlife at Cerro Maya, Belize**

June 25, 2014 will mark the fortieth solar anniversary of the first day of excavation at Cerro Maya, Corozal District, northern Belize. Along with Santa Rita, Cerro Maya was one of the first sites on Chetumal Bay to be excavated in the modern era. During seven seasons of investigation, the precocious nature of the Late Preclassic Maya community living there came into clearer and clearer view. As the beach front village, ballcourts, commercial dock and sculpted architectural facades were revealed, Late Preclassic Cerro Maya seemed extraordinarily advanced for its relatively small size, indicative of a prosperous, if short-lived, maritime trading monopoly. Preclassic Maya research in recent decades has demonstrated that Cerro Maya was not as precocious as once thought. Subsequent work, including radiocarbon assays, documents that the site's Preclassic occupation was shorter, later and more dramatic than previously thought. This paper will examine Late to Terminal Preclassic mortuary practices at Cerro Maya in light of recent work in northern Belize and elsewhere. Mortuary ceramics now housed at the Florida Museum of Natural History provide a previously unpublished data set for regional comparison.

[123] Chair

Walker, William (New Mexico State University)**[333] When is a Kiva a Social Actor?**

Are ceremonial buildings causal social actors? If so are they solely integrative or, like people, do they contribute to the creation of some social relationships and to the decline of others? In such activities do they also facilitate flows of information that enhance or hinder social relationships? I argue in this paper that leveling the playing field and treating people more like objects and objects more like people can make clear the causal contributions both bring to human activities. In this behavioral approach to architecture I treat people and buildings as equal interactors that possess performance characteristics that impact social relationships. This approach by design recognizes that any interaction and associated performance characteristics could also be construed as flows of information between interactors. This symmetry of interaction as a behavior and interaction as communication is particularly helpful for study of ceremonial architecture. Typically such buildings possess performance characteristics that include facilitating communication between human interactors and nonhuman beings. I draw on both forms of analysis (behavior and communication) to study the causal contributions of kivas in use during the spread of the Pueblo Katsina Religion in the American Southwest during the late 13th and early 14th centuries.

[126] Discussant**Walker, Chester and Jennie Sturm (University of New Mexico)****[155] Using Geophysics for the Archaeological Study and Management of Historic Cemeteries**

Studying historic cemeteries in an archaeological way often requires the initial steps of spatially defining the limits of that cemetery and the number of burials within it. Even "well-preserved" historic cemeteries are often heavily impacted areas; construction and erosion often destroy headstones and boundary fences, and even restoration efforts may remove or misplace headstones, making the correlation between cemetery records and the actual burials a best-guess. Geophysical surveys are arguably still the most effective and efficient means of locating and mapping unmarked burials in a non-invasive way, and are an important and complementary method for guiding excavations when exhumation is desired. In this presentation, we draw upon examples from historic cemeteries around the U.S. where geophysical survey contributed directly to the archaeological study of these cemeteries. Rather than simply showcase the utility of geophysical survey in locating unmarked burials, we seek to show how these data can be used to identify complex burial contexts (such as stacked or multiple burials), and correlate actual burials to above-ground headstones. The information generated from these surveys not only aids in preservation and management efforts, but often adds dimension to the complicated use-life and social history of these important places.

Walker, John (UCF Department of Anthropology)**[198] Refuge, Frontier, or Citadel: Mojos as a Political Landscape**

Could the southwestern Amazon and the Bolivian Llanos de Mojos in particular be usefully thought of as a refuge, where different groups of people used the geography of seasonally flooded savanna to escape various states over the long term? James C. Scott has used the term Zomia to describe much of Southeast Asia as such a refuge, a mountainous region united not by any feature of language, kinship, agriculture, music, art or economy, but rather by a common history of resistance to various states over thousands of years, and many thousands of square kilometers. For Scott, these attributes are strongly affected by the political necessity of evading predatory states. Sketching his model, Scott draws explicit parallels to other regions around the world, including Appalachia and the Amazon. The long-term pre-Columbian history of Mojos is complex, and spatial analysis of earthworks, occupied forest islands and rivers suggests that integration with and isolation from larger networks were important in the past.

Walker, Danny (Wyoming State Archaeologist's Office)**[334] Incised Stone Artifacts from Wyoming**

In 2006, a pecked stone was recovered from archaeological excavations at the Sand Draw Dump Site (48FR3123). An additional three incised stones were identified from the site during analysis of fire-altered rock from the site. Interest was immediately generated in other incised stones from Wyoming sites. A review of materials at the University of Wyoming Archaeological Repository (UWAR) revealed other incised and pecked rocks had been recovered from at least 14 other Wyoming sites, with the artifacts having been placed in the repository. The Wyoming Cultural Records Office has recorded at least 15 additional sites with incised stone artifacts, based on information provided from site forms. Numbers of incised or pecked stone artifacts per site range from four artifacts (two sites) to a single artifact. Several isolate incised stones have also been recorded in the UWAR collections. The markings include random

scratches (incisions), geometric figures, pecked designs and anthropomorphic figures. While this research has centered on incised stone, incised wood, bone and mammoth ivory items are also present in the repository. This research is yet another example of the research available which can be conducted on repository collections.

Walking, Lauren [79] see Wandsnider, LuAnn

Wallace, Ian (Stony Brook University), Lynn Copes (Quinnipiac University), David Raichlen (University of Arizona) and Theodore Garland, Jr. (University of California Riverside)

[16] Mobility as a Nexus of Biological Organization

It is well accepted by archaeologists that mobility is a critical dimension of human behavior, one that links economy, technology, and social relations. Perhaps less appreciated is that mobility is also a nexus linking aspects of biological organization, including anatomy, physiology, and genetics. Here, we introduce a novel experimental approach to examining the influence of mobility on biological organization using mice from a long-term artificial selection experiment for high levels of voluntary wheel running. In this experiment, selectively bred mice run nearly three times as far per day as non-selected mice. We propose that three general insights provided by this experiment about the dynamic relationships between mobility and biological traits (e.g., motivation, energy metabolism) may also apply to the network formed by mobility and cultural traits (e.g., trade, raw material procurement). First, an alteration in mobility will necessarily be associated with a cascade of changes to numerous traits directly and indirectly linked to mobility. Second, changing mobility will result in complex patterns of tradeoffs and constraints among affected traits. Third, 'multiple solutions' exist to altering mobility, such that various combinations of adjustments to traits networked with mobility can achieve the same behavioral outcome.

Wallace, Henry (Desert Archaeology Inc)

[47] The Tempo and Process of Culture Change: Two Tipping Points in Hohokam Prehistory

Three great tipping points in Hohokam prehistory in southern and central Arizona share a common theme that has relevance to societies today: societal change is molded by cascading social processes that inevitably proceed and ultimately reach a point of no return. The thresholds have their origins in human emotional responses to varied stressors and are thereby shaped by individual and group psychology, as well as by population levels and density and various environmental variables. The archaeologically visible results of the three tipping points are village formation at the start of the Hohokam sequence in the sixth century A.D., the development of a revitalization movement and rise of the Ballcourt Society at the end of the eighth century A.D., and the fragmentation and reorganization of Hohokam society in the late eleventh and early twelfth centuries A.D. Here, the first two of these tipping points are compared and contrasted with the goal of reaching a deeper understanding of the tempo and process of culture change.

Waller, Kyle D. [44] see Krug, Andrew

Waller, Steven (Rock Art Acoustics)

[122] Pipers' Stones: Archaeoacoustic Evidence Connecting Music and Megaliths

Ancient Cornish mythology links pipers to megalithic stone rings. Experiments demonstrate that two pipers can set up sound wave interference patterns that give the auditory illusion of a ring of stones casting acoustic shadows. Uninformed blindfolded volunteers circled around a completely empty large flat area containing only two sound sources emitting identical wavelengths of sound. Upon hearing silence in the zones of destructive interference alternating in space with loud zones of constructive reinforcement, the blindfolded participants independently described the scene as containing "pillars," "archways," "solid objects with openings," "tall and wide objects blocking the sound," or "a lot of boulders...larger rocks...when there was the gradual rise and fall of sound, I was thinking of a slanted rock that came up." Each participant drew corresponding figures clearly showing a ring of objects, where in fact there were no obstructions. In separate experiments, quantitative measurements show the megaliths at Stonehenge radiate acoustic shadows outward in an arrangement mimicking interference patterns, as do other megalithic stone rings tested. These results suggest interference patterns produced by pipers in the past were attributed to mysterious rings of massive unseen objects, which served as blueprints inspiring the construction of megalithic rings.

Waller, Kyle (University of Missouri)

[247] Prestige, Power, and Paquime: Social Inequality and Health in the Casas Grandes Region of Chihuahua, Mexico

The Casas Grandes region of Chihuahua, Mexico, represents one of the most socio-politically complex

prehistoric societies north of the Mesoamerican heartland. Beginning with Charles DiPeso's seminal excavations, multiple lines of evidence, including prestige goods and burial treatments, have been used to explore social complexity and inequality at the type site of Paquime. In this study, correlations between bioarchaeological and mortuary data from Paquime are used to test three hypotheses about the effects of inequality on human health and longevity. 1.) Does social inequality affect life expectancy, and the likelihood of reaching 70 years of age or more? 2.) Are high-status individuals less likely to suffer childhood physiological stress, or more successful in recovering from stressful episodes? 3.) Does social inequality affect access to subsistence resources? By combining recent advances in bioarchaeological age-at-death estimation with statistical techniques to estimate survivorship, lifetime expectancy, and body mass, this study demonstrates that there is support for all three hypotheses. Incorporating skeletal data into interpretations of social organization at Paquime yields a more nuanced interpretation of how social inequality affected the day-to-day experiences of its inhabitants.

Walling, Stanley (Community College of Philadelphia) and Jonathan Hanna (Pennsylvania State University)

[292] Late Classic Commoner Ritualism and Its Implications for Interregional Exchange

The site of Chawak But'o'ob was a densely occupied Late Classic Maya community, the unassuming remains of which are distributed across the face of the escarpment of the Rio Bravo drainage in northwestern Belize. During the 2013 field season, an unworked conch shell (*Lobatus gigas*) - possibly a conch shell trumpet - was found within a poorly preserved house stairway at the site. Obsidian prismatic blade fragments, sourced by x-ray florescence to Central Mexico, were found in the same residential area that produced the conch as well as adjacent to a nearby cave in the site's commoner Ballcourt complex. The presence of these high-status items in multiple non-elite contexts far from their sources corroborates the pan-Mesoamerican trade networks discussed by Shaw and others. Furthermore, it suggests that these interregional markets may have become more accessible to commoners during the transition from the Late to Terminal Classic periods.

Wallis, Neill (Florida Museum of Natural History), Thomas Pluckhahn (University of South Florida), Ann Cordell (Florida Museum of Natural History) and Michael Glascock (University of Missouri Research Reactor Center)

[11] Understanding Woodland Period Social Interactions through Integrated Analyses of Pottery The heightened and geographically extensive interactions of the Woodland period were fundamental to the development and reproduction of societies. In contrast to rare and unique artifacts so often studied, Swift Creek Complicated Stamped pottery found throughout much of the lower Southeastern U.S. is arguably the premier material for the systematic study of Woodland interactions. The unique impressions of individual carved wooden paddles are often found on pottery at multiple sites, lending an unparalleled level of detail and spatial resolution to social connections. Furthermore, the distribution of vessels potentially reflects a broad range of interactive practices among a large proportion of past populations rather than only the occasional practices of a few individuals. As part of a research program that uses integrated materials analyses of pottery to identify patterns of social interaction, this poster presents results of Neutron Activation Analysis and petrographic analysis of several hundred samples. More than two dozen assemblages were sampled from sites distributed across Florida and Georgia and dating between AD 200 and 800. Results indicate that interactions were geographically extensive, but clearly most intensive along particular corridors.

Wallis, Neill [12] see Krigbaum, John

Wallman, Diane (University of South Carolina), Kelly Goldberg (University of South Carolina) and Kenneth Kelly (University of South Carolina)

[205] Settlement and Exchange During the 19th Century Illegal Slave Trade in the Rio Pongo, Guinea For millennia, West Africa has remained a locus of dynamic cultural, political, and economic interactions. Throughout the first three centuries of the transatlantic slave trade, few Westerners settled the interior of this region, with most economic exchange occurring at coastal forts and trading posts. After the majority of Western powers agreed to abolish the slave trade in the early 19th century, an illicit trade developed through the opening of new markets with Europeans and Americans establishing smaller trading lodges or 'factories' in strategically isolated locations such as the Rio Pongo region of Guinea. As traders settled in these coastal hinterlands, new power relations were created in the local communities through the exchange of human chattel, material goods, and socio-cultural ideas. Archaeological investigations at three 19th-century illegal slave-trading lodges along the Rio Pongo reveal the complex social and economic networks and intercultural interactions that characterized this landscape. This paper integrates

documentary, archaeological, and geospatial data to specifically examine local patterns of settlement and exchange during this period, situating these sites within larger systems of political, economic, and cultural entanglement.

Walsh, Matthew J. [193] see Winter, Thomas

Walsh, Matthew

[290] *Assessing Generation-scale Shifts in Subsistence Practices over time at Housepit 54, Bridge River Site (EeRI4), British Columbia, Canada*

Rarely do archaeologists have the opportunity to view change in subsistence practices occurring within a household on a potentially inter-generational scale. The stratified floor sequence from Housepit 54 at the Bridge River Site, south-central British Columbia, provides just such an opportunity. An analysis of archaeo-faunal remains across six floors, spanning a roughly 150 year period (ca. 1250-1400 BP) examines trends in animal resource exploitation over time. A variety of zooarchaeological measures including abundance indices are used to determine the driving force(s) behind changes in the assemblages. More specifically, this study uses zooarchaeological data to test hypotheses concerning the effects of cultural transmission and contingent ecological and demographic factors on animal resource procurement and processing decisions.

Walter, Tamra

[119] *Native Homelands and Foreign Frontiers: Re-examining Native and Spanish Interaction in the South Texas Missions*

More than 30 Spanish missions were established in Texas during the colonial era, nearly half of which were founded in south Texas. Archaeologists studying these missions rely on the material record to identify the presence of Native groups with particular attention paid to technological changes in "Native" artifacts and the physical layout of the mission compound. Making sense of the Native mission experience based on technological changes and spatial arrangements is one of the many challenges faced by archaeologists. More often than not, the mission system is discussed as a frontier institution established by the Spanish overshadowing the fact that for the nomadic groups of South Texas, the missions and presidios were an intrusion in their homeland. Each group responded differently to the Spanish and dealt with the mission system in various ways dictated by their own political and social motivations. Using the Espiritu Santo Missions as an example, the archaeological record is re-examined in light of these concerns. Specifically, archaeological investigations at the third and fourth locations of the mission provide an opportunity to re-examine the Spanish Frontier from a different perspective.

Walters, Sarah

[133] *Tell Us What You Ate – and We'll Tell You Who, What, and When You Were: Paleoethnobotanical Recovery and Analysis along the Savannah River*

Topper (38AL23) – a quarry site, situated along the Savannah River's Piedmont-Coastal Plain transitional zone – validly stands as one of the most important archaeological sites in the Southeastern US. Though the subject of some controversy, Topper is a true rarity, yielding a complete sequence of artifacts – from Paleoamerican to Historic. As such, it is of great importance that all forms of artifact-potential be systematically recovered and analyzed. This presentation addresses the findings of a paleoethnobotanical study, conducted at Topper over the course of the last three years. Because the cost-benefit of systematic paleoethnobotanical investigation is sometimes questioned, this study aims to convey the broader scientific utility of such research, extending beyond description-based subsistence studies. Carbonized plant remains, all recovered from the context of sandy/acidic soils, have yielded several AMS dates – including one of the oldest associated with Southeastern Paleoamerican lithic materials (10,958 +/- 65 B.P. (AA-100294)). It follows that the preservation environment is often archaeologically misunderstood and that recovery of plant-artifacts, suitable for radiometric dating, is possible. Furthermore, the integrity of Topper's vertical stratigraphy is demonstrated, allowing for the construct of a more absolute chronology of this site-type, previously thought dateable only by comparison to regional sequences.

Wandsnider, LuAnn (University of Nebraska), Lauren Walking (University of Nebraska-Lincoln), Matthew Douglass (University of Nebraska-Lincoln), Emily Hammerl (University of Nebraska-Lincoln) and Daniel Osborne (University of Nebraska)

[79] *Fighting with Soddies? A First Look at Signaling and its Effectiveness in Homesteading Contexts, Sand Hills region, Central Plains, USA*

People strategically use "stuff" to signal aspects of themselves, their ethnic identity and status. Can we

see this behavior in homesteading contexts, with limited inventories of material culture? We report on our study of Custer Co (Nebraska) homesteaders and how they deployed material culture, relying on the photographs of Solomon Butcher, coupled with documents and archaeological evidence, to gauge the quality of the emitted signal. Documents on proving up and vital statistics are used to assess success. We examine this question in the contested Sand Hills region, rife with pastoralist-agriculturalist and ethnic rivalries.

Wandsnider, LuAnn [265] see Greiman, Nora

Wang, Hong [201] see Kappelman, John

Wang, Yanxi (University of Georgia)

[235] *Agriculture and Regional History of the Guan River Valley in China*

The Guan River regional systematic survey has revealed regional settlement pattern and history in the Middle Guan River Valley near Xixia, Henan from 5000 BC to the 1500 AD. The changes in the settlement pattern reflect complex processes involved in the history of agricultural intensification in this environmentally diverse region. During the Neolithic period, the regional population grew slowly. Settlement location choice shows that the transition from foraging to farming lifestyle was slow and gradual. In the Easter Zhou period (770-221 BC), the geopolitical importance of the Guan Valley led to rapid growth of population, occupation in mountainous area, and an emphasis on riverine transportation. In the Qin and Han period (220 BC-581 AD), the land exploitation for agriculture reached the peak, accompanying with an a transformation in village residential pattern to a more disperse style.

Ward, Christine (Statistical Research, Inc), Mark Mitchell (Paleocultural Research Group) and Catherine Cameron (University of Colorado)

[333] *The Role of the Bluff Great Kiva in Temporal Perspective: From Integration to Dissolution of Chaco-era Communities*

Chaco-era great kivas integrated the communities around them. But what happened after Chaco's collapse? Was the purpose of great kivas adjusted to reflect these larger changes occurring around them? Did the social significance that Chaco-era communities invested in great kivas linger, or were they re-imagined and re-purposed? In this paper, we review the evidence at the Bluff Great Kiva for its role – and perhaps changing role – within the Bluff Great House community and within the larger northern San Juan region. During the Chaco era, the Bluff great kiva was a setting for community-wide activities. In the post-Chaco era, the community and great house continued to be actively used, though both the great house and great kiva were remodeled repeatedly. Evidence from the great kiva's northern antechamber points to an increasingly domestic use of that space. Did the social significance people attached to the great kiva also change? We review the evidence for the changing role of the Bluff great kiva space, both directly through excavation data as well as through comparison with other great kivas in great house communities of the northern San Juan region.

Ware, Trevor [30] see Cast, Robert

Warinner, Christina (University of Oklahoma)

[83] *Ancient Biomolecules and New Possibilities in Mixtec Archaeology*

Over the past ten years, major technological advances in genomics and proteomics have opened up dramatic new possibilities in archaeological science. This paper discusses recent developments in biomolecular archaeology with an emphasis on emerging biomolecular tools for investigating the effects of the Spanish entrada on Mixtec polities.

Warmlander, Sebastian (3Division of Biophysics, Stockholm University), Vanessa Muros (UCLA/Getty Conservation Programme) and David Scott (UCLA/Getty Conservation Programme)

[104] *Characterization of Some Precolumbian Gold Wires from South America*

In this study, excavated gold wire and other small gold objects from the Calima cultural region in modern-day Colombia have been analyzed with x-ray fluorescence spectroscopy (XRF), scanning electron microscopy with energy-dispersive spectroscopy (SEM-EDS), and with conventional metallographic techniques. The results show that these gold artifacts are made from ternary gold/silver/copper alloys, where no surface enrichment of gold has taken place. A number of small circular wires were studied with respect to the manufacturing technique. Although some had been cast to shape, most wires had been created using the block-twisting method. These results improve our still limited understanding of pre-Columbian gold working and metal wire manufacturing.

Warner, Vincent (AMEC Earth & Environmental)

[11] *It's About Time: Using Relative Dating and Seriation to Identify Trends in Northeastern Missouri Late Woodland Pottery Decoration.*

This poster explores the temporal aspect to the location of Late Woodland pottery lip decoration; that is, does the location of the lip decoration (interior, crest, and exterior) relate to changes through time in the east-central portion of Missouri. Additionally, this research looks at the possible relationships among decorative techniques. These goals are accomplished through the seriation of feature pottery assemblages, specifically through wall-thickness time-series curves (based on the work by David Braun) and correspondence analysis of decorative elements. A commonly held notion is that in eastern Missouri and adjacent Illinois, lip decoration during the Late Woodland period moved from the interior margin to the crest and then to the exterior margin. If the location changes with time during the Late Woodland, then there might be a temporal relationship to the decoration itself. As Braun established in the Lower Illinois River valley (and Michael O'Brien confirmed in east-central Missouri), cooking vessels were designed and manufactured to be generally thinner through the Woodland period due to coevolutionary reasons. The focus of this research is the application of the wall thickness to chronology as related to trends in pot decoration.

Warner, Alanna [25] see Haydon, Rex

Warner, Addison

[140] *Exploring Chultun Functionalities: An Experimental Assessment of Food Storage in Chultuns at Uaxactun, Guatemala.*

Research was focused on replicating particular principles of Dennis Puleston's food storage experiment in chultuns at Uaxactun, Guatemala. Investigations were conducted during the 2013 Uaxactun-SAHI field season under the supervision of the Slovak Archaeological and Historical Institute (SAHI). The experiment was conducted over 47 days, with observation made every 3-4 days depending on the climate and rain. Food observations were made by weighing, photographing, and detailed recording of decomposition conditions. The eight varieties of foods utilized were macal, camote, cacao, yucca, dried corn, smoked corn, black beans, and red beans from Belize. Results showed great preservation of the camote and macal following the experiment. The yucca and both types of beans decomposed completely with a high presence of fungus and mold. Whereas the other foods of cacao, dried corn, and smoked corn all presented varying levels of preservation, though a percentage of each food was still edible following the experiment. For future experiments the environmental conditions should be closely monitored including the humidity index due to their influence on the overall preservations. Alterations should be made to the types of foods used and measurement of the water content of each food would be vital to understanding their preservation abilities.

Warner, John [285] *Discussant*

Warren, Daniel

[157] *Deepwater Shipwreck Investigations Using Autonomous Underwater Vehicle Based Geophysical and Optical Systems*

Underwater archaeologists have used remote sensing technologies to locate shipwreck sites for decades. Wreck sites located in waters less than 300 feet (91 meters) are regularly documented through diver surveys. Investigating wrecks beyond these depths, however, have proved problematic since the technology necessary was expensive and time consuming. In 2001, the first commercial Autonomous Underwater Vehicle (AUV) began operations in the Gulf of Mexico. Originally developed to support oil and gas exploration operations in deepwater regions, archaeologists soon realized that the AUV was also an ideal tool for deepwater shipwreck investigations. Over the past 13 years, AUVs have changed the face of deepwater archaeology in the Gulf of Mexico and around the world. This paper will discuss the AUVs used by C&C Technologies, Inc., the author's employer. It will include an overview of the types of geophysical and optical systems used on C&C's AUVs, look at AUV investigation methodologies, and highlight past AUV discoveries and potential future research.

Waterman, Anna (Mount Mercy University), Robert Tykot (University of South Florida), Jonathan Thomas (University of Iowa), David Peate (University of Iowa) and Katina Lillios (University of Iowa)

[102] *An Investigation of Human Dietary and Mobility Patterns at the Late Neolithic Burials of Bolores (Torres Vedras, Portugal) Using Isotopic Analyses*

The archaeological record of the Late Neolithic and Copper Age in Iberia provides evidence of large population aggregations around fortified and ditch-enclosed settlements that are associated with emerging craft specialization and long distance trade. However, in southern Iberia the impact of these changes on social differentiation remains unclear, in part because the commingled nature of human remains in Late Neolithic and Copper Age collective burials limits our ability to link burial goods with specific individuals, impeding our understanding of social differentiation, status, or individual identity in these late prehistoric agrarian communities. Bioarchaeological analyses, however, provide another avenue of investigation concerning individual life histories, as dietary, mobility, and health-related information can be gathered from human skeletal remains. This study uses carbon ($\delta^{13}\text{C}$), nitrogen ($\delta^{15}\text{N}$), oxygen ($\delta^{18}\text{O}$) and strontium isotope ratios ($^{87}\text{Sr}/^{86}\text{Sr}$) taken from human skeletal remains recovered at the Late Neolithic and Copper Age (3500-2000 BC) collective burial of Bolores (Torres Vedras, Portugal) to investigate if variations in dietary and mobility patterns during the lifetimes of these individuals can be used to better understand social differentiation during this dynamic period.

Waterman, Anna [241] see Mack, Jennifer

Waters, Michael (Texas A&M University)

[24] *The North Star Archaeological Research Program 2002-2014*

Joe and Ruth Cramer created the North Star Archaeological Research Program in 2002. Its mission is to investigate sites of the first people who entered the Americas and train the next generation of researchers. North Star has focused its resources on the investigation of the Late Pleistocene exploration period of the Americas, specifically Clovis and the people who were here before them. North Star funds have been used to conduct major field excavations, date early sites, and help many students. The knowledge generated by North Star and the other archaeological programs, and the students who have benefitted from these programs are the archaeological legacy of Joe and Ruth Cramer.

[114] *Discussant*

[114] *Chair*

Waters, Michael [24] see Jennings, Thomas

Watkins, Rachel [64] see Reese, Ashante

Watkins, Joe (National Park Service)

[304] *Training the Next Generation of Tribal Historic Preservation Officers*

Tribal Historic Preservation programs offer an opportunity for tribes to take an active role in the national historic preservation program. Unfortunately, all too often people who take on the role of the tribal historic preservation officer (THPO) have minimal training in the process of managing cultural resources or in running a successful tribal program. While tribal people can gather training in the "nuts and bolts" of the processes involved, it is important that the tribal preservation official understands the perspectives of those who manage the national program. Teaching the "next" generation of THPOs should therefore involve not only grounding in the legal processes, but also mentoring to allow "new" THPOs to better cope with the sometimes conflicting perspectives on similar issues held by tribal individuals and other managers. Using examples from an academic course offered in the Native American Studies program at the University of Oklahoma, the presenter will offer examples and techniques on helping tribal people not only to identify conflicting perspectives and but to create innovative ways of dealing with those conflicts.

[97] *Discussant*

Watkins, Rachel (American University)

[126] *The Embodiment of Inequality: Osteobiographies from the Cobb Human Archive*

This paper highlights analyses of individuals who are a part of the Cobb Human skeletal and documentary archive housed at Howard University. Individuals with and without a skeletal presence are included in the discussion for the purpose of demonstrating the demographic breadth of the original skeletal collection, as well as the associated breadth of social formations bearing upon health and disease patterns identified in the sample. The relationships between the social formations in which people were embedded and their health are explored by way of a model developed by Watkins and Muller for engaging in a critical and humanistic study of the sample. The model calls for reliance upon census and ethnographic data when possible, as well as simultaneous biocultural investigations of individual and group health within the collection. The paper argues that this approach provides a unique opportunity for exploring how individuals and groups within the collection existed as subjects and agents who developed

strategies to resist structural constraints.

Watkins, Christopher (Arizona State University)

[182] *The Bounded Alliance: Cooperation and Conflict in 14th Century Central Arizona Settlement* patterns have often served as the basis for arguments about alliance boundaries in the American Southwest, particularly as communities continued to coalesce into increasingly larger aggregates throughout the Late Prehistoric period. Both emergent and persistent alliances would have required persistent communication, interconnectivity, and regular maintenance, phenomena that should be manifested in the archaeological record. I take settlement size and spatial distribution as starting points for hypothesized alliances in 14th Century central Arizona, and test the boundaries of the proposed alliances with multiple lines of evidence including indicators of exchange as well as ritual and community integration within the context of boundary theory.

Watkinson, Gina [336] see Odegaard, Nancy

Watrall, Ethan (Michigan State University)

[215] *msu.seum: A Model for Mobile Public Heritage and Archaeology*

Developed during the 2011 Michigan State University Cultural Heritage Informatics Fieldschool, msu.seum is a mobile application that encourages the public to explore the rich heritage and archaeology of the Michigan State University campus. Built on the idea of "campus as museum," msu.seum connects cultural heritage directly to place, highlighting both what is known about the MSU campus and the scholarly narrative of associated archaeological and historical research carried out by the Campus Archaeology Program. msu.seum's content is organized into thematic "exhibits" that reflect the historical development of MSU. Each exhibit contains a series of locations with associated rich descriptive information that users are free to visit and experience at their leisure. In order to integrate the narrative of scholarly research, each location also features a "Dig Deeper" section which presents information on the survey and excavations carried out by the Campus Archaeology Program. In addition to introducing and discussing the app itself, this paper explores the unique and highly collaborative environment in which msu.seum was developed. Beyond its value as a platform for public heritage and archaeology at MSU, this paper argues that msu.seum also represents a general model for developing mobile public cultural heritage and archaeology applications.

[215] *Chair*

Watson, Adam [42] see Holeman, Abigail

Watson, Patty [66] Discussant**Watson, April**

[125] *Recent Investigations at Guantanamo Bay, Cuba*

Cuban prehistory had long been a subject of interest to North American archaeologists, including ground breaking work by Rouse and Harrington in the 1940's. However, the Revolution left North American scholars unable to continue work within the country. Much subsequent work has been done throughout the Antilles, but Cuban studies have been left without an update, including work on ceramic series and typologies, and lithic tool types and manufacture. Throughout this time, the United States maintained control of lands in southern Cuba, at Guantanamo Bay Naval Station (GTMO). In 2004, Navy archaeologist Bruce Larson and graduate students from Florida Atlantic University collaborated on excavation and subsequent analysis of archaeological sites at GTMO. The 2004 fieldwork involved excavation and surface survey at four of the prehistoric sites identified in 2003. The paper presents the analysis of the artifacts, which include ceramics, lithic debitage, and shell, and speculates on how these artifacts are tied to cultural groups and time periods of Cuban prehistory. Sites included a mulit-use site, with radiocarbon dates linking the site to the Ceramic Period and one site possibly linked to the Archaic period. Artifacts recovered from these sites reveal intriguing patterns across time at Guantanamo Bay.

Watson, Rachel (Louisiana State University), Heather McKillop (Louisiana State University) and E. Cory Sills (University of Texas-Tyler)

[177] *Excavations of Earthen Mounds in the Mangroves at the Paynes Creek Salt Works, Belize*

The ancient Maya along the coast of Belize produced salt by evaporating brine in pots over fires, evidenced by dense accumulations of briquetage—the remains of pots used in the evaporation process. During the 2012 field season, two earthen mounds were excavated as part of project excavating

underwater sites associated with wooden buildings stunningly preserved by mangrove peat below the seafloor. Salt was produced in massive quantities inside of buildings at the underwater ancient Maya salt works. Lacking at these underwater sites is any evidence that the salinity of seawater was enriched by leaching brine through salty soil or by solar evaporation before the brine was heated in pots over fires—virtually universal in ethnographic and historic case studies elsewhere. The mounds at Witz Naab and Killer Bee are some of the few remaining onshore remnants of the Paynes Creek salt works. We describe the excavations of two earthen mounds and evaluate their use and their relationship with the nearby submerged salt works.

Watson, Jessica

- [218] *Flintknapping in New England: Stone Tool Analysis at the Rebecca Nurse Homestead, Massachusetts*
Prehistoric occupation at the Rebecca Nurse Homestead (RNH) in Danvers, Massachusetts during the Late Archaic and Early Woodland periods occurred frequently but not consistently, suggesting that it was used as a temporary site, not as a more permanent habitation locale. The primary raw material used at RNH was Marblehead rhyolite, which made up 95 percent of the sample. Since the material is local, the lack of early-stage flakes implies that the residents were knapping their tools at the source site and then retouching them at RNH. The results of my analysis at RNH were compared with published data from seven other sites in New England: Wheeler's site, Nelson Island, Clark's Pond, Hofmann, Foster's Cove, Seabrook Marsh, and the Neville site. This research presents preliminary conclusions about the function, seasonality, and activities at RNH and identifies areas for future exploration.

Watson, Cristina (Texas State University-San Marcos) and Michelle Hamilton (Texas State University-San Marcos)

- [241] *Estimating Sex of Contemporary American Individuals through Metric Measurements of the Petrous Portion*
The current study determines if metric measurements of the petrous portion of the temporal bone are an accurate method of sex estimation for contemporary American individuals. Skeletal data utilized in this study were derived from individuals with intact petrous portions sampled from the William M. Bass Donated Skeletal Collection at the University of Tennessee Knoxville and from the Texas State University Donated Skeletal Collection. Methods utilized in this study were modeled after Kalmey and Rathbun (1996) who compiled 9 measurements of the petrous portion and applied them to documented historic individuals from the Robert J. Terry Anatomical Skeletal Collection. General Linear Model MANOVA procedures revealed a significant relationship between metric measurements and sex. Discriminant function analysis and stepwise discriminant function analysis procedures resulted in sex estimation accuracy rates between 60% and 68%. This research shows that the petrous portion can be used as an estimator of sex and can be an additional method in the arsenal of forensic anthropologists and historic bioarchaeologists alike in the absence of other key osseous remains.

Watson, Adam (American Museum of Natural History), Matthew Gleason (Worcester Polytechnic Institute) and Christopher A. Brown (Worcester Polytechnic Institute)

- [335] *Exploring Chaco Canyon's Invisible Industry: An Experimental Approach to the Study of Bone Tool Use-Wear and Perishable Craft Production Patterns at Pueblo Bonito*

During the Bonito phase (850-1140 C.E.), dispersed farming communities in and around Chaco Canyon, New Mexico emerged as the core of a regional network of unprecedented size and scope that flourished for three centuries. Studies have shown that while large quantities of ceramics and raw materials flowed into the canyon, there is also strong evidence for local production of textiles, basketry, cordage, rabbit-fur and turkey-feather blankets, and finished hides. By examining bone tools, a specific class of artifacts essential to the manufacture of these perishable products, this project traces changes in the scale and intensity of perishable craft industries that are otherwise largely invisible archaeologically. Building on recent breakthroughs in the analysis of microwear, this research applies confocal laser scanning microscopy and texture analysis techniques drawn from the field of surface metrology to identify use-wear patterns on experimental, ethnological, and archaeological bone artifacts. Our approach utilizes multi-scale geometric characterizations of surface wear to identify statistical similarities as a function of scale. The introduction of this quantitative approach to the study of microtopography holds significant potential for advancement in use-wear studies by reducing inter-observer variability and identifying new parameters useful in the detection of differential wear-patterns.

Wattenmaker, Patricia (University of Virginia)

- [205] *Hinterland Communities, Rural Elites and the Limits of State Power in Upper Mesopotamia*
Settlement patterns and archaeological data on production and exchange provide a window into relations

between centers and villages in the context of emergent urbanism. This overview of early to mid-third millennium upper Mesopotamian societies highlights the dynamic interplay between large and smaller sites in terms of the tributary economy, exchange, and population movements. Available evidence indicates that relations between centers and smaller sites were simultaneously complementary and antagonistic. Hinterland communities were unevenly impacted by increased political centralization and urbanism, with some villages well situated to prosper as urban systems formed. Their settlement trajectories underscore both the agency of rural communities and the limits of state power. The complexity of urban-rural relations contributed to the highly fluid political and economic landscape that characterized Upper Mesopotamia during this time.

Watters, Margaret, Bryan S. Haley (Tulane University) and Duncan P. McKinnon [157] *Time Team America: The Use of Public Archaeology as a Gateway to Science*

A second series of the PBS television program *Time Team America* (TTA) was funded entirely through a NSF Informal Education grant using “Archaeology as a Gateway to Science” to expose, engage, and inspire underserved youth in Science, Technology, Engineering, and Mathematics (STEM). The format included three days of filming and a concurrent five-day field school for STEM youth. Practical benefits of the project included the development of geophysical survey protocol and resultant data that contributed to the overall research agenda at each site and to guide excavations during filming and throughout subsequent years. During the filming and field schools, a diverse range of people participated and were exposed to all aspects of science-based archaeological methods. The public archaeology approach encouraged direct engagement with community members to help them visualize and articulate the integrated history of their community and explore archaeology as a gateway to science. Major involvement from a variety of agencies and groups demonstrated cross-organizational cooperation toward a common goal of preservation and methods through which to achieve this goal. Lastly, a website was designed to provide a resource for further public dissemination on archaeological methods while revealing in-depth information on the history and diversity of the shared past.

Watts, Joshua (Center for Social Dynamics and Complexity, Arizona State University) [101]
Discussant

Watts, Christopher (University of Western Ontario)

[159] *Late Woodland Earthen Enclosures and the Cultivation of Place*

Found throughout the Great Lakes and environs, Late Woodland earthworks have been the subject of archaeological investigation since at least the late nineteenth century. While typically considered a site type and understood to have served a single function (e.g., as defensive installations or demarcations for ritual activities) such enclosures are often unique, mutable, and enigmatic. Drawing upon the archaeology of the eastern Midwest, and inspired by recent investigations at the Cedar Creek Earthworks in southwestern Ontario, this paper attempts to displace some of the more imperious tropes concerning Late Woodland landscape use and transformation. Born of particular lifeworlds and intimately tied to localized histories of inhabitation, it is argued that earthen enclosures were intended to engender particular topographies and materials as part of a broader commitment to place and fabric of Late Woodland dwelling.

Watts, Joshua [208] see Ashley, Sarah

Watts, Elizabeth (Indiana University) and Meghan Buchanan (Indiana University)

[261] *What's Grog Got to do With It? Ceramic Temper, Technological Processes, and Social Change in the Precolumbian Midwestern United States*

In the study of the Precolumbian Eastern United States, ceramic typologies classifying temper treatments have been foundational in defining chronologies and culture groups. Specifically in the Midwest region, grog tempering has been typically recognized as a Middle (A.D. 1-400) and Late Woodland (A.D. 400-1000) culture trait and shell tempering as a diagnostic hallmark of the subsequent Mississippian culture (AD 1000-1600). Ceramic analyses from this region often downplay or dismiss observed mixed tempered materials as non-existent or incidental admixtures. This analytical practice often masks the variation of tempering treatments in these assemblages as well as masking the social constructs that inform ceramic production. In this paper, we suggest that identifying and including mixed tempering in analyses and interpretations is key for better understanding the processes of Mississippianization and the material manifestations of being Mississippian. Directly addressing mixed temper treatments, we present ceramic analyses from Late Woodland Yankeetown Phase (A.D. 800- 1100) sites in southwestern Indiana and the

Late Mississippian Period Common Field site (A.D. 1200- 1275) in southeastern Missouri, and reposition mix-tempered technologies as negotiated practices, whereby learned, habitual actions related to the production of pottery are entangled in the historical processes associated with the rise and fall of Mississippian polities.

[261] *Chair*

Weaver, Brendan [121] see Van Buren, Mary

Weaver, Brendan (Vanderbilt University), Adam Wiewel (University of Arkansas) and Meghan Weaver (Tennessee Valley Archaeological Research)

[256] *Dialectics of Power in Peruvian Slavery: Preliminary Findings from the Archaeology of the Jesuit Wine Estates of Nasca*

A number of historical studies since the 1970s have brought to light the practices and administration of the coercive institutions of slavery in the colonial Andes. However, many questions regarding how power was brokered in the spatial and material conditions of slavery among the significant population of enslaved Afro-Andeans in the viceroyalty (and young Republic) of Peru, remain unasked and unanswered. This paper discusses advances from the ongoing Haciendas of Nasca Archaeological Project, the first such project in Peru emphasizing a principal research agenda on the material culture of African descended peoples. We discuss the preliminary results of walkover and geophysical survey, excavation, and material analysis on two Jesuit wine-growing estates (and their annexes) centered in the Ingenio Valley. In addition to exploring how space and the built environment structured and were structured by the labor regime, we examine particularly how power was brokered at the levels of agroindustrial and domestic production. This leads to a better understanding of development of the institution of the hacienda by multiple actors, highlighting the material actions of enslaved laborers of (mostly) sub-Saharan African origin.

Weber, Jill (The University Museum of Archaeology and Anthropology, UPenn), Kimberly D. Williams (Temple University) and Lesley Gregoricka (University of South Alabama)

[67] *Animals and the Changing Landscape of Death on the Oman Peninsula, 3rd Millennium BC*
Animal bones form large components of Early Bronze Age burials in Syro-Mesopotamia, which reflect concepts of death, vestiges of funerary ceremony, and artifacts of life. However, in contemporary burials from the north-central Oman Peninsula, finds of faunal remains remain scarce in third millennium BC Bronze Age tower tombs. At the Al Khubayb Necropolis near Dhank in the Sultanate of Oman, transitional tomb forms (dated to the later Hafit and early Umm an-Nar periods) have yielded new information about rare instances of animal bones deliberately interred within human burials. Despite their scarcity, the context of these bones - particularly their associations with individuals of a certain age and sex - offer insight into a transitional mortuary landscape and its relationship to the living. These data will be assessed in relation to regional examples of faunal inclusion elsewhere in southeastern Arabia and their significance considered with regard to the practice and ritual meaning of faunal interments.

Weber, Steven [201] see Habu, Junko

Webster, David [52] see French, Kirk

Webster, Chris

[258] *Fired Twice for Blogging and Social Media: Why CRM Firms are afraid of social media*

Three months after starting my first blog I was fired for a post about a project I was on. Two companies and five months last I was fired for a tweet about a project. Blogging and social media have become indispensable tools for tech-savvy archaeologists to learn, stay informed, and educate the public and our peers about what we do and why it's important. Many other industries have embraced social media while many CRM firms still treat social media as something to be avoided and controlled. What are they afraid of? Are the concerns valid? How can we change the perception of social media among firm owners?

[258] *Chair*

Webster, Andrew (University of Massachusetts-Boston)

[259] *"A Perfect Hive of Human Beings": The Archaeology of Post-Famine Irish Immigrants in Boston's North End*

During the eighteenth century, the people of Ireland suffered through long periods of famine. Leaving Ireland in the millions, many settled in the working-class neighborhoods of North American port cities

such as Boston's North End. They became part of the cultural and economic transformation of the North End from a predominantly middle class English-American neighborhood to an industrial center for the waves of working class immigrants who arrived in Boston daily. In 1880, the Clough House, which in earlier times was home to only one or two families at a time, housed a staggering 22 individuals from seven families in three meager apartments. Here, Irish immigrants shared their living quarters with the American-born working class in a diverse and ever-changing neighborhood. This presentation combines recent archaeological excavations at the Clough House with in-depth archival research to provide new insight into this volatile period of Boston's history. It retraces the paths of the Irish who emigrated during the famine years, explores their lives in the tenements, and connects the material culture to their struggles with class and ethnicity in a new, American, environment.

Webster, Laurie (University of Arizona)**[294] Sandals, Baskets, and Other Perishable Technologies of the Southern Chuska Valley**

Recent archaeological investigations at late Basketmaker III burned pit structures in the southern Chuska Valley have yielded surprising quantities of carbonized perishable artifacts that complement data from better-preserved perishable assemblages from rock shelters to the north and west. Analyses suggest that groups in the southern Chuska Valley were as heavily invested in the use and production of complex twined sandals and coiled baskets as their northern neighbors and may have engaged in ritual practices with links to Chaco Canyon. In this presentation, I synthesize perishable data from several recent mitigation projects in the southern Chuska Valley and explore the social implications of these findings.

Wedding, Jeffrey [230] see Edwards, Susan

Weets, Jaimin [291] see Usher, Bethany

Wegener, Robert (Statistical Research, Inc.)**[210] New Aspects of Archaic Land-Use in the Sonoran Desert: Intensive Excavation at Luke AFB, Arizona.**

Statistical Research, Inc.'s., mitigation of a proposed solar-power-array at Luke Air Force Base involved excavating 44 contiguous acres, sampling ca. 3,000 features, and documenting the largest and most diverse Middle Archaic occupation in Arizona to date. Site function and socioeconomic organization varied from a resource procurement staging and processing locale frequented by task groups to a seasonal habitation including multiple contemporary structures built and used by family groups. The increased occupational intensity signaled by the repeated but short-term establishment of seasonal habitations coincided with short periods of increased precipitation, aggradation, and biotic productivity. On-site subsistence is particularly interesting because it involved significant investment in a formal ground-stone technology applied to nearby native plants, and this subsistence pattern persisted for millennia before and after the arrival of maize horticulture in surrounding locales at ca. 2100 B.C. At Luke AFB, all this transpired in a lower-bajada setting that is traversed but not occupied in most Middle and Late Archaic land-use models. Ongoing analyses and current project results are used to present these newly documented aspects of settlement, subsistence, and social organization during the Middle-to-Late Archaic transition in the Sonoran Desert.

Wegener, Robert [210] see Windingstad, Jason

WEI, Dong [102] see Berger, Elizabeth

Weinstein, Richard [14] see Barrett, Jason

Weinstein-Evron, Mina [84] see Kaufman, Daniel

Weishampel, John (University of Central Florida) and Jessica Hightower (University of Central Florida)**[337] Modeling Environmental Effects of Maya Legacies from LiDAR-Derived Topography**

Mesoamerican rainforests are remnants of one the largest natural reforestation events of the last millennium. Abandoned settlement and agricultural engineering features of the Maya, that lay largely hidden beneath the dense tropical forest canopy, are being revealed with the use of airborne LiDAR remote sensing. Around the hills and valleys of Caracol, a significant archaeological site in Belize, lies an extensive network of terracing that once supported over 100,000 people. The anthropogenic manipulation

of the landscape has been shown to affect contemporary tree species composition and general forest structure (i.e., height, biomass, canopy openness). Using the LiDAR-derived digital elevation model (DEM) coupled with topographic modeling routines, we were able to estimate the influence of terracing on hydrological flows and erosion forces, which may have been the fundamental cause of the ecological consequences. Though simulated soil wetness indices were somewhat higher on steep terraced slopes, sediment transport indices of terraced areas were lower regardless of slope. This pattern suggests that the primary function of the Maya terracing was soil conservation and may be the driver of the present-day forest stand differences.

Weishampel, John [337] see Chase, Adrian

Weisman, Russell

[327] Solar Eclipses: Events Marking the Center of the Mississippian Landscape

Solar eclipses are dramatic, widely observable, recurring events for which precise dates, times, and locations of occurrence are known. Despite their potential to have influenced prehistoric beliefs and behavior, and their utility as temporal markers, solar eclipses have received little attention from southeastern archaeologists. During the Mississippi period, more than 50 total and annular eclipses occurred, including events on December 3, 1062; March 7, 1076; July 1, 1079; August 13, 1151; September 14, 1205; and June 13, 1257. The number, magnitude, and duration of eclipses varied appreciably by location. While total and annular solar eclipses are rare, with an average combined recurrence rate of 140 years, some sites witnessed more frequent, longer, and greater-magnitude eclipses. This paper examines the correlation between site locations and major solar eclipse events, and it hypothesizes that Mississippians identified and preferentially occupied 'central' locations defined by eclipse paths, and that those celestial events demonstrated the 'centrality' of particular places and affirmed beliefs about the favorability of particular places within the landscape and cosmos. The concept of centrality as marked by solar eclipses is widely expressed in Mississippian iconography. Examples in engraved shell, copper, ceramics and rock art are briefly discussed, and interpretations of them reconsidered.

Weismantel, Mary (Northwestern University)

[25] Heads as Artifacts

Severed heads are omnipresent in Andean iconography and in the archaeological record, where they are found in mortuary depositions and in household caches. Human and animal heads and other body parts were also re-purposed as artifacts with a variety of purposes; this paper focuses on the fashioning of headdresses, drums, flutes, and drinking vessels, and on the creation of ceramic effigy heads that served as containers for liquids. In the first half, I use Amazonian ethnographic data as well as theoretical insights from Strathern, Mauss and others to argue for an Amerindian conceptualization of the body as an assemblage of material interactions with others, suggesting that pars pro toto may not be the best way to understand the post-mortem use of body parts. In the second half, I analyze Moche ceramic effigies of human body parts to suggest a possible dualism in Andean thought between air and liquid. This distinction may be visible in the material record, and can be used to interpret the fact that some artifacts made from or representing body parts, such as bones and skulls that whistle, are air-filled, whereas others, such as the effigy pots, are liquid-filled vessels.

[143] Discussant

Welch, Katherine (Boston University Medical School), Linda Taylor (Anthropology, University of Miami), Monica Faraldo (Anthropology, University of Miami) and Mihai Constantinescu (Institutul de Antropologie, "Francisc I. Rainer" a)

[28] Social and Biological Variables in a Case Study of Commingled Remains

The social context of commingled remains may enrich interpretations of osteological data. We incorporated this approach in our study of three skeletons recovered from a common grave, located 100m south of a cemetery in present-day Bucharest (Romania), dating to 1550-1650 AD. We collected qualitative and quantitative data on sex, age, ancestry, trauma, and social context. The remains represented three adult males (-25-50 years at death). Ancestry data suggests one was European, one Asian, and one African. All had multiple healed and perimortem traumas. Two had lead shot in the neck area; the third had a projectile point in the same area and was likely beheaded. Orientation and commingling of the remains suggests that the bodies were buried unceremoniously. The history of the area, and the ancestry findings, reflect the biological diversity of warring entities contesting for control of area when the three were buried. The sex and age results conform to the demographics of period armies. Their bones disclose lives marked by injuries and violent death, likely in armed conflict and/or execution.

The ancestry and social roles of these three individuals likely contributed to their deaths and the burial context outside of the local community cemetery.

Welch, Daniel R. [43] see De Smet, Timothy

Welch, John (Simon Fraser University) [134] Moderator

Welch, Daniel (Texas A&M University) and Suzanne Eckert (Texas A&M University)

[242] *Do Dates Connect Culture? Rethinking Identity at Aganoa, a Lapita-Aged Plain Ware Site on Tutuila Island, American Samoa.*

Excavations at Aganoa (AS-22-43), Tutuila Island, American Samoa have uncovered a living surface with a radiocarbon record and associated material culture and that dates to the Late Eastern Lapita era (2700-2300 BP). Although no dentate-stamped pottery was found on this surface, the chronological placement and other material culture resembles that of the Lapita cultural complex found elsewhere in Western Polynesia. This early plain ware producing community at Aganoa forces us to question what Lapita means in Samoan archaeology. The paleo-topography, living surface, radiocarbon dates, and material culture associated with the Late Eastern Lapita era component of Aganoa is described here, with a discussion of its implications for how we understand Lapita and the development of Polynesian culture in Samoa.

Welch, Jacob (University of Kentucky)

[305] *The Maya Toll: Regulation, Use and Administration of the Ucí-Cansahcab Sacbé*

Isolated on the outskirts of the Ucí, an ancient capital in Yucatan state, Mexico, rests a giant megalithic platform locally known as Hubichen. First mapped in 2009 as part of a survey along the 8km long intersite sacbé between Ucí and Kancab, Hubichen is the largest structure in the survey. Its proximity to the sacbé and its seclusion from other mounds in the area have sparked questions on the use of this structure and its involvement in the regulation, supervision and administration of the portion of the sacbé between Ucí and Kancab. Recent broad horizontal excavations in conjunction with phosphate data allow to glimpse at the purpose of this platform and its relation to Ucí's growing political domain in the Early Classic and regional integration overall. Due to its Post-Classic re-use, Hubichen also provides insights on Late Prehispanic occupation and ritual within the Northern Maya Lowlands of Northwestern Yucatan.

Welker, Martin (Penn State University) and Patricia Lambert (Utah State University) [12]

Subsistence and Trauma: The Southeast in Perspective

Human skeletal remains from Late Woodland and Mississippian period sites in North Carolina and Virginia exhibit relatively low long bone fracture rates. As these settlements were occupied by early agriculturalists, these data appear to challenge conventional wisdom concerning the risks associated with farming. To clarify the role of subsistence practices in traumatic injury risk, long bone fracture data from 17 globally dispersed human skeletal samples representing three different subsistence strategies—foraging, floodplain agriculture, intensive agriculture—were compared to test predictions generated from the Ideal Free Distribution Model. According to this model, early agriculture encourages settlement in floodplain environments requiring little labor investment until competition results in higher returns from marginalized areas. These comparisons suggest the risk of traumatic injury did not increase in a linear fashion with the transition to agriculture. In fact, early farming practices appear to be associated with a reduced risk of injury relative to those of foragers. Rather, it was only with agricultural intensification, including built environments and increasing dependence on large animals, that injury rates appear to have increased. These data provide important insights into the agricultural transition and to specific practices and conditions that change the health costs associated with different subsistence strategies.

Wells, Peter (University of Minnesota)

[15] *Objects, Decoration, and Writing: Dynamics of Communication Media in the Roman Frontier Zone of Temperate Europe*

Graves located across the Roman frontier in temperate Europe that contain objects imported from the Roman world provide an ideal context in which to test and refine models for examining the directionality and intensity of cultural exchange across frontiers. Following the Roman conquests west of the Rhine River in the 50s BC and south of the Danube River in 15 BC, a frontier zone at the edge of the Roman Empire was established that was to endure for 500 years. Written sources (Caesar, Tacitus, and others) yield limited information about interaction through merchant ventures and diplomatic missions. But archaeological evidence provides a vast amount of data about the character, scale, and chronology of

interaction between individuals and communities on the two sides of the "border." This paper explores changes in patterns of reception and rejection of Roman cultural elements by native peoples beyond the frontiers with a focus on shifting systems of communication that they employed. The media examined in this ever-changing cross-cultural environment include objects, decorative patterns, and writing - in both Latin and runic scripts.

Wells, Joshua (Indiana University South Bend), Eric Kansa (Open Context), Sarah Kansa (Open Context), Stephen Yerka (University of Tennessee) and David Anderson (University of Tennessee)
[36] Public Data for Public Archaeology: Developing Linked Open Data, Open-Source GIS, and Sensitive Data Standards for the Digital Index of North American Archaeology Project

The Digital Index of North American Archaeology (DINAA) project employs linked and open data strategies to make governmentally-produced data about archaeological sites in the United States publicly available for research and outreach purposes, without revealing site coordinates and other sensitive information. DINAA is an Internet index for archaeological concepts of culture histories, site types, diagnostic materials, investigation strategies, and information significance qualities, all structured through Web Ontology Language (OWL) - these in turn are linked to Smithsonian trinomials (also other site names) and obscured geographic locations useful for landscape analyses but not location reidentification. DINAA's framework and goals are strongly aligned with "Open Data" and "Free and Open-Source Software" (FOSS) movements, so the greatest values and fewest limitations for DINAA's digital spatial products and linkages are associated with standards and applications that are reusable by the broadest public audience (e.g. OWL, GitHub sharing of ontologies, FOSS GIS compatible data and instructions). The potential of DINAA products and linkages to be reused in outreach, publications, and other scholarly work is derived from these "open" efforts. For researchers, DINAA facilitates the identification, request, and citation of more precise archaeological data from State Historic Preservation Offices (SHPOs) and other secure repository entities.

[81] Chair

Wells, E. Christian [77] see Darley, Zaida

Wells, Christian (University of South Florida)

[283] Interdisciplinary Forensic Archaeology and Restorative Justice: The Case of the Boot Hill Cemetery, Marianna, Florida

In 2011, the Arthur G. Dozier School for Boys in Marianna, Florida was shuttered after more than a century of allegations concerning abuse and murder. Subsequently, researchers from the University of South Florida received permission and funding from the State to investigate the human remains interred in unmarked graves at the school. The project seeks to determine the identities of those buried, with the greater goal of repatriating the remains to surviving family members. This paper describes the results of the investigation, which integrates bioarchaeology and geoforensics with forensic and cultural anthropology to bring restorative justice to the families.

[252] Discussant

Wendrich, Willeke (UCLA)

[22] Circular Baskets, Circular Reasoning: The Interpretation of Basketry Lined Storage Pits in the Egyptian Neolithic

The discovery of well-preserved basketry lined storage pits has been the base for arguments that the Fayum Neolithic in Egypt was a sedentary society. Recent field work has shown that the basket-lined pits were sealed in such a manner that they could have enabled long-term caching. This leaves the question open as to whether the Fayum Neolithic society was sedentary or mobile. To prevent circular reasoning, the question whether the type of materials, basketry techniques and employment can be used as indicators of a way of life, are addressed in conjunction with the results of the interdisciplinary research team as a whole.

[55] Discussant

Wendt, Carl (Cal State University - Fullerton)

[192] Fishing in the Olmec World

Archaeologists have long argued that fish and other aquatic resources played an important role in the Olmec diet. Poor preservation of bone and shell at many Gulf lowland sites has limited what archaeologists can deduce about the importance of aquatic species relative to other foods in the local diet. In this paper I use indirect evidence of fishing (i.e., non-faunal) and the collection of other aquatic species (e.g., invertebrates) in an attempt to better understand the role that these resources played in the Olmec

diet. These data include artifacts from household and ritual contexts, settlement patterning, and iconography. In addition, inferences are drawn on the organization of subsistence activities among the Olmec.

Wening, Karen [18] see Moore, James

Werkheiser, Marion [98] Moderator

Wernecke, Clark [318] see Crook, Wilson

Wernecke, D Clark (The Gault School of Archaeological Research)

[318] *Incised Stones from the Area 15 Excavation: The Gault Site, Central Texas*

Incised and painted stones and other materials are found worldwide dating back at least 100,000 years though, prior to their discovery at the Gault Site, none had been securely dated from early sites in the Americas. Previous articles and papers have reported on incised stones at the Gault Site dating from Archaic to Clovis. This poster will address those stones recovered during excavations at Area 15, an excavation to bedrock designed to look at strata below Clovis levels and explore the earliest occupations at the site. More examples were found that date from Middle Archaic to Clovis and possibly older.

[318] Chair

Werneke, Clark [334] see Christmas, Patricia

Werner, William (Syracuse University)

[309] *Markets, Material Culture, and Mestizaje: Compositional and Archival Investigations of a Museum Accession from 1860s Central Veracruz, Mexico*

Since the late nineteenth century, folk pottery produced in the hills and valleys of central Veracruz has attracted the attention of anthropologists and collectors, who offered it as a rare indigenous tradition within a mestizo region dominated by ranching and sugarcane in colonial and postcolonial Mexico. This paper incorporates original archival work and archaeometric analysis to address the social context of a ceramic assemblage submitted to the Smithsonian Institution in the 1860s by the naturalist Carl Christian Sartorius, whose hacienda, El Mirador, was among the most significant in central Veracruz. Archived correspondence reveals that the pottery was likely acquired during a festival market hosted at the hacienda, although the geographic scope of this market is unclear. The chemical composition of the artifacts, determined through neutron activation analysis, was compared to that of modern pottery produced in the small towns surrounding the former hacienda. The results support an interpretation for local manufacture. These findings suggest how archaeometric methods in tandem with archival sources may mutually enhance provenience information of historic collections and elucidate the social dynamics through which the objects circulated prior to their museum accession.

Werness-Rude, Maline (Eastern Connecticut State University)

[195] *Updating the Chocholá Corpus: New Data Advancing Interpretation*

A closely-knit group of Late Classic Maya potters working in the Yucatan Peninsula created a deeply carved set of ceramics in what is now known as the Chocholá style. An examination of a number of examples held in various museum storage spaces helps advance our understanding of these wares. Rarely on display, such vessels provide important information regarding what originally seemed to be a small iconographic subset centered on isolated day sign cartouches. Adding these examples to the corpus indicates that this is a more significant category within the standing body of work than originally thought. What is more, as a group, the day sign cups demonstrate that a particular set of dates were emphasized. When considered in context, it becomes clear that these dates correlate with a series of important events named at Oxkintok, one of the power players in the Puuc region at this time. This evidence adds yet more support to the long-standing idea that Oxkintok acted as the center of a Chocholá manufacturing nexus. Other vessels hitherto ignored in overarching discussions of Chocholá iconography will also be considered, with advances made in our awareness of variation within the different scene categories.

[9] Discussant

Wernke, Steven (Vanderbilt University)

[256] *Paradoxes of Place and Power in a Planned Colonial Town in Highland Peru*

In the viceroyalty of Peru, the general resettlement of Indians enacted by the Viceroy Francisco de Toledo in the 1570s was among the largest colonial resettlement programs ever enacted, affecting some 1.5 million native Andeans. The program displaced Andean communities into gridded towns (*reducciones*—“reductions”) built around central plazas and churches, and has long been understood as one of the most concrete manifestations of colonial domination. However, the processes by which *reducciones* were emplaced and constructed remain poorly documented. This paper explores the construction and spatial organization of a large (~30 hectare) and well-preserved *reducción* in the Colca Valley of southern Peru. Intensive architectural survey and surface collections establish that the *reducción* was constructed atop a major Late Horizon settlement with elaborate Inka cutstone architecture and a large central trapezoidal plaza. Though the construction of the *reducción* generally adhered to the prescribed gridded layout, core elements of the prior Inka provincial settlement were integrated into its urban fabric. The central trapezoidal plaza was re-consecrated through the construction of altars and recycled for Christian processions. Overall, a picture emerges of the simultaneous production of dominance and the means for its destabilization through building and dwelling in such hybrid colonial/Andean places.

[34] Discussant

Wernke, Steven [188] see Thurber, Hali

Wesp, Julie (UC Berkeley) [293] Chair

Wesson, Cameron (Lehigh University) and Ned Jenkins (Alabama Historical Commission)

[327] Sacrifice, Symbolism, and the Sacred: Redefining Community and Mortuary Ritual at the Shine Site (1Mt6), Montgomery County, Alabama

Recent analysis of David W. Chase's 1963 excavations at the Shine Site (1Mt6) near Montgomery, Alabama, has revealed the presence of a distinct mortuary precinct dating to the Shine I Phase (AD 1200- 1400). An examination of interments within this precinct suggests a radical shift in mortuary ritual, ceramic styles, and community architecture took place at the site early in the Shine II Phase (AD 1400- 1560). We suggest these changes were part of a physical restructuring of the Shine community and an alteration of local ritual practice and religious traditions resulting from the immigration of distinct Mississippian peoples to Shine (circa AD 1400). In this paper we focus specifically on two burials that appear to have been integral in the redefinition of community relations during the Shine I-Shine II transition. The contexts of these interments suggest that one was part of a ritual terminating the preexisting mortuary regime at Shine, while the second established a new set of mortuary practices at the site.

West, Catherine (Boston University), Meghan Burchell (Memorial University of Newfoundland) and Fred Andrus (University of Alabama)

[286] Shellfish and Paleoenvironmental Reconstruction in Island and Coastal Settings: Variability, Seasonality, and Sampling

In recent years there have been significant methodological advances in sampling and interpreting stable isotope data from shellfish recovered from archaeological sites. In particular, the stable oxygen isotope record in mollusks derived from island and coastal sites reveals trends in shellfish collection intensity, seasonality, paleoenvironment, and broader patterns in local climates. These lines of evidence add a new dimension for interpreting human-environmental interactions. Sampling methods that consider the growth rate of the species in question and the research objectives are essential for accurately interpreting stable oxygen isotope results. This paper will review current techniques in the isotope analysis of shellfish and address future directions for this method.

Westby, Molly and Michael Hilton (U.S. Forest Service)

[304] Partnerships and Programs Designed to Recruit and Equip a New Generation of Cultural Resource Professionals in the U.S. Forest Service

A variety of programs and partnerships introduce new professionals to the cultural resource management (CRM) programs of the U.S. Forest Service. Some are not unique to the Forest Service (Student Conservation Association) and others are agency staples (Passport In Time), while some innovative approaches are in their formative phase (HistoriCorps). Partnership programs are vital to fulfilling agency needs, while simultaneously exposing emerging professionals to the training necessary to transition into a career in federal CRM. This paper highlights U.S. Forest Service cultural resource programs, identifies potential roadblocks to integrating new professionals into the work force, provides examples of partnerships that are already working toward integration, and offers recommendations for the next generation.

Wester Davis, Shaza [44] see Rakita, Gordon

Wexler, Jennifer

[181] *Places of Death: New Interpretation of the Development and Utilization of Rock-Cut Tombs in Western Sicily during the Copper and Bronze Ages (circa 3500-900 B.C.).*

This presentation will examine the development and utilization of rock-cut tombs in Western Sicily during the Copper and Bronze Ages (3500-900 B.C.). Although these tombs are often the best indicators of variations in the archaeological record, they have been widely looted or excavated unsystematically and, therefore, largely undervalued in modern archaeological research. Despite the difficulties with the archaeological record, there is still much we can learn about these sites by adopting a progressive methodology not previously applied to them. This project employs spatial landscape approach to analyze the location, utilization, and relationships between rock-cut tomb sites and their physical and socio-cultural landscapes. By integrating data from previous studies and new field surveys, it has been possible to identify a number of key components in tomb placement and utilization over time, including topographic location, tomb visibility, tomb access and the spatial relationships between tombs, settlements, and other archaeological sites. The discovered patterns assert that the prehistoric communities of Western Sicily were making conscious decisions about the positioning of their dead, allowing us to further develop ideas of how tomb use evolved in its relationship to land-use, local/regional identities, and territoriality throughout the course of the Copper and Bronze Ages.

Whalen, Verity (Purdue University) and Corina M. Kellner (Northern Arizona University)

[15] *Modeling Late Nasca Societal Interaction on the South Coast of Peru*

The end of the Early Intermediate Period on the south coast of Peru was a time of unprecedented interregional interaction. People in the Ica and Rio Grande de Nasca drainages engaged in spheres of elite contact, trade and likely intermarriage with groups in the northern Pisco and Chincha Valleys, southern Acaí and possibly Arequipa region, and highland Ayacucho. In the aftermath of Wari colonization during the Middle Horizon, the cultivation of such relationships played a key role in local community politics and the negotiation of colonial relationships. Here we examine the nature of cross-cultural contact at Cocahuischo, a large Late Nasca settlement. Based on data from excavations and artifact, mortuary, and isotope analysis, we evaluate the evidence for societal interaction between residents of Cocahuischo and the broader Andean world. Using the model developed by Green and Costion (2013), we suggest that residents of Cocahuischo were engaged in increasingly broad and mutually influential spheres of interaction with other central Andean groups. The abandonment of Cocahuischo by the end of the Early Intermediate Period, however, suggests that while some Late Nasca factions forged beneficial ties with Ayacucho people and the emerging Wari state, Cocahuischo was not among them.

Whalen, Verity [27] see Vaughn, Kevin

Whalen, Michael (University of Tulsa)

[144] *Ceramic Development in the Casas Grandes world*

The complex ceramic assemblage of Casas Grandes (or Paquime) was described nearly four decades ago, but little attention was given to the chronology of its development and decline. Recent research and extensive dating have opened new perspectives on this dynamic ceramic assemblage. The implications of these studies extend far beyond ceramics, providing new perspectives on the rise and fall of Casas Grandes.

Whalen, Kathryn (University at Buffalo)

[215] *Avocational Archaeologist Knowledge Project*

Avocational archaeology, in the form of surface survey is a longstanding tradition in Western New York. The goal of the Avocational Archaeologist Knowledge Project is to collect, compile and curate oral histories about the artifact collections of avocational archaeologists in Western New York for the purpose of mitigating the loss of archaeological knowledge caused by hobby field walking and the amassing of archaeological materials by private collectors. The end result of the project is a searchable database of oral histories, photographs of material culture collections, and geographic references for these collections. The motivation is to 1) capture information from hobbyists on archaeological sites in Western New York before it is lost through sale, inheritance or further loss of provenance at the death of the owner, and 2) collect the personal recollections of these avocational archaeologists and their knowledge of our local history. This paper discusses the project methodology, and results as a means of creating a

replicable protocol for other institutions who are interested in similar projects. Examples from our oral history collection will be used to illustrate the value of projects such as these for other public archaeology efforts.

Whallon, Robert (University of Michigan)**[73] Sacred Locales among Hunter-Gatherers**

Occasionally, among the myriad named and/or intentionally marked places in hunter-gatherer territories, locales imbued with special, sacred significance are found. The various markings identifying and forming part of these locales are typically numerous, complex, and highly symbolic. The places themselves are typically considered to be beyond significant and meaningful, being powerful, often frightening and dangerous. Often, only certain people, or certain categories of people, are allowed access to these highly sacred places. However, instead of being places to avoid, such sacred locales typically demand regular visitation, physical maintenance, and the periodic performance of ceremonies and rituals. Examples of such places are known both ethnographically and archaeologically, but they are far from universal among hunter-gatherers. The question explored in this paper is when and why places of such extreme sacred character are created and maintained by hunter-gatherers and when and why they are not.

[73] Chair

Wheelbarger, Linda [56] see Reed, Lori

Wheeler, Kathleen (IAC, LLC)**[155] In Life As In Death: Segregated Burials in New Hampshire**

In 2003, Independent Archaeological Consulting, LLC, recovered eight burials from the Portsmouth African Burial Ground, which had been established in 1705 on glebe land at the edge of the city. This "Negro burying ground" was specifically set aside for Portsmouth's black citizens. In neighboring Greenland, the final resting place of Ona Judge Staines is tucked away on the landholding of freed slaves Phillis and Jack Warner, while the burial of Caesar lies downslope from the fenced burial ground for Thomas Brackett and his family. Finally, in Amherst, New Hampshire, IAC recovered the remains of a woman and child from beneath the corner of the Town Hall; this double burial had been forgotten - or ignored - when the structure was erected. Each of these examples illustrates the effect of isolating burials from the general populace, when the deceased were of African descent. In three of the four instances, the segregated burial place was imposed on local blacks, while for Ona Staines, she and the Jack family chose for themselves their place of burial. This paper explores New Hampshire's history of separation by race, as revealed through archaeology.

Whelan, Carly (University of California, Davis)**[316] Long-Distance Acorn Transport in Eastern California**

The ethnographic Mono Lake Paiute of Eastern California regularly crossed the Sierra Nevada crest to procure acorns from Yosemite Valley, a total journey of fourteen days. These trips seem economically inefficient and are usually explained as social excursions to visit and trade with the Yosemite Me-Wuk, or as journeys of necessity in years with poor piñon pine nut harvests. An optimal foraging analysis of subsistence options in the Mono Basin reveals that acorn excursions to Yosemite produce more calories than local seed harvesting. This indicates that the long-distance transport of plant foods can be a viable subsistence strategy for hunter-gatherers.

Whitaker, Jason**[49]*****The San Lorenzo Settlement Cluster: An Investigation into Household Economy in the Mopan River Valley of Western Belize***

This paper is a discussion of recent archaeological investigations at the San Lorenzo settlement cluster in the Mopan River Valley of Western Belize. The objective of current research at this ancient hinterland settlement is to better understand household economic organization and integration during the Late and Terminal Classic periods (A.D. 670-890). Households are fundamental units of economic organization in both past and present societies; thus, studying them enables archaeologists to better understand both micro-scale economic activities, and to situate those activities within larger societal contexts.

Archaeological investigations at the San Lorenzo settlement cluster focused on the areas surrounding structure groups SL-22, SL-23, and SL-25. Examination of macroartifacts collected in 2013 shows that the highest artifact densities are in the area south of SL-22. Moreover, excavations in this zone revealed numerous cultural features. Macroartifact densities are significantly lower in the spaces between SL-22 and SL-23, and between SL-22 and SL-25. Preliminary analysis of lithic macroartifacts suggests that the

ancient residents of these structure groups favored local raw materials. Finally, ongoing analysis of the relationship between macro and micro artifacts in the areas investigated will be discussed.

[49] Chair

Whitaker, Adrian [282] see Ruby, Allika

White, Christine [113] see Szpak, Paul

White, William (University of Arizona)

[258] *Calling All Archaeology Careerists: Discussing Archaeology Careers Online*

A careerist is an individual that doggedly pursues professional advancement. This definition aptly describes nearly everyone who has created a successful career in archaeology. Forging a path in archaeology requires a wealth of experiential learning that is amassed throughout an individual's career. In the past, the true mechanics of academic or commercial archaeology were discussed in face-to-face conversations and through academic writings; however, social media has provided a way to expand the discussion to a larger audience of archaeologists working around the world. LinkedIn is a social media outlet for professionals that is frequented by a large number of archaeologists and archaeology students. My research focused on revealing what archaeology professionals of today are talking about and how those topics are relevant to current practice. This paper uses public comments on archaeology related LinkedIn groups to investigate topics relevant to those pursuing a career in archaeology. The insights gained from these conversations illustrate the contrast between professional archaeology as it is practiced and archaeology as it is conceptualized.

White, Andrew (University of Michigan)

[278] *Marriage, Mortality, and Middle Paleolithic Families: Implications of a Model-Based Analysis*

The ratio of old to young adults (the OY ratio) in the Neandertal fossil record is substantially lower than it is for both Upper Paleolithic skeletal samples and relevant ethnographic cases (Caspari R, Lee S-H, 2004, Proc Natl Acad Sci 101:10895-10900). This suggests that Middle Paleolithic populations in Europe experienced a mortality regime unlike that of later hunter-gatherers. An agent-based model is used to: (1) show how the OY ratio is related to fertility and mortality in populations with cultural behaviors and patterns of age-specific mortality like those known ethnographically; (2) examine the effects of imposing a pattern of high adult mortality on culturally "modern" populations; and (3) explore how varying the presence and strength of cultural behaviors and constraints linked to marriage and family size/composition affects demographic viability under such a mortality regime. Viable model populations with OY ratios comparable to that of Neandertals can be produced under conditions of high adult mortality when "families" are relatively large, polygynous groupings whose size is not constrained by the dependency ratio in the same way as it is among ethnographic hunter-gatherers. This result is compared to archaeological and osteological evidence relevant to understanding domestic life during the European Middle Paleolithic.

White, Carolyn (University of Nevada Reno)

[328] *The Archaeology of Burning Man*

Each August, cadres of staff and volunteers begin to construct Black Rock City, located in the Black Rock Desert in northwestern Nevada. Every September, tens of thousands of people travel to it, creating the third largest population center in Nevada. By mid-September, the city is fully dismantled and by October, the playa on which the city lay is scrubbed of evidence of its existence. This city is the locus of the archaeological project that examines the Burning Man festival. As a city on the threshold of destruction and on the verge of creation, archaeological techniques are particularly appropriate for understanding the

created private and public spaces in the city before, during, and after its use. This paper presents findings from five seasons of archaeological survey, mapping, artifact collection, and analysis to interpret the domestic and public space of Black Rock City.

[328] *Chair*

White, Devin (Oak Ridge National Laboratory) [337] Archaeological Applications of LIDAR

Over the past decade, archaeologists have increasingly embraced airborne and terrestrial laser scanning (LIDAR) as a means to more efficiently and accurately survey landscapes at varying scales, from large regions to individual excavation units. The recent--and spectacular--applications of LIDAR at sites like Caracol, Angamuco, and Angkor Wat have enhanced its popularity, accelerated its integration into our discipline, and in some ways exacerbated existing challenges. The financial and methodological barriers to entry for this technology, and others that can produce 3D point clouds, remains relatively high for archaeologists. Additionally, we are not using the technology to its full extent and, more importantly, are too reliant on outside specialists and organizations who do not fully understand and cannot fully support our research requirements. This needs to change if we truly want to revolutionize how we collect, visualize, and analyze such rich sources of spatial data. This paper will provide information about the technology for the uninitiated, review the state of the practice for archaeology, highlight some applications at the cutting edge to show what is currently possible, and conclude with a few thoughts on how we can begin to take more ownership of how LIDAR is used in our field.

[337] *Discussant*

Whitehead, William [19] see Deibel, Michael

Whitley, David (ASM Affiliates, Inc.)

[156] *Peopling of the Americas: A Rock Art Perspective*

Over a half-century of "dirt" archaeological research has failed to resolve many basic archaeological questions about the peopling of the Americas, suggesting the value of alternative data sources and analytical approaches. What can rock art tell us about the peopling and Terminal Pleistocene prehistory of the Americas? Over the last decade, chronometric and traditional dating techniques have yielded a significant suite of pre-9k YBP North and South American rock art dates. These provide conclusive evidence for widespread rock art production by 10-11k YBP, with multiple examples suggesting circa 15k YBP-aged art. The dates also indicate the existence of at least 7 distinct rock art traditions by 10k YBP, demonstrating that substantial cultural diversity was already in place by Paleoindian times. These data support the developing western North American perspective of very early cultural variability, correcting the over-emphasis on fluted projectile points as monolithic cultural markers that has characterized much traditional Paleoindian research. The values of rock art in this context are straightforward. Unequivocally cultural, exposed/easy to identify, and inferentially rich, as new dating techniques are developed and older ones improved, rock art promises to provide key evidence concerning the oldest problems in New World prehistory.

[334] *Discussant*

Whitley, Thomas (Brockington and Associates, Inc.)

[229] *Discussant*

Whitley, Catrina (Office of Archaeological Studies, Museum of NM)

[247] *Environmental Factors for Cancer in Ancestral Puebloans from the Northern Rio Grande*

The few cases of cancer reported in ancient human remains around the world suggest modern environmental factors are largely responsible for modern high rates of cancers. Cancer rates in antiquity are, however, probably under-reported and environmental factors that could have caused cancers in antiquity have received little attention from archaeologists. Identification of several cases of cancer in precolumbian skeletons from the Taos Valley, New Mexico, prompted an on-going examination of possible causes. This region is characterized by high levels of ambient, naturally-occurring radionuclides in bedrock, soils, sediments, and groundwater. Lifestyle decisions of Ancestral Puebloans, such as housing types, construction materials, water and food sources and storage, food processing, and raw material sources, may have increased their exposure to carcinogens. This paper discusses the multiple types of cancer found in the pre-Columbian Southwest and explores potential exposure pathways from natural and lifestyle carcinogen sources. Evidence from this study demonstrates that archaeologists should look more closely at environmental factors that could have resulted in cancer in archaeological populations. In turn, archaeological studies of carcinogen exposure can increase our understanding of

the risks associated with naturally-occurring sources and lifestyle decisions and their implications for modern cancer research, culturally-relevant diagnoses, and treatments.

[247] Chair

Whitley, Catrina [268] see Tsesmeli, Evangelia

Whitley, Tamara (Bureau of Land Management)

[316] *Restoring the Cultural and Natural Landscape at the Piedras Blancas Light Station*

The Piedras Blancas Light Station Outstanding Natural Area located on the California Central Coast is being managed for the preservation and public interpretation of the important natural and heritage values found there. This program has included the restoration and reconstruction of the historic light station structures and other features which contribute to the historical context. In addition to these historical elements, the restoration of the natural setting has been an important component of the recovery of the cultural landscape. This presentation illustrates the importance of the natural setting to the interpretation of the cultural landscape.

Whitmore, Katie (Department of Anthropology, University of Central Florida), Toshia Dupras (Department of Anthropology, University of Central), Lana Williams (Department of Anthropology, University of Central), Rimantas Jankauskas (2Department of Anatomy, Histology and Anthropology) and John Schultz (Department of Anthropology, University of Central)

[102] *Eating like a Catholic?: The Use of Carbon and Nitrogen Isotope Analysis of Bone and Dentin Collagen from Medieval Alytus, Lithuania to Assess the Incorporation of Marine Resources*

Medieval Lithuania represents a dynamic time in Europe's history as the last pagan country in Europe prior to the Conversion of Lithuania in 1387 A.D. Lithuania was unique at the time by accepting immigrants of many faiths to their borders. Bone (N=35) and dentin (N=38) collagen samples from the site of Alytus (late 14th through early 18th centuries) offer new insight into the manner in which rural Lithuanians responded to the institution of the Catholic religion, specifically in terms of diet and the adoption of fast days. As of yet, there has been very little stable carbon and nitrogen isotopic analysis undertaken in the Baltic region to investigate diet, and this study aims to address the gap in the data. Analysis of stable isotopic data revealed that the protein portion of the diet mainly reflects consumption of terrestrial non-legumes and very little marine resource consumption, although the use of some freshwater resources is possible ($\delta^{13}\text{C}$ mean: -20.08, SE: 0.0434; $\delta^{15}\text{N}$ mean: 10.29, SE: 0.1541). Despite the conversion of the country to Catholicism, individuals at Alytus did not demonstrate $\delta^{15}\text{N}$ levels consistent with a diet largely reliant on marine resources.

Whitridge, Peter (Memorial University of Newfoundland)

[159] *Writing History on the Land: Inuksuit As Long-Term Repositories of Cultural Information*

Inuit ranged widely across their arctic homeland. Most groups moved seasonally between permanent villages and an array of temporary camps; resources were harvested from large hinterlands surrounding settlements; friends, relatives and trading partners were visited in neighbouring communities; bands periodically pioneered new territories; and individuals were in a perpetual state of exploration and discovery of the world around them. A correlate of the importance of movement was the importance of fixed locations, places amongst which people navigated and which provided cognitive anchors for a dense store of spatial information. In a sparsely occupied landscape learned placenames were an important supplement to more tangible traces of human occupancy, but Inuit also employed the distinctive tactic of erecting simple stone markers or inuksuit at significant locations, such as the inflection in a travel route or the summit of a hill from which a campsite or landmark could be seen. Unlike placenames, which depended on an idiosyncratic stock of cultural knowledge, inuksuit constituted durable material cues that broadcast topographic information in perpetuity to whomever possessed the navigational intelligence to decipher their meaning.

Whittaker, John (Grinnell College), William Bryce (Southwest Archaeology Research Alliance) and Chuck LaRue (Independent Researcher)

[182] *Conflict among Dispersed Early Agriculturalists: Depictions in Basketmaker II Rock Art*

The distinctive Basketmaker II rock art style of the North American northern southwest is well documented (Charles and Cole 2006; Cole 1989; Robins and Hays-Gilpin 2000, Kitchell, 2010). The depiction of atlatls and violence in this rock art has been noted (Farmer 1997), but paid little attention. Recording of atlatl depictions in BMII rock art from 2007-2012 resulted in multiple scenes of violence, typically in the form of duels with two individuals facing each other with darts ready to be propelled, darts in the air, or protruding out of one of the duelists. Many of the panels show the duelists with differing

headdresses. Matson et al. (1988) estimate ca. 440-880 individuals occupying the 800 km² study area on Cedar Mesa of southeast Utah during the Basketmaker II period. Such a low population estimate suggests demographic constraints were not a cause for conflict. Based on headdress style, and assuming headdresses correspond with differing groups, Basketmaker II rock art in southeast Utah illustrates both inter- and intra-group conflict among dispersed groups.

Whittington, Stephen (Wake Forest University)**[83] Cerro Amole and Its Relationship to the Mapa de Teozacoalco**

Cerro Amole appears on the Mapa de Teozacoalco, submitted with San Pedro Teozacoalco's Relación Geográfica to the Spanish Crown in 1580. It is marked by a unique two-tiered structure surmounted by a red cross. Detailed mapping of architecture and artifact locations on Cerro Amole using powerful GPS units during 2013 revealed a dense and extensive site core. It produced data on artifact distributions that define differing functions of various areas and changes in settlement distribution and character through time. Analysis of ceramics recovered from the ground surface supports the interpretation, based on royal genealogies painted on the map, that the capital of the Teozacoalco yuhuitayu was located on Cerro Amole from around 1085 until 1321. This is unexpected, not only because of its short duration, but also because many archaeologists would interpret the site's monumental architecture, including a ballcourt more than 45 m long, as signaling Classic period (A.D. 300-900) occupation.

[83] Chair

Whittington, Stephen [152] see Robinson, Kenneth

Wholey, Heather (West Chester University)

[80] Teaching Archaeological Skills through Stewardship: The Wilson Documentation Project The Wilson Documentation Project was undertaken from 2007-2011 with undergraduate interns and students at the West Chester University of Pennsylvania. The Wilson Collection, orphaned at the university, includes over 1,000 lithic artifacts collected by Harry Wilson from 1890 to 1943, along with Wilson's log books, scaled field maps, and artifact illustrations. These records are detailed and thorough enough to accurately provenience 100 previously unrecorded sites in southeastern Pennsylvania. The project involved 1) documenting the holdings of the Wilson Collection (maps, letters, illustrations, log book entries, etc.) in OneNote; 2) re-creating assemblages of materials from documentation; 3) producing overlays of historic property maps, U.S.G.S topographic maps and GoogleEarth satellite imagery to provenience assemblages; 4) consulting property records to identify current landowners, 5) conducting site visits to field check, photo-document and record site locations via global position system; and, 6) completing site file forms. Through this project students learned to read maps, perform basic lithics analysis, access municipal records, perform field reconnaissance and interact with landowners. Students involved in the project practiced basic archaeological skills while gaining a profound sense of stewardship and an appreciation for the significance of archaeology for the present and future.

[80] Chair**Wiant, Michael (Illinois State Museum-Dickson Mounds)****[74] Archaeology Large and Small: The Foundation of Stuart Struever's Legacy**

Introduced to archaeology in the 1950s, Stuart Struever advanced in the 1960s revolutionary ideas including flotation, settlement subsistence, and the organization, scale, and sustainability of archaeological inquiry. Drawing on his family's industrial heritage, Struever formed the Foundation for Illinois Archaeology with a vision of large-scale, integrated, inter/multi-disciplinary research underwritten by a diverse combination of public and private funds. The experiment soon turned into an institution that attracted a critical mass of academic colleagues from the earth, life, and social sciences, a curriculum of coursework ranging from method and theory to natural science and archaeology, and the opportunity presented by public interest in archaeological exploration. The course of development drew Struever from the halls of the academy into the world of grants and contracts and philanthropy, but through it all his goal was to transform how we conduct archaeological research.

Wichlacz, Caitlin [321] see Jarrett, Jordan

Wickstrom, Brian [287] see Binning, Jeanne

Widmer, Randolph [63] see Storey, Rebecca

Wiederhold, Jim [217] see Lynch, Joshua

Wiederhold, Jim (Center for the Study of the First Americans)

[315] *A Functional Analysis of "Bend-Break" Artifacts from the Debra L. Friedkin Site, Texas*

Use-wear analysis can be used to identify non-formal artifacts as tools that might otherwise be classified as shatter from manufacturing mistakes or post-depositional processes. The radially-fractured and other snap-fractured flakes from the Debra L. Friedkin site in central Texas provides a case in point. Suggested by the number recovered, an initial use-wear survey was conducted. Subsequent experimentation and further microscopic evaluation strongly support the notion that these pieces were indeed multi-function tools that were well used.

Wienhold, Michelle (University of Central Lancashire) and David R. Robinson (University of Central Lancashire)

[36] *Open Geospatial Data: Discussions and Solutions for Publishing Sensitive Rock Art Data Online*

The rock art of South Central California includes some of the most intriguing and complex, polychromatic pictographs found worldwide. With the inherent nature of rock art as immovable artifacts fixed within a cultural landscape, spatial analysis is an applicable heuristic for analyzing its networks and relationships to archaeological and environmental contexts. Due to the compelling nature of these sites, destruction from humans has been one of the main problem in site preservation. In the advent of readily available, high-resolution data (e.g. LIDAR) and open access to academic information, locations of these sensitive and vulnerable sites could potentially be accessed even through the GIS analysis outputs. Arguments on the distribution of sensitive data have been predominant within biodiversity concerning dissemination of sensitive/endangered species data and the need to study global species' populations for public education and decision-making purposes. Similarly, making archaeological data available must not present potential harm the sites. It should instead find a balance between public education and not making the sites vulnerable. We suggest solutions to support open geospatial data for public consumption including micro- and meso-scale presentation, 3D scanning and "blurry" resolutions so that the integrity of these complex pictographs and caves can be preserved.

Wiersema, Juliet (University of Texas, San Antonio)

[120] *Ritual Processions and Sacred Space on Moche Fine Ware Vessels*

For the Moche, visual evidence for processional activity is preserved on Moche fineline vessels and in monumental architectural remains. Both sources reveal a connection between processions and single-room structures. Fineline scenes, such as the Arraignment of Prisoners, suggest that ritualized activities (presentation, detention, and sacrifice of captives) were anchored and linked by small, free-standing constructions. In the main plazas at Huaca de la Luna and Huaca Cao Viejo, this idea is corroborated by the presence of elaborately decorated rooms which likely served as venues for key events and influenced the direction of movement within the huaca. Further evidence that connects independent structures to processional activity can be found on Moche architectural vessels. These objects, which convey information both two- and three-dimensionally, suggest a central role for small structures in Moche ritual activity. They also reveal a propensity for processional activity that moved in an upward direction.

Wieser, Anna (University of Kansas)

[301] *Reassessing the Bronze Age Archaeology of Kandahar Province, Afghanistan*

Archaeological research in Afghanistan has largely halted due to armed conflict beginning in 1978. As a result, few publications have focused on archaeology in the country, particularly the southern half, in the past few decades. Several projects have been revitalized in the north, but the south remains blocked off by war and physical risks to researchers. Remote sensing and GIS technologies provide a safe way to maintain the country's presence in archaeological discussions. This poster reviews what is known of Bronze Age occupation of southern Afghanistan, with an emphasis on Kandahar province, and situates it within archaeological developments since 1978. This synthesis provides the background for an ongoing project developing a predictive model of Bronze Age site location and natural resource use in Kandahar Province, Afghanistan.

Wiewall, Darcy (Antelope Valley College), David Earle (Antelope Valley College), Michael Esquer (Antelope Valley College) and Victor Guzman Contreras (University of California at Riverside)

[163] *Unfinished Business: Interpretation of the Fairmont Butte (CA-LAN-298) Archaeological Collection*

The archaeological site at Fairmont Butte (CA-LAN-298) has become familiar to many who work in the Western Mojave Desert because of its complexity, substantial rhyolite quarry, deep midden deposits and diverse artifact inventory; however the collection is largely unanalyzed and most of the work remains unpublished. Generated by previous faculty and student excavations in 1989-1996, the collection has recently become the focus of a renewed effort to analyze and interpret the site for the purpose of teaching, student research projects and professional training. In this paper, we present the initial results of the lithic, ground stone, and bead analyses. These new data, in conjunction with previous site interpretations, are evaluated in light of current research in the Western Mojave Desert. Comparisons with other known settlements will be presented to place this occupation chronologically and to provide insight into the development of hunting-gathering focused procurement systems in the region.

Wiewel, Rebecca (University of Arkansas)

[10] *Protohistoric Community Formation in the Central Arkansas River Valley: The Use of Compositional Analysis to Identify Regional Interaction*

A long-held belief among archaeologists maintains that the so-called Carden Bottoms phase communities of the protohistoric Central Arkansas River Valley contain ceramics from three distinct traditions: local wares produced within the Carden Bottoms locality, imported wares from the Central Mississippi Valley in northeast Arkansas, and imported wares from Caddo communities in the Middle Ouachita region of southwest Arkansas. These beliefs rest on stylistic cues and macroscopic examination of ceramic pastes to discriminate between local and nonlocal wares. This poster presents results of ongoing instrumental neutron activation analysis undertaken to independently assess these assumptions. Ceramic and clay samples from three recently excavated houses at 3YE25 (a Carden Bottoms phase site within the Carden Bottoms locality) containing a cross-section of wares found at the site were analyzed via INAA.

Comparative ceramic samples from sites in the Central Mississippi Valley, Middle Ouachita region, and Lower Arkansas River Valley obtained from archaeological collections were also analyzed to determine the provenance of nonlocal wares. Ultimately, this research provides a means of refining our current perceptions of regional dynamics in the Southeast during what appears to be a time of reorganization and community formation.

Wiewel, Adam and Jesse Casana (University of Arkansas) [13] *UAV-based Archaeological Aerial Thermography*

Despite a long history of studies that demonstrate the potential of aerial thermography to reveal surface and subsurface cultural features, technological and cost barriers have prevented the widespread application of thermal imaging in archaeology. This paper presents a method for collection of high-resolution thermal imagery using an unmanned aerial vehicle (UAV), as well as a means to efficiently correct and process data using photogrammetric software. To test the method and determine optimal conditions for thermal image collection at sites of different types located in distinct environments, aerial surveys were conducted at a Chaco-period site in northwestern New Mexico; the Mississippian center of Cahokia, Illinois; the Plains Village site of Arzberger, South Dakota; and the Late Bronze Age city of Kalavasos, Cyprus. At most of these sites, our easily replicable methodology produces data that rivals traditional archaeological geophysics in terms of feature visibility, but which can be collected very rapidly, over large areas, with minimal cost and processing requirements.

Wiewel, Adam [256] see Weaver, Brendan

Wilcox, Michael (Stanford University)

[135] *Discussant*

Wilcox, David (Itinerant Scholar)

[339] *Discussant*

Wilde, James (AFCEE)

[101] *Discussant*

Wildt, Jennifer (Boston University)

[252] *The Power of Comparison: New Approaches to Ancient Plazas*

Among ancient architecture, plazas present various challenges for researchers attempting to understand their roles in societies. Unlike buildings elaborately decorated with iconographic messages, the importance of plazas was as sites for social interaction. Due to the open nature of plazas, they have been

traditionally viewed as lacking data through which to understand them. However, recent advances in both scientific methods and theoretical approaches are changing our understanding of plazas. Building on a comparative study of three plazas at the Lowland Classic Maya of Xultún, this paper considers new theoretical approaches to understanding plazas. These approaches are drawn from archaeology, ethnography, ethnohistory, architecture and town planning. Incorporating modern studies of the use and design of space provides new data for archaeologists that include both human interactions and architectural insights. Studies of ancient plazas can also prove valuable to modern planners, providing the time depth that current architectural studies lack.

Wiles, Gregory [266] see Kardulias, Paul

Wiley , Kevin [111] see Labate, Julie

Wilkin, Shevan [103] see Rauscher, Erika

Wilkin, Shevan (University of West Florida), Taylor Rauscher (Wagner College) and Danielle Kurin (UCSB)

[103] A Bioarchaeological Analysis of Domestic Violence in Post-Imperial Peru

This paper evaluates changes in violence enacted against women in late prehistoric south-central Peru. As the Wari Empire dissolved ca. AD 1000, populations forged new, regionally based polities no longer supported by a central state. The social, political, and economic unrest of the epoch spurred a myriad of changes: habitations ascended to higher elevations, social identities changed as cranial modification was newly implemented, and traumatic skeletal injuries increased significantly. This study evaluated 68 female crania from three communities in the region. One population dates to the terminal Wari imperial era (AD 880-990) and two others are from a few generations later, during in the fledgling post-imperial era (AD 1000-1250). We observed a dramatic increase in female cranial trauma overall during the post-imperial era, as well as a striking rise in female facial injuries and lethal vault wounds. Barring strong evidence of female hand-to-hand combat, we suggest that the injuries directed towards females were the result of domestic violence, likely spurred to some extent by the social stresses of the post-imperial era.

Wilkins, Jayne (Arizona State University), Naomi Cleghorn (University of Texas at Arlington), Christopher Shelton (University of Texas at Arlington), Benjamin J. Schoville (Arizona State University) and Leesha Richardson (University of South Africa)

[209] Stone Age Archaeology on the Western Head at Knysna, Western Cape, South Africa

We present previously unreported Stone Age sites near Knysna (Western Cape, South Africa). The sites are located on the Western Head, one of two headlands where the Knysna estuary meets the Indian Ocean. An open-air Acheulean site on the Western Head includes large bifaces, flakes, shatter, and casual cores. At the base of this headland, 3 caves facing into the Knysna strait preserve deposits with characteristic MSA and LSA artifacts. In the southern cave, bone, shell, and prepared core lithic artifacts typical of the MSA are eroding out of a profile with hearth features. Similar artifacts are eroding out beneath a partially cemented aeolian layer in the northern cave. A shell midden (most likely LSA) is exposed in the central cave. Goodwin and Van Riet Lowe (1929) and Deacon (1979) reported Acheulean, MSA, and LSA occurrences near Knysna and on the heads, but these sites were never systematically examined. Additional MSA sites on the Eastern Head are being investigated as part of the current research program. There is a long and rich history of Stone Age occupation in the Knysna region, and the sites presented here show good potential for investigating behavioral evolution through the Middle and Late Pleistocene.

Wilkinson, Tony, Dan Lawrence (Durham University, UK) and Graham Philip (Durham University, UK)

[75] The Fragile Crescent: Long Term Adjustments to Changing Political and Environmental Changes

The Fertile Crescent has fostered the growth of domestication as well as the earliest cities. The Fragile Crescent Project has demonstrated that the relationship between settlement and environment is often non-linear, and our research provides compelling evidence for both long-term human sustainability as well as boom and bust cycles. The themes to be tackled for the period ca. 4000-1BC are: 1) strategies of food procurement and production during periods and areas of climatic stress; and 2) the spread of water distribution systems which depend upon changing environmental circumstances and large-scale state dynamics. We conclude that ancient patterns of land use have been partly replicated in the recent past. Particularly relevant to human sustainability have been periods when populations grew in the face of a drying environment, at which time there was a need for societies to adjust their strategies or devolve

during phases of acute stress. A key message for policy makers is that such conditions might be on the horizon in the Middle East in the near future, because the "perfect storm" of climate drying and population dynamics, together with conflict, may result in changes to human resilience leading to a phase when sustainability will be severely jeopardized.

Wilkinson, Patrick (University of California, Merced)**[139] *The Use of Caves in Haitian Vodou***

Haitian Vodou is a syncretic religion that combines elements of West African beliefs and indigenous Taino culture overlaid onto a rigid framework of forced Catholicism. One aspect of the religion that has not been investigated is the modern use of caves as a specialized location for various types of rituals, each having a specific purpose. This poster will discuss the use of both ethnographic and archaeological investigative techniques to differentiate the various purposes of cave ceremonies and attempt to determine whether different areas within the caves are associated with specific aspect of the religion, with emphasis on the ephemeral material remains left behind by Vodou practitioners. These material remains include cave iconography, ritual deposits, and ceremonial paraphernalia belonging to both practitioners and adherents.

Willems, Willem (Faculty of Archaeology, Leiden University)**[86] *Discussant***

Willer, David (University of South Carolina/University of Kansas), Yamilette Chacon (University of South Carolina), Richard Chacon (Winthrop University), Pamela Emanuelson (University of North Dakota) and Danielle Lewis (University of South Carolina)

[288] *From Influence to Power: The Path through Chiefdoms to the Emergence of the State*

States did not grow directly out of egalitarian societies: between those two social types are found an array of social structures that have come to be called chiefdoms. Whereas some chiefdoms are ranked and organized by status-influence relations, the most complex of them are stratified with organized power structures. In this paper we propose a theory to explain the evolution of social complexity in chiefdoms. Chiefdoms evolve in a series of steps in which old institutions that have failed are displaced by new ones that fail in turn. As a result, the structure evolves from one based on status-influence to one based on coercive power. Our analyses of these changes are based in part on the application of social theory that has been experimentally tested.

Willhite, Brent [44] see Fernandez, Andrew

Willhite, Brenton (University of Missouri), Richard Kennedy (University of Missouri), Todd VanPool (University of Missouri), Christine VanPool (University of Missouri) and Gordon Rakita (University of North Florida)

[44] *Stone Tool Production in the Medio Periphery: Analysis of Debitage from the 76 Draw Site (LA 156980)*

Thousands of flaked stone artifacts have been recovered from the 76 Draw Site in Luna County, New Mexico. These artifacts were analyzed with regard to formal attributes (including presence or absence of a single interior surface, cortex, platform morphology, and margin morphology), in conjunction with mass analysis techniques. These data suggest that the inhabitants of 76 Draw reduced locally available material through generalized core reduction with hard-hammer percussors. Additionally, fine-grained materials are reduced more intensively than coarser grained materials. Raw material choice and artifact morphology across the site are also documented.

Williams, P. Ryan [19] see Piscitelli, Matthew

Williams, Kimberly (Temple University)**[67] *The 3rd Millennium B.C. Mortuary Landscape of Dhank, Oman: Evidence of Transition between the Hafit and Umm an-Nar Period***

On the Oman Peninsula, the shift from single or small-order multiple interment tower tombs (Hafit-type cairns; ca. 3100-2700 B.C.) to large, finely built, large-order communal tombs (Umm an-Nar tombs; ca. 2700-2000 B.C.) is not well understood. This "Hafit - Umm an-Nar transition" relies on a simple tomb type dichotomy that does not account for variation in these tomb forms or provide a framework to understand why this change occurred. Recent work at several necropoles near Dhank, Oman has begun to shed light on this transition. This paper will explore the application of a more nuanced classification of the 3rd millennium B.C. tombs in this region and compare this approach with the current simple Hafit/Umm an-Nar dichotomy in order to learn more about the development of the mortuary landscape in this rural

location in northwest Oman. We will present evidence of differential placement on the landscape, intermediate architectural elements, and mortuary rituals unique to a transitional tomb form which we assert is evidence of a gradual process of change between the development of the Hafit and Umm an-Nar tomb forms and that reflects social change during the 3rd millennium B.C.

[67] Chair

Williams, Justin (Washington State University) and Matthew Landt (Alpine Archaeological Consultants, Inc)

[77] *Colorful Interpretations: Innovative Uses of MAN Analysis in a CRM Setting*

Minimum Analytical Nodule (MAN) analysis is an effective method of classifying the lithic raw materials used at a site. A modified version of MAN analysis was applied to the Aught-Six site (5MF3006) in northwestern Colorado. Instead of assigning artifacts to MAN groups en masse as suggested by Larson and Kornfeld (1997), each lithic artifact was assigned to a MAN during the course of the normal lithic analysis. This requires that each artifact be described and coded in an ever growing list of MANs. This modified version of MAN analysis is less time consuming, and removes the necessity of labeling each artifact. The spatial mapping of MANs, and the identification of same-MAN clusters, within temporally discrete components could represent single flint knapping events. These single MAN events highlight lithic reduction strategies at the Aught-Six site. Results from the Aught-Six site suggest that MAN analysis performed one artifact at a time can elucidate trends which help to better understand the lithic technological organization at a site.

Williams, Mark (University of New Mexico), E. James Dixon (University of New Mexico), Dale Croes (Pacific Northwest Archaeological Services and Wash), Kelly Monteleone (University of New Mexico) and William Taylor (University of New Mexico)

[160] *Preliminary Excavations at Labouchere Bay, Prince of Wales Island, SE Alaska*

Excavations and sea level studies conducted at Labouchere Bay on Prince of Wales Island, Alaska during the summer of 2013 (NSF OPP 1108367) provide new evidence of ancient people's use of ecologically rich paleoshorelines. The Labouchere Bay site comprises several components including a waterlogged clam bed dating to 10,730 +/- 30 cal BP (9490 +/- 40 14C BP, Beta-325353), a raised beach deposit with chipped stone flakes and cores, and several rock shelters with associated shell middens on adjacent terraces. A primary focus of this research is to address people's use of coastal resources in response to rapidly changing sea levels.

Williams, Travis (University of Michigan) and Andrew Gurstelle (University of Michigan)

[171] *Shabe Settlement Dynamics: Archaeological Site Distributions in West Africa during the Transatlantic Slave Trade*

This research presents the distribution of archaeological sites in the southern half of the Shabe kingdom, a precolonial African polity in central Bénin. Sites were recorded during field research conducted by the authors in 2012 and 2013. The analysis of artifacts collected from these sites complements geospatial and environmental data to create settlement patterns and reconstruct economic networks in the Shabe kingdom during the 16-19th centuries. Though some goods associated with the transatlantic trade were taken up into Shabe communities soon after European merchants set up along the Bight of Benin, most sites lack artifacts with clear European origins or other evidence of participation in European trade. Instead, Shabe settlement patterns and economies are oriented toward regional, rather than global, networks. It is these regional networks that will be explored.

Williams, Patrick (Chicago Field Museum) and Donna Nash (University of North Carolina - Greensboro)

[203] *Wari Burial Practices at Cerros Baul and Mejia*

We examine burial practices and human body part interments at Wari affiliated sites on the southern frontier in order to understand how practice represents the expression of identity and affiliation among the diverse occupants of the Baul colony. By comparing the similarities and differences in mortuary practice both within the colonial context and with neighboring and distant Tiwanaku and Wari groups, our goal is to provide insights into the construction of identity at the nexus of state boundaries. We review the types of interments in the colony, characteristics of the deceased, and differential mortuary treatment in distinctive contexts to illuminate the range of mortuary traditions present in the dataset. We then examine this diversity in light of broader Middle Horizon practices.

Williams, Eduardo (COLMIC)

[254] *Social Change and Cultural Continuity among Tarascan Potters: A Case Study in Huáncito,*

Michoacán, Mexico

How and why do ceramics and their production change through time? Following the perspectives of Dean Arnold, this study tries to answer these questions by tracing social change among potters and changes in the production and distribution of their wares in Huáncito, a Tarascan Indian community located in the Cañada de los Once Pueblos (Michoacán, Mexico). During a period of over 20 years the author has witnessed changes in the families of artisans and the evolution of a ceramic style on a household, community, and regional level. The structural modifications and patterns of cultural continuity discussed in this paper offer a model for ethnographic analogy and archaeological interpretation. This study bridges the gap between archaeology and ethnography, using the analysis of contemporary pottery production and distribution to generate original theoretical explanations for archaeologists working with pre-Hispanic pottery assemblages.

Williams, Alexandra, Anna Marie Prentiss (University of Montana) and Richard Sattler Jr. (University of Montana)

[290] Ethnography and the Interpretation of Ancient Socio-Political Structure on the Plateau
Ethnographies provide vital clues to understanding socio-economic and political structures in more ancient societies. However, ethnographies can also be highly misleading often due to the impacts of Colonial histories. In this paper we examine incongruences between the ethnographic and archaeological records of Plateau groups during the Colonial period with a focus on the Middle Fraser Canyon. We compare the Plateau record to other colonial histories, including the Southeast (Creek and Seminole) and western Arctic (Nunamiut), to develop new frames of reference for interpreting the more ancient archaeological record. In many cases, we recognize inherited social structures that lack strong material manifestations, for example, among the Creeks we recognize social categories for hereditary elite descendant from deities within otherwise more egalitarian social arrangements. Among the Nunamiut of interior Alaska, there are umialgich (or elite boat-owner/whaling captain) statuses reflecting ancestry on the coast. Similarly, Plateau ethnographic sources describe a variety of chiefly and commoner statuses within largely egalitarian groups, hinting that at some point prior to European contact, groups may have indeed been more complexly integrated. We explore the implications of these thoughts for interpretation of the Middle Fraser villages during the late pre-Colonial period.

Williams, Tom (Texas State University), Wilson Crook (The Gault School of Archaeological Research) and Charles Speer (University of Texas at San Antonio)

[318] Chert Provenance Studies from the Gault Site (41BL323), Bell County, Texas
The Gault site (41BL323), located in Bell County (Central Texas), has arguably one of the richest Clovis deposits in North America. The abundance of lithic material thus far recovered makes it important to understand the site in its wider context, specifically raw material procurement and Clovis mobility. In this regard, it is reasonable to suggest that broad patterns in raw material use and mobility can be determined by analytical provenance studies. To test this assumption, and place the Gault site in the context of the wider Texas Paleoindian landscape, two analytical techniques, Laser Ablation – Inductively Coupled Plasma – Mass Spectrometry (LA-ICP-MS) and portable X-Ray Fluorescence (pXRF) have been used to source artifacts to their geologic outcrops. Geochemical variability in chert stems from a complex diagenetic processes, which, when combined with the post-depositional chemical enrichment / depletion in artifacts, provides unique challenges. This poster outlines a new methodological approach for the use of LA-ICP-MS and pXRF in sourcing chert artifacts from the Gault Site, specifically the diagnostic Clovis points, to some of the primary outcrops of the Edwards Plateau. By combining two non-destructive analytical techniques, archeologists have the potential to study mobility and procurement patterns during the Clovis occupational horizon.

Willis, Mark (Blanton & Associates, Inc.)

[199] Cyberpunk on the Lower Pecos: Augmented and Virtual Realities in the Canyonlands Since 2009, Structure from Motion (SfM) 3D modeling has been actively developed and used to document archaeological sites in Texas. The techniques we have developed range from creating complex 3D models of rock art panels to detailed virtual landscapes from data captured with Unmanned Aerial Vehicles (UAV). The evolution of these techniques and their potential value to the archaeologist will be offered. Furthermore, examples of these data will be presented in an immersive setting via an Oculus Rift headset.

[107] Discussant

Willis, Mark [107] see Herndon, Kelsey

Willis, Lauren (University of Oregon) and Jon Erlandson (University of Oregon)

[320] *A Reanalysis of Fish Bone from Daisy Cave (SMI-261), San Miguel Island, California: The Evidence for Butchery*

The Daisy Cave site (SMI-261) on San Miguel Island, California, dates from ca. 11,500 to 3,000 cal BP, with various occupations throughout the Holocene. Fish were a substantial portion of the faunal assemblage in those strata dating to the late Pleistocene and early Holocene. Edible meat weight estimates indicate that fish contributed approximately 50-65% of the meat during this period. Despite the unusually high concentration of fish bone and the excellent preservation, zero cut marks were identified on the 27,403 fish bones originally analyzed from Daisy Cave. This study aims to test whether the dearth of cut marks is a reflection of current standard analytic techniques. Using results from previous experiments in fish butchery, we reanalyzed approximately 10,000 fish bones from the E-6 column sample, including unidentified fish bones and bone fragments. Although the proportion of cut marks to the overall assemblage remains relatively low, these results highlight the potential bias against butchery evidence introduced by standard analytic techniques. Without a more thorough examination of fish remains, particularly unidentified bones and bone fragments, cut marks will continue to be overlooked in archaeological assemblages.

Willison, Megan (University of Pittsburgh) and Kathleen Allen (University of Pittsburgh)

[172] *Understanding Gendered Activities from Surface Collections: An Analysis of the Parker Farm and Carman Cayuga Sites*

This research involves studying Iroquois female and male complementary tasks through the use of surface collection materials from two Cayuga sites, Parker Farm and Carman. These economic behaviors, as primarily dictated via societal gender norms, are analyzed in regards to their spatial location in order to showcase economic activity areas and create a broader conception of how the Iroquois utilized their local landscape for daily, seasonal, and yearly projects. Systematic surface collections of lithics, pottery, and bone at both sites are employed to provide intra-site and inter-site comparisons of economic activities. This research has implications for understanding the spatial dynamics of gendered tasks at Iroquois sites and the nature of site occupation.

Wills, Wirt and Wetherbee Dorshow (University of New Mexico)

[344] *Deforestation and the Chaco Economy*

The rapid growth underlying the Bonito Phase (ca. AD 840 to 1140) in Chaco Canyon, New Mexico, is widely attributed to economic strategies that were unsustainable and led to social instability and population emigration. According to prominent scholars such as Jared Diamond, Pueblo Bonito and other massive Chaco Great Houses were the products of over-exploitation of local resources that created short-term gains but ultimately left the canyon population exposed to unpredictable climate change. In particular, researchers have suggested that deforestation of the canyon for construction and fuel inadvertently destroyed agricultural fields and forced residents into a fragile dependency on long-distance exchange that collapsed during a prolonged drought. In this paper we argue instead that hypothesized deforestation is inconsistent with the empirical archaeological record and long-distance acquisition of timber was not a critical economic factor in canyon abandonment.

Wilmsen, Edwin (University of Texas-Austin)

[58] *Pots and Their Clays in interior Southern Africa ca. cal. 200-2012 A.D. as Identified by Microscopic Optical Petrography*

Potsherds in Botswana sites dated A.D. 200-1850 appear to have been made in sub-regions other than where they were found. We have employed optical petrography to analyze 304 archaeological sherds and are able to demonstrate the transport of pots within and between these sub-regions and far beyond. To do this, we have collected and analyzed clays from 181 geologic deposits from within interior southern Africa. Examples: 1. Brown-volcanic-glass fabric pots from the Chobe waterveld appear at Bosutswe in the eastern hardveld 530km to the south at AD900-1100; 2. this fabric occurs at Nqoma in the Tsodilo Hills 400km to the west of Chobe before that time, and after a 1000 year hiatus again with migrating Kavango peoples; 2. sherds with a perthitic-texture fabric distinctive of Choma-Kalomo granite in central-southern Zambia are found at Nqoma 600km to the west; 3. Khami style hornblende granite fabric pots from Domboshaba in northeastern Botswana were taken to Tora Nju on the edge of the Makgadikgadi Pans 120km away. Current potters have similar practices. All petrographic identifications were made by David Killick and Dana Drake Rosenstein. Clays were collected by me and Phenyo Thebe; potter interviews were led by Anne Griffiths.

Wilshusen, Richard (History Colorado)

[288] Early Pueblo Great House Communities and Their Leaders: Tools for Identifying the Social Networks of Leadership in Mesa Verde and Chaco

The last decade of research has revealed that the earliest "great houses" are found not in the Chaco region, but instead within the centers of ninth century Mesa Verde villages. The communities focused on these first great houses prove to be politically, economically, and demographically unstable; and by the tenth century significant population declines in the Mesa Verde region can be linked to concurrent demographic growth in the Chaco region and the emergence of the first Chacoan great houses. This second great house experiment appears to have been built on a hybrid model of two earlier patterns of community organization and leadership. Building on a proposal coauthored with Scott Ortman and Ann Phillips, I use additional evidence in this paper to demonstrate how to identify tenth century communities and community leaders in the Chaco region. Better-defined social networks that linked tenth century great house community heads may allowed for a more sustainable model of serial leadership than was the case in the ninth century Mesa Verde villages.

[18] Discussant

Wilson, Dean [18] see Clark, Lindsey

Wilson, Gregory (UC-Santa Barbara) and Brian Geiger (UC-Santa Barbara)**[110] Conflict and Community: An Architectural Analysis of a Catastrophically Burned Mississippian Village in West-Central Illinois**

The early 13th century A.D. witnessed the intensification of inter-group violence throughout large portions of the Middle Mississippian region and adjacent areas of midwestern and southeastern North America. Changes in the scale and intensity of conflict led to the nucleation of previously dispersed populations into fortified settlements. Ongoing architectural analysis of the catastrophically burned Orendorf site in the Central Illinois River Valley of west-central Illinois provides the opportunity to investigate this dynamic process. Our research has revealed that the establishment of compact living arrangements within the Orendorf village entailed the negotiation of new social institutions and relationships as well as the novel incorporation of traditional organizational conventions.

Wilson, Charles (Southwestern Baptist Theological Seminary)**[262] Artifacts and Architecture of Structure 6, Wolf Village, Goshen, Utah**

Structure 6 at Wolf Village, Goshen, Utah, is a surface structure with characteristics that conform to and depart from normal Fremont houses. Evidence of household activities is seen in manos, charred Indian rice grass lemmas recovered from the hearth area, and a high frequency of bowl sherds. But Structure 6 also has several unusual characteristics that place it outside the expectations of normal houses. These characteristics include Structure 6's surface architecture (as opposed to pithouse architecture), a ventilation tunnel (previously unattested with surface buildings), a thick midden deposited over the structure collapse, a number of deer mandibles deposited in the ventilation tunnel (likely deposited at the time of abandonment), and eight clay figurines and figurine fragments found in and around the structure, possibly deposited in a termination ritual. Examining the artifacts and architecture of Structure 6 together suggests that what sets this adobe-walled building and its contents apart most is not the evidence of how the building was used, but how the Fremont walked away from it. Structure 6 was probably home to an individual of special status, and possibly served as a communal integrative facility.

Wilson, Jeremy (Indiana University-Purdue University, Indianapolis), G. William Monaghan (Indiana University), Erica Ausel (Indiana University), Matthew Pike (Purdue University) and Gary Macadaeg (Indiana State University)**[266] Mound Construction and the Built Landscape: Results of the NSF-REU Research on Earthworks at Angel Mounds, Indiana**

Our NSF-sponsored REU focused on built landscapes, particularly earthworks, at Angel Mounds, a Mississippian town in southwestern Indiana. Results offer insights about use, failure, erosion and rebuilding of Mounds A and F, as well as seismic activity in the midcontinent. Closely spaced, solid-earth cores collected from Mound A in 2013 (and earlier research) show that its "upper platform" was built around AD 1080-1100 by stacking >60,000 m³ of overturned turf blocks and basket loads within 10 years. Subsequently, Mound A underwent significant slumping and sheet-washing before the "lower platform" was constructed. The lower platform was expanded at least twice, but also underwent major episodes of erosion, slumping and repairs. Mound F was extensively excavated in 1939-42 and 1964-65 and includes two sequentially buried platforms ("Inner" and "Primary"). The only intact profile left after 1965 was reexamined in 2013 and revealed details about the Inner Mound and human activity on the premound surface. Additionally, liquefied sand was likely injected into the Inner Mound fill during a

significant, post- AD 1100 earthquake. Forthcoming OSL/AMS ages from both mounds will improve the chronology and our understanding of premound structures and cultural activity, initial mound construction timing, and seismic events at the site.

Wilson, Jeremy [266] see Monaghan, George

Winburn, Amanda, Larisa DeSantis (Vanderbilt University) and Tiffiny Tung (Vanderbilt University)
[103] 3D Dental Microwear Analysis of Maya Elites from Cancuén, Guatemala

Microscopic wear patterns on teeth are commonly used by paleontologists to analyze diets of animals; their application in bioarchaeological studies has been less frequent. This study uses dental microwear texture analysis (DMTA) to quantify microwear in three dimensions on the molar teeth of Maya elites from the Classic site of Cancuén (Petén, Guatemala), who died when the city was attacked and defeated in 799 A.D. Dental replicas of a polyvinylsiloxane impression material were prepared and hardened with an epoxy resin and hardener; these replicas were scanned in three dimensions in four fields of view and analyzed with SSFA software to characterize the tooth surfaces in terms of complexity, scale of maximum complexity, anisotropy, heterogeneity, and textural fill volume. Microwear provides insight into ingestive behavior during the final weeks of life by distinguishing between ingestion of hard, soft, and tough objects; these results demonstrate the usefulness of this method in understanding aspects of diet shortly before death. Preliminary results suggest that Maya elites were consuming or processing brittle foods. Further, we discuss how using dental microwear analysis in conjunction with carbon and nitrogen stable isotope analysis of bone and teeth can provide a more comprehensive understanding of diet across the life-course.

Winchell, Frank

[58] The Butana Group and Its Independence from the Central Nile Valley and Predynastic Egypt in the 4th Millennium BC: The Rise of the Eritrean-Sudanese Lowland Culture

In the far reaches of the eastern Sahel in Sudan a ceramic-bearing culture group, known as the Butana Group, arises from a more generalized and widespread Late Mesolithic tradition associated with the Central Nile Valley and northern Africa at the end of the 5th millennium BC. Within a span of some several hundred years, the Butana Group emerges as a distinct culture from the Central Nile Valley at the same time the Egyptian Predynastic cultures begin to dominate the Lower Nile Valley and into Nubia. In contrast to Nubia and its interaction with ancient Egypt, the Butana Group develops into an independent culture, more oriented to the Horn of Africa, may have developed incipient cultivation of native African cereals such as sorghum, and is essentially the formative development of a Eritrean-Sudanese Lowland culture by the first half of the 4th millennium BC. This Eritrean-Sudanese Lowland culture may have been part of the region known to the Dynastic Egyptians as the land of Punt.

Winchell-Sweeney, Susan [211] see Lothrop, Jonathan

Windingstad, Jason (Statistical Research, Inc.), John Hall, Jesse Ballenger and Robert Wegener

[210] Geochronology of Luke Solar

The nearly contiguous 46-acre footprint of the Luke Solar project area housed a shallowly stratified middle and late Archaic archaeological record associated with a laterally complex mosaic of distal bajada alluvial fan deposits. One of the primary objectives of the geoarchaeological analysis was placing this important archaeological record into a time-stratigraphic framework. The complex nature inherent to alluvial fan environments, however, makes correlation across space difficult if not impossible without some form of independent age control. One hundred and twenty radiocarbon dates from geologic and cultural contexts along with the detailed description over 200 profiles, exposed in mechanically excavated trenches, allowed us to place site deposits into five major geologic units. The chronostratigraphic model indicates site occupations were contemporaneous with a major period of fan deposition between 4500-4000 14C yr BP and with multiple fan aggradational episodes dated between 2900-1300 14C yr BP. Regionally, the periods of active fan deposition at Luke Solar correlate with other dated alluvial fan and paleoflood deposits in the Southwest suggesting climate change as a major driving mechanism for both geomorphic and prehistoric cultural shifts.

Windler, Zach [326] see Sharma Ogle, Mini

Windy Boy, Alvin [77] see OBoyle, Robert

Windy Boy, Sr., Alvin J. [50] see Bello, Charles

Winemiller, Terance (Auburn University at Montgomery) and Heather McKillop (Louisiana State University)

- [154] *Using GIS and GIS 3D to Reveal the Cultural and Natural Landscapes of Ancient Maya Salt Works with Wooden Buildings Submerged and Preserved by Sea-Level Rise*

In this paper, we describe the methods we used to transform and integrate data collected at over 100 inundated archaeological sites in Paynes Creek National Park, Belize into a modern geographic information system. The Paynes Creek sites were salt works where brine was evaporated in clay pots over fires, an activity which took place indoors on a massive scale. The wooden buildings were perfectly preserved in mangrove peat below the sea floor. Our data include geographic locations and attributes for over 4,000 preserved wooden posts, associated artifacts, core samples, and the results of sonar mapping in selected areas. Data are based on underwater survey, mapping, and excavation. The locations of wooden posts were mapped with a laser total station and processed in a traditional GIS environment. Point features representing wooden posts were converted to raster area features and extruded above existing bay floor levels in a 3D GIS environment. Post diameters were subsequently used to determine function and reconstruct structures as they might have appeared during the Late Classic period (A.D. 600-900). The methods we developed can be adapted to solve a variety of archaeological problems and provide 3D renderings of relic cultural landscapes.

Winemiller, Terance [190] see Ochoa-Winemiller, Virginia

Winstead, Christy [42] see Hoffman, Amy

Winstead, Christy (University of North Texas) and Amy Hoffman (University of North Texas) [42]

Mesa Verde's Great Drought, Faunal Remains and Great Kivas

There is sufficient evidence that the Great Drought (A.D. 1276-1299) in the Mesa Verde region of the American Southwest affected the lifestyles of Ancestral Puebloan people. However, the impact of the drought on Ancestral Pueblo religious ceremonies has received less attention. We examined the faunal assemblages of two great kivas in the Goodman Point Pueblo Unit in southwest Colorado. The faunal assemblages we compared were excavated from a great kiva (5MT16805) decommissioned before the drought (1260s) and a great kiva (5MT604) abandoned toward the end of the drought (1280s). Comparative analyses of taxonomic abundance and species richness of the two great kiva assemblages demonstrated changes from a turkey dominated, low species richness to a cottontail dominated, higher species richness. Our results suggest that the people of Goodman Point switched from using turkey to rabbit in ceremonial contexts in response to the Great Drought. Ethnographic evidence leads us to believe that this transition to rabbit use in great kiva ceremonies has been maintained until historical times by some Pueblo descendants.

Winter, Amos [17] see Rivera-Collazo, Isabel

Winter, Jacob (Washington University in St. Louis)

- [20] *Implementing Geoarchaeological Methods to Explore Site Formation Processes of Pastoralist Occupations in Eurasia*

Throughout Eurasia, ephemeral habitation sites occupied by pastoralists have notoriously eluded archaeological detection. This paper aims to distinguish cultural versus natural agents of deposition and evaluate site stratigraphy. Geoarchaeological methods are implemented to understand the relationships between climate, sedimentation, pedogenesis, and anthropogenic activity. Geochemical signatures and site formation processes are analyzed in the mountains of Uzbekistan and Kazakhstan to determine if recovered data represent in situ pastoralist occupations.

Winter, Thomas, Anna Marie Prentiss (Department of Anthropology, The University of Mont), Matthew J. Walsh (Department of Anthropology, The University of Mont) and Kristen D. Barnett (Department of Anthropology, The University of Mont)

- [193] *Phylogenetic Analysis of the Arctic Small Tool tradition: Implications for History and Cultural Macroevolution in the North*

Phylogenetic analysis in archaeology offers scholars the tools for rigorous examination of hypotheses concerning cultural evolutionary process ranging from the modern era back to ancient times. Addressing evolutionary questions may also provide insight into the history of particular groups of people. The Arctic Small Tool tradition (ASTt) appeared in the western North American Arctic shortly after ca. 5000 B.P. and

is considered to be associated with a human group broadly identified as the "Paleoeskimo" people, who eventually moved into the Canadian Arctic and Greenland. Significant debate exists regarding the origin of the ASTt (whether Siberia, Primorye, or Southwest Alaska?), the nature of ASTt variability, and its associated evolution. This paper presents a phylogenetic analysis of cultural macroevolution associated with the ASTt. We address a range of hypotheses regarding cultural origins, divergence, and cultural evolutionary process. Artifact and feature data are derived from a range of sites potentially including those associated with the Malyshovo Culture of Primorye, Bel'kachinsk culture of eastern Siberia, Denbigh Flint Complex of NW Alaska, Brooks Gravels, Russell Creek, and Margaret Bay phases in SW Alaska, Pre-Dorset in the Canadian Arctic, and the Independence I and Saqqaq phases of Greenland and the Canadian High Arctic.

Winterhalder, Bruce (Anthropology, UC Davis) [194] Discussant

Winterhalder, Bruce [316] see Atwater, Chloe

Winter-Livneh, Rona, Tal Svoray (Prof.) and Isaac Gilead (Prof.)

[65] Shape Reproducibility of Prehistoric Dwellings in the Southern Levant (Israel)

Different attributes of structure such as shape, size, material and decoration have significance beyond their immediate function. They provide invaluable information about social aspects of past societies, as well as evidence concerning modes of adaptation to environments, changes in population size, technology and subsistence economy. While attributes such as size can be measured, and therefore objectively compared between structures, the comparison of shapes between structures is based on subjective observations. This presentation introduce a new method, Shape Reproducibility (SR), based on objective computerized procedure for analyzing the similarity between shapes of ancient structures. Matlab and GIS platforms are used for this analysis. Applying this method to settlement data of the Chalcolithic period demonstrate that in the main cultural Chalcolithic entity, the Ghassulian, the architecture of different sites could not be distinguished from one site to the other. In addition, we demonstrate that the architecture of the Chalcolithic sites in the Golan Heights is homogeneous and significantly differs from other Chalcolithic sites, while Ghassulian intra-site variability is higher. In comparison with Arad, however, this variability is relatively low and limited. These results suggest that status differentiation or hierarchical social organization cannot be indicated from Ghassulian architecture.

Winter-Livneh, Rona [117] see Hulse, Eva

Winzenz, Karon (University of Wisconsin-Green Bay)

[164] The Painted Sky Bands of the Maya and the Textile Domain

The skybands (celestial bands) on San Bartolo's Late Formative murals provide the framework for an examination of those painted on Late Classic vases. This study supports the hypothesis that processes and structures associated with textile techniques were the likely source for both the template and specific symbols found in these registers. Although humidity in the Maya region has destroyed all but a small sampling, weaving and fiber technologies were likely the primary carriers of symbols used to express core religious concepts of the early Maya before the transition to sedentary life. The conceptual and iconic relationships between celestial bands and the technologies of weaving, lashing, knotting, and bundling created a symbolic vocabulary in which a template from the textile domain was transferred to the cosmological domain. Moreover, these techniques were practiced by all levels of society and their symbolism would have been universally understood. Today, the use of weaving and spinning metaphors for cosmic creation continues among more traditional descendants.

Wismer-Lanoë, Meredith [206] see Reynolds, Cerisa

Wismer-Lanoë, Meredith (University of Iowa)

[320] Subsistence Practices in the Tallgrass Prairie: A Re-analysis of the Rainbow Site (13PM91) Faunal Assemblage

The Rainbow site (13PM91) is a multicomponent Woodland site located in northwest Iowa, within the tallgrass prairie of the Midcontinent. Salvage excavations conducted by the Luther College Archaeological Research Center in 1978, and later reports by the Iowa Office of the State Archaeologist, revealed the significance of the site for understanding human-environmental interactions within the Woodland period. Today the site remains one of few examples within the region for Woodland period habitation sites containing substantial faunal remains. The current study is a re-analysis of the faunal assemblage using modern quantification methods. In addition to diet breadth analyses, an emphasis is

placed on reconstructing subsistence practices using skeletal part frequencies, degree of fragmentation and burning, as well as presence of cut-marks. Taphonomic damage is recorded and used to evaluate the potential for non-anthropogenic impacts on the assemblage. The Rainbow site (13PM91) offers a significant source of information regarding Woodland subsistence practices and is also valuable for understanding the long term subsistence trends that eventually resulted in the adoption of large-scale agriculture in the region.

Witmore, Christopher (Texas Tech University) [159] Discussant

Witt, David (SUNY Buffalo)

[56] *The Study of Borders and Frontiers and Their Role in Chacoan Hegemony*

The study of borders, boundaries, and frontiers has been approached by archaeologists and other social scientists in various regions of the world, including the American Southwest. These terms do not indicate mere lines in the ground, but zones of interaction through which people, goods, influence, and even control, extend in both directions to various degrees. This interpretation allows for the incorporation of concepts such as hegemony, which is the predominant influence in ideological, political, military, and/or economic matters exercised by one society over another. Addressing these concerns, this paper will present a history of the theory and methodology used to study such phenomena, as well as provide examples of more modern, theoretically advanced approaches. Finally, the expansion of the Chacoan system will be broadly discussed in this light, and examples of hegemonic growth will be highlighted, while providing a basis for other papers in this panel.

[56] *Chair*

Witt, David [56] see Reed, Lori

Wix, Elizabeth (The University of Alabama)

[272] *Mississippian Kinship and the Organization of Koger's Island Cemetery Rows*

The assumption that Mississippian societies were exogamous and matrilineal has not been tested. This pattern of kin group organization may be examined archaeologically through biodistance studies of cranial and dental remains. This paper focuses on the Mississippian cemetery of Koger's Island to determine if average genetic homogeneity within cemetery rows at Koger's Island is greater than the overall genetic homogeneity of the population, and further, if there is greater homogeneity among females within rows than males. If confirmed, it may be inferred that kin groups were both matrilineal and exogamous. Confirming matrilineality and exogamy within this cemetery population would contribute to a growing awareness that forms of kin groups were not uniform across the Mississippian Southeast. The Koger's Island burials have been compared in terms of grave goods, age, sex, and trauma, but no prior biodistance study has been conducted to determine biological kin organization within the cemetery. Cluster analysis is used to examine overall patterning within a Gower's matrix. Clusters of individuals are predicted to fall into distinct spatial groups, indicating that individuals were interred with biological kin. Also, females within clusters are predicted to have greater homogeneity than males indicating the exogamous matrilineality expected for this Mississippian group.

Wobst, H Martin (University of Massachusetts) [284] Discussant

Wogau, Kurt [158] see Bhattacharya, Tripti

Woldekiros, Helina (Washington University in Saint Louis)

[205] *The Role of Small-Scale Border Towns in the Development of Complex Societies in the Ethiopian Highlands*

The Aksumite (150 C.E.-C.E. 900) and medieval periods were important for the development of complex societies in northern Ethiopia. Historical data and exotic goods during these two periods suggest that provisioning of highland towns and cities with lowland resources such as gold, salt, and obsidian was an important component of the economy and of increasing complexity. However, the lowland communities taking part in this interaction have never been identified or explored. This archaeological study provides artifactual and landscape-based evidence that indicates that the small-scale border towns of Agula and De'sia located between these two zones played a significant role in facilitating access to lowland resources. Archaeological survey and settlement analysis indicate that small towns were strategically located near the least-costly path to lowland resources. Zooarchaeological and paleoethnobotanical evidence suggest that these towns were not resource-rich themselves, but that they provided institutional structure and logistical support for trading routes.

Wolf, Marc [137] see Hammond, Gail

Wolf, Marc (GWE Corp.)

[191] Ancient Maya Frontiers in the Verapaz Departments of Guatemala

The archaeological sites within the Verapaz department of Guatemala exhibit an intriguing mixture of lowland and highland Maya architectural styles. The region marks the liminal zone between the traditional Maya lowlands that stretch into and beyond Guatemala's Peten and the uplands that reach toward and past modern Guatemala City and Antigua. The site of Cancuen—located along the folds of the winding Pasión River—displays a markedly lowland style of construction that stands in glaring contrast to the theorized highland stylings of sites like Raxruha Viejo, Siltzul, La Lima, and Cebol that lie a scant 12 km towards the foothills west of the Cancuen epicenter. These differences are supported by a variety of data aside from the settlement patterning of individual sites—ceramic assemblages, specialized architecture (such as palace, ball-court, shrine or temple complexes), and other conspicuous cultural indexes (i.e. stone monumentation and other dedicatory caching rituals) combine to reinforce the unique identities that collide in this frontier zone. The most obvious demarcations and hybridizations of these traditions are visible in the buildings and spatial relationships between architectural elements when comparing different sites from the region.

Wolff, Nicholas (Boston University Department of Archaeology) and Matthew Piscitelli (University of Illinois at Chicago)

[146] Reading between the Lines: Micro-Stratigraphic Analysis of Ceremonial Contexts at the Late Archaic Site of Huaricanga, Peru

This paper presents the results of geoarchaeological analysis conducted in conjunction with the recent excavation of small-scale ceremonial structures at the Late Archaic (3,000-1,800 BC) site of Huaricanga in the Fortaleza Valley, Peru. To date, little is known about the specifics of ritual behavior in the context of these distinctive architectural features. In an effort to rectify this gap in our knowledge, intact block samples were collected from sequences of superimposed floors and fills within these structures and subjected to micro-stratigraphic and micromorphological examination. The initial goal of this study is to elucidate modes of depositional practice in floor construction and fill emplacement, with particular emphasis on material selection and treatment, the timing and periodicity of depositional events, and any evidence for residue or alteration of floor surfaces that might shed light on the kinds of activities which took place within these buildings. These results in turn shed light on specific ritual practices, distinctive histories of use, and variability in the form or make-up of the structures themselves.

Wolff, Christopher (SUNY-Plattsburgh)

[325] Changing Times or Time for a Change? Dorset Technological Practices at the Stock Cove Site, Newfoundland

The Stock Cove Site of Eastern Newfoundland is a large, stratified, multi-component site. Evidence from the site suggests the largest and most intense occupation was by Dorset Paleoeshimos; however, artifacts representing antecedent groups, Maritime Archaic and Groswater Paleoeshimos, and subsequent groups, Ancestral and Historic Beothuk peoples, have been recovered in stratigraphic sequence with hints of some chronological overlap. To have such an opportunity to study historical and environmental processes at a single location is rare in Newfoundland, as it is in most of the Eastern Subarctic and Arctic, and provides us with a unique opportunity to understand cultural interaction and continuity. Within that guiding framework and context, the research presented here will focus on Dorset technological practice utilizing a historical perspective to assess the development of technological variation through time. We demonstrate that the depth of the Dorset deposits permits us to assess tool production through a long-term lens and document changes in practice and their relationship to variations in environmental and cultural conditions.

[325] Chair

Wolff, Christopher B. [325] see Miszaniec, Jason

Wolfhagen, Jesse (Stony Brook University), Katheryn Twiss (Stony Brook University), Amy Bogaard (University of Oxford) and Jacqui Mulville (Cardiff University)

[84] Moving Beyond 'The Local Range': Statistical Approaches to Interpreting Herd Management Strategies through Stable Strontium Isotopes at Neolithic Çatalhöyük (Turkey)

Despite Çatalhöyük's isolation as the only permanent settlement in central Turkey's Konya Plain throughout its Neolithic occupation (9,500-7,500 BP), paleoenvironmental reconstructions and material

cultural evidence indicate that the world of Çatalhöyük regularly extended well beyond the site's boundaries. An important aspect of that world is the landscape regularly visited by herders and their domestic flock (Henton 2012; Bogaard, et al. 2013). Stable strontium isotopic values from animal teeth reflect patterns of landscape use by herds; analyses of these values allow identification of regularly frequented areas. Stable strontium isotopic ratios ($^{87}\text{Sr}/^{86}\text{Sr}$) have been analyzed for thirteen sheep molars from chronologically and spatially diverse levels of Çatalhöyük seven previously published (Bogaard, et al. 2013) along with six new samples. Here I compare all of the Çatalhöyük sheep tooth specimens' $^{87}\text{Sr}/^{86}\text{Sr}$ ratios to landscape $^{87}\text{Sr}/^{86}\text{Sr}$ ratios to investigate trends over time in landscape use and herd mobility. I also briefly explore interpreting stable strontium isotopic analyses using maximum likelihood, a statistical technique that involves using datasets to identify parameters that best fit the data at hand. Using the Çatalhöyük isotopic ratios, I estimate the amount of time each sheep spent in more distant landscape zones and evaluate different herding system models for the site.

Wolverton, Steve [42] see Ellyson, Laura

Wolverton, Steve (University of North Texas), Miguel Giardina (Museo de Historia Natural de San Rafael, Mendoza), Matthew Fry (University of North Texas, Department of Geography), Clara Otaola (CONICET-Museo de Historia Natural de San Rafael) and Gustavo Neme (CONICET- Museo de Historia Natural de San Rafael)

[206] *Zooarchaeology and Vertebrate Taphonomy of Contemporary Goat Ranching at Puesto Toscal, Western Argentina*

The puesteros of west, central Argentina are traditional ranchers and pastoralists who live in the plains and range up into the Andes. In western Mendoza province, puesteros ranch in areas that cross several culture continua and physical environmental gradients, such as varying degrees of interaction with urban economies and differences in residential mobility related to elevation and livestock range condition.

Puestero herding lifeways vary from seasonal transhumance (to take advantage of shifting plant phenology from low to high elevation) to sedentary small ranches with large ranges in order to provide opportunities for mobility of grazing goat and cattle herds. Puesto Toscal has been occupied by sedentary puesteros for forty years, and has a series of primary and secondary midden deposits surrounding the ranch house. Analysis of faunal remains from the middens provides a record of puestero ranching and cultural adaptation.

Wolyniec, Renata (Edinboro University of Pennsylvania)

[88] *The Fall and Rise of Zahi Hawass*

Zahi Hawass, the Egyptian archaeologist, is close to a rock-star celebrity. His name is well known by the public in many countries outside of Egypt. This paper explores English speaking press coverage of Zahi Hawass since the Arab Spring demonstrations in Egypt in 2011. This press coverage focused on how he was perceived by the demonstrators and government, what Hawass thought of himself, how he was valued by the professional archaeological community, and more.

[88] *Chair*

Wong, Corinne (Univ. of Cali, Davis/Univ. of Texas, Austin) and Jay Banner (The University of Texas at Austin)

[280] *Characterizing Climate in Central Texas during the Calf Creek Period Using Speleothem Proxies*

The Calf Creek horizon (c.a. 6 kya) occurs throughout the Southern Plains and is a temporal marker. The exact timing of the period, however, is imprecisely constrained, and it is unclear whether the Calf Creek culture persisted under dry conditions or flourished during a brief wet interval. To help address these uncertainties, we present a Holocene climate reconstruction from a central Texas cave deposit (speleothem). We find that speleothem growth was fastest (50 lJm/yr) from 6.5 to 5.5 kya. During this interval, carbon isotope values and Mg and Sr concentrations increase and peak at 6.0 kya, then decrease to a low by 5.5 kya. Faster speleothem growth rates and lower carbon isotope values and Mg and Sr concentrations are interpreted to reflect wetter conditions. These results suggest that it was wet from 6.5 to 5.5 kya relative to the rest of the mid to late Holocene. Within this interval, however, conditions were driest at 6.0 kya. If the Calf Creek period was centered at 6.0 kya, then it is likely that the climate during this period was at the driest point of an interval that was wet relative to the rest of the mid to late Holocene.

Wood, Brian [16] see Raichlen, David

Wood, Catharine

[94] *Charity on the Fringes of the Medieval World: Skriðuklaustur, A Late Medieval Priory-Hospital in Eastern Iceland*

The aim of this study is to understand how the medieval Western European model for the charitable monastic practice of the care for the poor, sick and infirm, was adopted in Iceland at Skriðuklaustur, a late medieval Augustinian monastery. The research was conducted by utilizing a combination of archaeological and historical cross-cultural research supported by the social theory of structuration in order to create a context in which to address the issues and questions concerning the archaeological and architectural features of Skriðuklaustur that have been used to ascribe the role and function of the monastery within medieval Icelandic society.

Wood, W

[239] *The Lincoln Area Office and the Upper Missouri River Basin*

Lincoln, Nebraska was chosen as the headquarters for the Missouri River Basin Surveys because of its central location and the offer of office space at the University of Nebraska. Between its onset in July 1946 and mid-1969, archaeologists from that office carried out excavations throughout the Missouri Basin, cooperating with ten state and local entities as they did so. Nearly 100 major excavations were conducted in sites along the Missouri River, and numerous others on its tributaries. The results of this work provided the foundation for our present understanding of the prehistory of the Northern Great Plains.

Wood, Nicholas (University of Mississippi)

[260] *A Sociopolitical Perspective of Hollywood Mounds (22TU500)*

The Hollywood Mound site is a 15th century multi-mound and village center located in the Yazoo basin. The site is dominated by Mound A, a large platform mound located at the center of the site. To the east lie four boundary mounds, while it has been established that the boundary mounds were constructed prior to Mound A, the contemporaneity of the mounds is unclear. This research examined this question of contemporaneity by examining one boundary mound (BC) through excavation. Through a combination of radiocarbon dating, pottery analysis, and stratigraphic data, I address the occupation of a boundary mound to better understand the relationship between Mound A and the boundary mounds.

Woodfill, Brent (University of Louisiana at Lafayette)

[128] *Salinas de los Nueve Cerros: Production and Exchange at the Nexus of the Maya Highlands, Southern Lowlands, and Chiapas*

Salinas de los Nueve Cerros was a major economic hub at the borderlands where three different regions of the Maya world connected—the northern highlands, the southern lowlands, and Chiapas. Residents of the city exploited a large salt source in the site core during its over two millenia of occupation, exporting the finished product far into each of these regions. As a result, it is an ideal site to examine interregional communication and exchange from the rise of the first Maya cities in the Middle Preclassic period (1000-250 B.C.) through the northern highland florescence during the Early Postclassic (A.D. 900-1200).

Woodie, Daniel [336] see Travina, Anastasiya

Woods, James (College of Southern Idaho), Alejandro Pastrana (INAH), John Clark (Brigham Young University) and Silvia Dominguez (INAH)

[30] *Obsidian Sequin Manufacture at La Sierra de las Navajas, Pachuca, Mexico*

From A.D. 200 to 400, craftsmen at La Sierra de las Navajas were producing quantities of small circular sequins made from segmented obsidian prismatic blades. Finished sequins have been found far from the source at Teotihuacan, including sites in the Maya area, and they appear to be part of political relations between Teotihuacan and Kaminaljuyú, as well as Tikal and Izapa. A prehispanic bead-making workshop at the Pachuca source reveals the process of manufacture, including a unique perforating technique that has only recently been replicated by the authors. Completed specimens recovered from other sites in the area of Teotihuacan suggest these may have been associated with high-status individuals, possibly related with a warrior class.

Woods, Aaron (University of Nevada, Las Vegas)

[32] *Abandonment, Relocation, and Reorganization: The Harris Site in the Late A.D. 900s*

Recent investigations at the Harris Site have determined that its Late Pithouse period (AD 550-1000) occupation ended in the late AD 900s. In the Mimbres region, the end of the Late Pithouse period is marked by important changes in settlement that are defined by a general abandonment of pithouses and

the development of above-ground pueblos. The succeeding Classic Period (AD 1000-1130) settlement pattern reflects a strategy of placing pueblos directly on top of Late Pithouse period villages. The Harris site is one of the few exceptions to this, as no Mimbres Classic Pueblo was ever built on top of it. The nearest Classic Period pueblos to the Harris Site are the Stewart and Ewell Ranch pueblos. The lack of a Classic Period pueblo directly on top of the Harris Site and the close proximity of Stewart and Ewell Ranch pueblos raise questions regarding the abandonment of the Harris site, community relocation and reorganization, site location preferences, and land tenure. Results of archaeological investigations at Stewart and Ewell Ranch Pueblos are presented and used to make inferences regarding the post-Pithouse period occupation of the Harris Site and the surrounding area.

Woods, Aaron [66] see Toney, Elizabeth

Woods, Julie (University of Massachusetts, Amherst)

[328] *From Nichewaug to Petersham: Evolving Land Use and Cultural Landscapes in a New England Forest*

Nichewaug was a densely forested land of many rivers, ponds and lakes, located in the rolling hills of Central Massachusetts. This area falls within the traditional territory of the Nipmuc people. As the Massachusetts colony expanded westward, settlers were encouraged to turn the forests into farms and develop new local and regional industries thus improving “unimproved” lands, controlling waterways, and threatening thousands of years of sustainable land use. This paper shares the story of changes seen in the forest ecology and cultural landscapes at Harvard Forest in Petersham, Massachusetts through the 19th century as seen through the lens of archaeology.

Woollett, Jim (Université Laval), Céline Dupont-Hébert (Université Laval, Centre d'études nordiques), Guðrún Alda Gísladóttir (Fornleifastofnun Íslands), Uggí Ævarsson (Minjavörður Suðurlands) and Natasha Roy (Université Laval, Centre d'études nordiques)

[29] *A Boom and then a Bust in a Northern Icelandic Community: The Svalbarð Estate Circa 1200 to 1477 A.D.*

Through five seasons of fieldwork, the Archaeology of Settlement and Abandonment of Svalbarð project has sought to examine settlement patterns and economic practices in the community associated with the estate of Svalbarð (Þistilfjörður, north-east Iceland), over a period of approximately 1000 years. Work to date points to the 13th to 15th centuries as a period of particularly important social and economic change. Notably, the Svalbarð church farm appears to have been expanded while some of its neighbours, poor and not so poor, were enclosed or abandoned. At the same time, sheep herding, fishing and marine hunting activities were all of increasing importance across the Svalbarð estate community. Results of ongoing archaeological research at the sites of Svalbarð and Hjálmarsvík will be presented to contrast economic trends at neighbouring farms after circa. 1200 AD. Long-term trends in settlement will be discussed through the results of a complete survey of auxiliary farms, shielings and other installations. While the influence of climate change processes on tenancy and land use patterns is clear in this study, it also seems likely that the survival of individual farms had as much to do with their role within community-scale social and economic networks as with local-scale ecological viability.

Wopschall, Kayla (University of Washington)

[223] *Pygmy Hippos of Cyprus: An Interdisciplinary Approach to Understanding Late Pleistocene Megafauna Extinctions*

The cause for Late Pleistocene megafaunal extinctions is hotly debated, with arguably two main competing contributors- humans and climate change. Within this debate, island extinction events are frequently used as the foundation for understanding the mechanisms of their continental counterparts. While islands make for a great ‘natural laboratory’ for studying extinctions, many of these events are Holocene in age; focus on avian species, not mammals; and/or have poor chronological control, complicating correlation between the mechanisms for extinctions in these island examples and large mammals in the Late Pleistocene. Here we evaluate the potential impacts on the extinction of a large endemic mammal, the pygmy hippopotamus of Cyprus, from the Late Pleistocene with excellent chronological controls. The entire assemblage of this species is evaluated through relative skeletal abundance, demographics and distribution of burnt bone at the archaeological site Akrotiri Aetokremnos. The results of these analyses, in combination with paleoenvironmental data from the region, are used to address the relative impacts of human hunting, introduced competitors and/or climate change on this species’ extinction. This event is then discussed within the context of the larger debate over Late Pleistocene megafaunal extinctions, and of the relative impacts of humans and climate change.

Worley, Katrina (American River College)

[336] *The Interpretation of Carbonized Textile Fragments from Partial Cremations in California*

California Indian populations utilized a variety of funerary practices, including cremation. Bodies prepared for cremation were often tied in a fetal position and wrapped with mats and other perishable materials. The process of burning and then smothering such funerary bundles as part of the burial ritual can lead to the carbonization of these materials. While textiles rarely preserve in the archaeological record, the process of carbonization can enhance their survival. The carbonized fragments are extremely fragile and brittle, typically have lost any indication of original color, but can retain details of their underlying structures and construction techniques. Even in this highly fragmentary state, it is possible to collect significant information about the textiles and other perishable artifacts that these fragments were once a part of. Archaeological collections often contain such specimens of "burnt basketry" that in many cases have never been adequately examined. This presentation will cover examples of such carbonized fragments, how they were interpreted, and show reproductions of some of the structures used.

Worman, F. Scott (Missouri State University), Patrick Hogan (Office of Contract Archeology, University of New Mexico) and Alexander Kurota (Office of Contract Archeology, University of New Mexico)

[87] *Burned and Blown Away: Hearth-Mound Sites at White Sands National Monument*

Recent research at White Sands National Monument highlighted the central role of geoarchaeology in a program of research that also integrated remote sensing, survey, and excavation in an effort to understand a complex archaeological record. The unique geology of the dunefield provides clues about the ages of sites, and geoarchaeological research helps to reveal both the landscape context when they were occupied and the resources that drew people to the area in the past. The study also has significant implications for understanding site formation processes – both those that lead to preservation and the processes that determine the trajectory of decay and eventual destruction of the traces of past occupations. The gypsum dunefield presents unusual challenges for archaeology, and our work to overcome those challenges led to further insights that are particularly important for managing cultural resources in that environment. In addition, the data generated by our investigations are relevant to answering more narrowly geological questions. Specifically, they help to reveal the rate and timing of dune movement and the history of growth of the dunefield. Finally, there are tantalizing clues that the archaeological data might provide insight into past environmental change.

[87] Chair

Worth, John (Univ. of West Florida) and John Bratten (Univ. of West Florida)

[276] *The Materials of Colonization: Archaeological and Documentary Traces of Tristán de Luna's Colonial Fleet*

The material assemblages associated with sixteenth-century Spanish entradas in the Americas are still just beginning to be understood by archaeologists, not just as a means for tracing expedition routes across indigenous landscapes, but also as a basis for understanding the nature and consequences of these entradas. The discovery and excavation of two sunken ships from the 1559 colonial fleet of Tristán de Luna in Pensacola Bay has provided a unique opportunity to examine just such an assemblage from both an archaeological and documentary standpoint. The Emanuel Point I wreck, investigated between 1992 and 1998, and the Emanuel Point II wreck, discovered in 2006 and continually excavated to the present day by the University of West Florida, contain an extensive and well-preserved assemblage of mid-sixteenth-century Spanish artifacts. The assemblage includes not just the ships' hardware and supplies, but also portions of the cargo loaded onto the fleet for the purposes of both colonization and military exploration of the coast and interior of the southeastern United States. In this paper we compare this assemblage to the corresponding financial account records, which provide a detailed documentary inventory of all materials originally loaded onto the fleet for the Luna entrada.

Worthey, Kayla (University of Washington) and Lisbeth Louderback (University of Washington)

[207] *Patterns of Chenopodium spp. Seed Use at North Creek Shelter, Utah*

Cultivation of annual species of goosefoot (*Chenopodium/Amaranthus* spp.) for food was practiced by the ethnographic Southern Paiute groups in southern Utah (Kelly 1932-1934, Fowler 1995). Yet our understanding of the archaeological use of these plants in the northern Colorado Plateau is limited. This study documents use of these important species over time and examines evidence for *Chenopodium* spp. management at North Creek Shelter (NCS), an archaeological site in the Escalante river valley of southern Utah. NCS contains a rich macrobotanical sequence spanning the early Holocene to Proto-historic times, of which *Chenopodium* spp. fruits and seeds form the largest dietary component. Here we present preliminary results on the use of *Chenopodium* spp. by examining 1) change in *Chenopodium*

spp. abundance throughout the Holocene archaeological record and 2) concurrent morphological changes in the fruit margins and/or seed coats. To our knowledge, this is the first attempt to evaluate archaeological evidence for management of *Chenopodium* spp. in the northern Colorado Plateau. Our findings provide a local history of *Chenopodium* spp. use and an archaeological context for ethnographic data on wild plant horticulture in the region.

Wragg Sykes, Rebecca (UMR 5199 PACEA, Université Bordeaux 1), Vincent Delvigne (Université Bordeaux 1 sciences et technologies, UM), Paul Fernandes (SARL Paléotime, 272 rue du lycée Polonais, 38250 V), Audrey Lafarge (Université de Montpellier 3, UMR 5140 « Archéologi) and Jean-Paul Raynal (Université Bordeaux 1 Sciences et Technologies, UM)

[299] “The White Mountain”- Palaeolithic Exploitation of the Saint-Pierre-Eynac Silcrete, Haute-Loire (Massif Central), France: A Source-Centred Approach

Palaeolithic exploitation of stone tool sources is still often considered from a site-centred perspective: ‘living’ sites are represented as centres of resource consumption, with stone entering them centripetally. The reality of how lithic sources fitted into webs of resource use and human movements is likely to be more complex. Within landscape-scale studies, it is essential to understand the lithic sources themselves: both in terms of mapping centrifugal movement of stone away from them, and activities being undertaken at these locales. This poster presents early results from a study of the Saint-Pierre-Eynac silcrete, Haute-Loire, France. In a region of mainly granitic/volcanic geology with sparse flint, this silcrete (silicified material from pedological processes) represents an accessible, abundant and technologically-flexible resource. Lithic artefacts have previously been found at Saint-Pierre-Eynac itself, and the silcrete is present in Middle-Upper Palaeolithic sites at least 40 km away. This project therefore has two aims: 1) The first detailed study of Palaeolithic behaviour at this type of lithic source, through aerial survey, large-scale surface collection, excavation and petro-archaeology; and 2) building a robust picture of Palaeolithic techno-economic exploitation of siliceous stone within the Massif Central landscape by clarifying where the stone was transported, and how it was utilised.

Wren, Colin (McGill University) and Ariane Burke (Université de Montréal)

[201] Climate Variability and Risk: Human Settlement of Iberia during the LGM

Climate change is a potentially significant factor affecting the spatial distribution and cultural dynamics of prehistoric groups. Understanding the impact of past climate change on human populations is also key to predicting how they might adjust to global climate change in the future. Climate change is defined by changes in the mean (e.g., temperature) or changes in variability (IPCC, 2007). Previously, millennial scale climate simulations have been used to investigate the impact of climate means on the spatial behaviour of prehistoric populations (Banks et al., 2013; Davies and Gollop, 2003; Gamble et al., 2004; van Andel, 2003). The goal of this research is to investigate the effects of climate variability at a fine spatial and temporal scale on the spatial behaviour of modern human populations in the Iberian Peninsula during the Last Glacial Maximum (LGM). Using an agent-based model, we show how human populations could have developed a risk-avoidance strategy towards highly variable locations within the Iberian Peninsula, and how this shaped the pattern of human settlement in this region during the LGM.

Wren, Linnea, Travis Nygard (Ripon College) and Kaylee Spencer (University of Wisconsin-River Falls)

[309] Establishing and Translating Maya Spaces at Tonina and Ocosingo: How Indigenous Portraits were Moved, Mutilated, and Made Christian in New Spain

Maya portraiture played transformative roles in shaping ritual, political, and social dynamics of Maya society, not only in the pre-conquest period but, at least in some cases, in the colonial era of New Spain. Our presentation studies two Late Classic portrait sculptures of Tonina kings that were moved, mutilated and made Christian through their reconfiguration as baptismal fonts in Dominican parish churches of Chiapas. We argue that the reworked sculptures were complex elements of an emerging visual culture in which differing audiences, both indigenous and Spanish, were active participants. For the Spanish, these sculptures, through their disfigurement, functioned as spolia, that is, as dramatic evidence of the military conquests of their armies and the spiritual might of their evangelizing faith. For the Maya, however, these sculptures, despite their disfigurement, continued to encode messages that had been embedded in their original forms. Thus, these sculptures were sites of cultural translation that permitted the continuity of indigenous ideas and the recontextualization of newly introduced Christian rituals and doctrines. Thus, we propose, these sculptures offered their multiple audiences the simultaneous potential for change and adaptation, for conversion and intransigence, and for compliance and resistance.

Wright, Rita (New York University)

[35] Enigmatic Polities and the Indus Civilization

The varied political strategies employed in the Indus are evident in the Harappans' selection of landscapes, urban development, and the spatial practices that shaped political economy and integration. This is most evident in the regions of Sindh, the location of Mohenjo-daro, and in Gujarat, at Dholavira and its neighboring settlements. In the 1980s, Gregory L. Possehl (1982) identified eight "cultural and natural areas" that he regarded as sub-regions of the civilization that had "historical legitimacy and utility." Later, Possehl (1992, 1997) introduced the concept of domains, and he emphasized the ecological variability of river systems, climate, and environmental differences. Each of the domains corresponded to the locus of a major Indus center, and Possehl (2003:6) suggested that it "might be the case" that domains corresponded to "Harappan polities." Although Possehl's domains have been cited and mapped by Indus scholars and have been useful in identifying ecological differences, the concept has not accounted for the systems of authority that materialized into sub-regional polities. It also has failed to clarify whether the sub-polities were integrated into the civilization's political economy or were independent, source suppliers (Agrawal et al). In this paper, I suggest some solutions to these enigmas.

Wright, Holly (University of York), Paul Cripps (University of South Wales), Gerald Hiebel (Foundation for Research and Technology - Hellas) and Keith May (English Heritage)

[36] Finding the Context: A European Perspective on Representing and interpreting Spatial Data from Archaeological Fieldwork as Linked Open Data

While considerable strides have been made in representing textual information as Linked Data within the domain of archaeology, how best to represent the important spatial components associated with fieldwork has remained elusive. The use of coordinates as point data is well suited to the structure of RDF, and has been put to good use with a variety of archaeological resources, but to truly represent the way archaeologists document and interpret the archaeological record requires the inclusion of data in two and three dimensions; therefore lines and polygons. This paper will outline research currently underway in Europe looking at ways to address this issue. It will feature work by May to understand diverse field recording systems, and issues of interoperability between them, work by Hiebel and Doerr on the ontological modelling of the geospatial components of archaeological data, specifically through an alignment of GeoSPARQL with the CIDOC-CRM, and work by Cripps on the G-STAR project, developing applications to incorporate complex geometries and advanced spatial reasoning. Finally, Wright will discuss the importance of this work to making the full complement of archaeological data available for re-use, specifically from the perspective of the UK-based Archaeology Data Service, and the EU-based ARIADNE project.

Wright, Carrie (University of Oxford) and Julia Lee-Thorp (University of Oxford)

[53] The Ladies of Highfield and the Blokes from Hoy: A New Approach for Detecting Mammal Milk Consumption in the Archaeological Record

Two important stages in the early life of mammals involve milk; it's exclusively consumed during nursing and subsequent weaning is a mixed transition to solid foods. Milk is rich in calcium, thus calcium isotope ratios ($^{44}\text{Ca}/^{42}\text{Ca}$) may be a proxy for milk consumption but earlier studies lacked adequate controls. We describe a controlled study to assess the effects of milk consumption on $\delta^{44}/^{42}\text{Ca}$ values in enamel samples of modern sheep with known histories in order to identify the isotopic effects and duration of nursing. Results show a consistent 0.44-0.50‰ depletion in ^{44}Ca in milk relative to grass, demonstrating that milk is a low $^{44}\text{Ca}/^{42}\text{Ca}$ source. First and second molars show a significant mean difference, with M1's consistently depleted in ^{44}Ca by 0.18‰. These data reflect milk as the primary food during the M1's development with weaning occurring during development of the M2. Changes in the diet related to nursing and weaning, within and between molars, can be seen through the analyses of serial incremental enamel samples. Linking these results together with modern sheep management schedules to those from archaeological sites aids in identifying nursing and weaning duration in the past, and thus provides indications about past sheep management practices.

Wright, Katherine

[84] Domestication and Inequality? Households, Corporate Groups and Ground Stone Processing Tools at Neolithic Çatalhöyük and Other Early Villages in the Near East

Ground stone assemblages from early Neolithic villages in the Near East show different patterns from region to region, in social arrangements for food processing and in the use of ground stone artefacts in craft production. While there are points of comparison, the variations suggest diverse and culturally specific pathways in the development of early agricultural societies, particularly in food preparation practices. These are consistent with other data suggesting variability in plant-domestication pathways. Many questions remain unanswered about the early Neolithic: whether domestic groups were autonomous and self-sufficient; whether they had access to similar goods; whether households were competitive; whether specialization existed; and how domestic units articulated with corporate groups.

Feasting models emphasize household competition, but wide-ranging ethnographic studies show that many hoe-farming societies are egalitarian, with little material wealth, little inequality, and little wealth transmission. This paper explores these issues via ground stone assemblages from a range of early Neolithic sites across the Near East. One example is Çatalhöyük East, where analysis of 2429 artifacts from 20 buildings and 9 yards reveals a mix of egalitarian features and emerging social complexity. However, data from other Neolithic villages do not necessarily mirror the trends seen at Çatalhöyük East.

Wright, Lori (Texas A&M University, Department of Anthropology)**[126] Disability, Compassion and the Past — Thoughts from my Wheelchair**

A recent publication by Tilley and Oxenham (2011) has revived interest in the use of skeletal pathology data to make inferences regarding empathy and compassion of past peoples and cultures, as evidenced, indeed, by this symposium. Does the survival of an individual through a protracted illness or impairment evidence compassionate care or, if the remains are of sufficient antiquity, shed light on the evolution of a capacity for empathy? How reliable are interpretations of impairment and pain when based on skeletal pathology alone? Can bioarchaeologists assess well being reliably? Having spent the summer of 2013 confined to a wheelchair and unable to walk, I have had the opportunity to reflect on the issue of empathy (and pain) in the context of physical impairment, and the familial and social ramifications of individual illness in our own culture. My experience leaves me wondering why this line of inquiry keeps raising its head? At this writing, I conclude that such inferences tell us more about our own culture than about the past.

Wright, Joshua (Oberlin College)**[149] Detecting Microenvironments used for Nomadic Pastoral Habitation**

Archeological survey and environmental data are frequently of different scales. Active, modern nomadic pastoralists clearly exploit identifiable microenvironments to protect their habitations and herds. Locales identified through archaeological survey frequently match these profiles. This paper describes the detection and modeling of those microenvironmental locales as used in the present and the past. Using archaeological and ethnographic data from Baga Gazaryn Chuluu in Dundgov, Mongolia, a desert-steppe island of small- and large-scale heterogenous terrain, and drawing on environmental data of different scales including remotely sensed landcover and soils, large-scale DEM, surface hydrology and archaeological survey material, we are able to model potential seasonal shelter, flash flood survivability, visibility, and access in both current and ancient inhabited locales.

[313] Discussant

Wright, Alice [157] see Horsley, Timothy

Wright, David (Seoul National University), Steven Forman (University of Illinois at Chicago), Elisabeth Hildebrand (Stony Brook University) and Christopher Bloszies (University of Illinois at Chicago)**[186] To Fish or Cut Bait: Changing Subsistence Strategies in the Face of Holocene Environmental Changes in Turkana, Kenya**

Oscillating lake levels during the Holocene in eastern Africa reflect changes in the distribution of rainfall and resources available for human use. Between 12.0-0.1 ka, the closed basin of Lake Turkana, NW Kenya underwent 10 oscillations of >10m in absolute lake level on sub-century timescales. Recent analysis of a relict tombolo west of Lake Turkana at Lothagam shows high stands at 11.4-11.6 ka, 10.4-10.8 ka, and 6.3 ka. The Early Holocene high stands occur within a moist period of generally high and stable lake levels. The Middle Holocene high stand follows a period of generally lower lake levels and at least three >10m transgressive or regressive events. The dramatic shifts in lake level demonstrated here suggest likely fluctuations in local rainfall, vegetation, and aquatic and terrestrial fauna. Humans living in the basin would have had to adjust subsistence strategies on short notice, accommodating to physical and ecological changes in landscape and rebalancing emphasis of aquatic vs. terrestrial resources. Regression after the 6.3 ka highstand created vast plains between the lakeshore and volcanic hills that would have provided new grazing habit for terrestrial herbivores and, slightly later, incoming livestock as herding became established in the area.

Wright, Patti (University of Missouri--St. Louis) and Julie Morrow (Arkansas Archaeological Survey)**[327] Plant Exploitation Strategies Used by the Mississippian Occupants of Northeastern Arkansas**

The lowlands of northeastern Arkansas provide an interesting setting for examining crop selection strategies

and cropping systems during late prehistoric times. Between cal. AD 900 -1500, Mississippian populations occupied the Mississippian River floodplain east of Crowley's Ridge as well as the lowlands to the west. In this study, we assess intersite variability in the presence of crops such as members of the starchy seeds complex, maize, and sunflower as well as wild plants such as acorn, persimmon, and giant cane. We explore ecological and cultural variables affecting the decision to adopt and utilize these plants.

Wright, Henry (University of Michigan)**[329] Production, Exchange, and Consumption in the Uruk World**

The seemingly homogenous material inventories of Uruk settlements mask patterned variability at many levels. Variability in raw materials, production sequences, and microstyle can be used to evaluate new models of the organization of production, the social relations of producers, the exchange of objects and craftspeople, and similarities and differences in consumption. Evidence from Upper and Lower Mesopotamia, SW Iran, and SE Anatolia from the middle and late portions of the Uruk trajectory will be used in this discussion.

Wriston, Teresa (University of Nevada, Reno) and Geoffrey M. Smith (University of Nevada, Reno)**[24] The "Old Dirt" and Paleoindians of Warner Valley, Oregon**

Following in the footsteps of Jonathon O. Davis and Fred Nials, we continue our search for "old dirt" to find the earliest peoples in the Great Basin at the University of Nevada, Reno. This approach has proved enormously successful in our recent research in Warner Valley where we have discovered numerous fluted and stemmed projectile points in association with a dated recessional beach bar. Although people using stemmed points followed the pluvial lake's recession into the valley interior at the end of the Pleistocene, fluted points disappear from our record. Long periods of erosion during the mid-Holocene scoured many parts of the basin after the lake receded, but water did persist in the lowest portion of the valley, providing valued resources that drew people throughout the Holocene even as the basin's northern reaches were scoured of sediment during the Altithermal. Our geomorphological and archaeological studies have enabled us to trace Paleoindian and Archaic use of the dynamic landscape of north Warner Valley and further contribute to the understanding of early peoples in the Great Basin.

Wrobel, Gabriel [70] see Stewart, Caitlin

Wrobel, Gabriel (Michigan State University)**[335] Understanding the Multi-Scalar Complexity in Archaeological Skeletal Collections and Its Implications for Analysis**

Bioarchaeological analysis is highly dependent upon the scale of archaeological investigation. The size and nature of skeletal samples determine not only which methodological approaches are appropriate, but also provide clues useful for contextualizing biological data. This paper explores potential problems with different types of analyses that result from scalar variables not being taken into consideration. For instance, many researchers tend to treat archaeological samples as "populations" or assume that differentiation in death necessarily corresponds to meaningful social distinctions within a population in life. A case study from central Belize illustrates the variable composition of burial groups from different locations across the landscape, providing several viable explanations for differential burial treatment. In conclusion, the implications of underlying assumptions related to the scale of social units represented by skeletal collections are discussed in relation to archaeological research designs that create these collections.

Wu, Xinhua [297] see Zhang, Xu

Wyckoff, Don**[280] The Primrose and Anthony Sites: Calf Creek Base Camps and Staging Areas in Central Oklahoma**

Located in Oklahoma's Washita River drainage, the Primrose and Anthony sites represent two diverse kinds of camps frequented by Calf Creek hunter-gatherers. Situated just north of the Arbuckle Mountains, the Primrose site has yielded an array of chipped stone tools and cores, mainly of Frisco flint for which the nearest bedrock source is 50 km east. Extending along a dune covered 1st terrace, finds of biface caches, diverse kinds of cores, and broken preforms, the Primrose assemblage bears witness to intensive heat-treatment of the flint as well as gearing up for forays in several directions. In contrast, the Anthony site is approximately 115 km up the Washita drainage and is atop the high divide with the Canadian River. The Anthony assemblage is mainly broken spear points and flake tools of Alibates agatized dolomite, with well known quarries some 350 km west. The Anthony assemblage does contain

notable amounts of tools made from nearly all knappable stone used by Calf Creek groups in Oklahoma. These two intensively utilized sites offer contrastive evidence of resource use, encampment practices, and band aggregation. Artifacts scattered over the nearby landscapes of both sites attest to local foraging and hunting.

Wygala, Brian [173] see Krasinski, Kathryn

Wygala, Brian (Adelphi University) and Kathryn Krasinski (Fordham University)

[282] Late Glacial Exploration and Colonization of the Last Beringian Frontier

For most people today, the concept of being alone in the wilderness or even in a wireless dead zone is particularly frightening. But for the first Americans to enter and establish territories in the New World, being isolated in a new land may have been commonplace and even culturally engrained. Heavily glaciated during the LGM, the Susitna region of southcentral Alaska was sparsely occupied during the Late Pleistocene and may have undergone thousands of years of marginal exploration by the earliest Alaskans prior to becoming fully colonized in the early Holocene. As such, the colonization of empty landscapes by small-scale foragers has become a significant area of research in the Susitna Valley. This paper assesses the relevant colonization models as they apply to Eastern Beringia with a particular emphasis on the initial phase of the process, exploration of a new territory. Recent excavations in the middle Susitna Valley suggest the first explorers of the area arrived soon after deglaciation and lacked established trade networks and lithic procurement sources when compared to the long distance transport of obsidian that occurred in later occupations.

Wylde, Michael (University of Florida), Ellen Lofaro (University of Florida), Susan deFrance (University of Florida) and Paul Goldstein (University of California, San Diego)

[53] A Dog Burial from Rio Muerto

This presentation examines the place of the dog in the Andean society of Tiwanaku. The mummified remains of a small dog were recovered from a domestic context at the Rio Muerto site located in the Osmore River drainage of southern Peru. The Rio Muerto complex is one of several Tiwanaku settlements in the region with dates ranging from ca. 700 to 1300 A.D. Canid burials and iconography may be observed during many periods of Peruvian prehistory, with much of the material originating from northern archaeological sites. An initial overview of the history of canids in pre-contact Peru offers preliminary information from the archaeological and ethnographic records to suggest possible avenues of study focused on ancient dogs of southern Peru. Were dogs used as status symbols, pets, dedicatory offerings, or herding dogs for ancient llama caravans from the altiplano? Offerings of young camelids and dogs have been found buried beneath floors and entryways of houses at Rio Muerto M43 and at other Tiwanaku sites in the Moquegua colony. We describe the burial context of the dog mummy from the Rio Muerto site and the probable role of the dog as an indicator of status in this large Tiwanaku immigrant community.

Wylde, Michael [206] see Lofaro, Ellen

Wyllie, Cherra (University of Hartford)

[204] Reconsidering Cerro de las Mesas Ceremonial Sculpture

Classic period Cerro de las Mesas rulers decreed their power on monumental relief-carved stone, the raw material imported at great distance from the clay rich Mixtequilla. The use of stone stelae connected them with their Olmec ancestors, proclaiming Cerro de las Mesas as the inheritor of a centuries old tradition. Gradual changes in costume, gesture, signs, hieroglyphs, and symbols on these monuments document the ways that regional traditions and external influences impacted elite roles and an ever-developing cosmology. These were the last rulers of the southern Gulf lowlands to erect stone stelae; and yet Cerro de las Mesas maintained this practice for centuries. As the influence of Cerro de las Mesas waned artists of the Mixtequilla abandoned the use of stone in monumental art.

[62] Chair

Wyllie, Cherra [192] see Keeler, Peter

Wynn, Thomas

[26] The Cognitive Implications of Levallois

Palaeolithic specialists have long accorded the shift from façonné to debitage strategies an important status in the evolution of lithic technology. Epitomized by classic Levallois reduction, debitage strategies

instantiated a different approach to the task of producing useable products. Such strategies are descriptively more complex than even the most sophisticated biface reduction: descriptions of Levallois include more discrete steps, and a more complex hierarchy of steps. Does this descriptive complexity reflect the evolution of specific cognitive abilities, and if so, what might they have been? An explicit model drawn from cognitive neuroscience, that of expert performance, provides an appropriate theoretical framework for contrasting Levallois cognition with that of earlier strategies. Through this perspective it is possible to identify two specific cognitive developments implied by Levallois reduction: 1) an increase in long-term memory capacity in the guise of a greater variety of active cues and retrieval structures, and 2) an increase in working memory capacity as reflected in rapid shifts in technique. Levallois has no necessary implications for language or other semiotic behaviors.

Wynne-Jones, Stephanie (University of York) and Anne Haour (University of East Anglia)

[108] *Precolonial African trade networks and the 'Small World' paradox*

Trade is a pervasive theme in the archaeology of precolonial African societies. Control over production and the movement of objects is frequently invoked as either cause or result of the emergence of socio-political elites; yet, it is also increasingly recognised that even small-scale societies were deeply interconnected and often entangled in larger global economic trajectories. This trade, though fundamental, is rarely considered as a process, and its mechanics are often glossed based on simplistic models of down-the-line exchange or central place modelling of trade entrepôts. In this paper, we consider two areas deeply implicated in medieval trading networks, comparing the West African Sahel with the East African coast. Network theories are used to consider the dynamics of premodern trade; in particular we consider the Small World theory of interaction, suggesting that comparatively small groups of traders might have connected large numbers of people over long distances.

Wynne-Jones, Stephanie [145] see Fleisher, Jeffrey

Wysham, Lauren [119] see Blackmore, Chelsea

Xie, Liye (University of Arizona)

[297] *An Early Hemudu Social Learning Strategy Reflected by the Pattern of bone Spade Production, 7,000-6,000 B.P., China*

Bone spades crafted from water buffalo scapulae were used for rice cultivation and constructing structures in early Hemudu culture dating to ca. 7,000-6,000 BP in eastern China. These bone spades had sophisticated hafting designs that were costly to make. Surprisingly, the production of these scapular spades may not have been carried out by well-trained specialists, but by the users themselves, i.e., self-sufficient household craftspeople, through emulation. Several clues jointly led to this conclusion, including the presence of (1) technical variations at almost every stage of scapular spade manufacture that left traces; (2) high product variation reflected in morphological details regardless of similar designs; (3) unequal, low to moderate levels of manufacturing skills observed on the finished products that were used regardless of differences in quality; and (4) very little training and practice as displayed by replicated mistakes and an inadequate amount of "practice pieces." The social learning strategy of emulation may have contributed to extended long tradition of using bone spades even when raw material was in short supply.

Xiuhtecutli, Nezahualcoyotl (Tulane University)

[275] *Surrounded? Assessing the Aztec Blockade on Tlaxcallan through Surface Evidence from Tepeticpac*

This paper presents evidence for domestic strategies adopted by middle status households at the Postclassic site of Tepeticpac. Tepeticpac formed part of one of the most important altepetl of Tlaxcallan, the polity centered in the modern state of Tlaxcala, Mexico, which was never conquered by the Triple alliance of the Basin of Mexico headed by the Mexica of Tenochtitlan. The evidence recovered during surface collections from middle status terraces at Tepeticpac suggest that although the ethnohistoric sources suggest an economic block imposed on Tlaxcallan by the Triple Alliance, goods continued to flow into Tlaxcallan, as recent surface collections show the presence of artifacts proceeding from areas controlled by the Mexica and their allies.

[275] *Chair*

Yadmaa, Tserendagva [211] see Schneider, Joan

Yaeger, Jason (University of Texas at San Antonio)

[21] *Hinterland Settlement Histories, Population Mobility, and Political Dynamics in the Mopan River Valley, Belize*

Archaeologists have considered population mobility largely from the perspective of long-distance and large scale migrations, such as those documented by ethnohistory. These infrequent events can be historically momentous, and consequently they overshadow the much more frequent population relocations that happen on smaller social and spatial scales, as households and communities move to the other side of the community, polity, or valley. This paper examines the pace and shape of founding, growth, and abandonment of hinterland settlements associated with two major centers (Xunantunich and Buenavista). This comparative study allows the author to suggest that hinterland community growth often involved in-migration, and that geomorphological, economic, and political factors all structured people's decisions to move into these settlements and to leave them. The results have implications not only for understanding population mobility at smaller scales, but for understanding how the decisions of hinterland families were shaped by and also structured larger-scale economic and political dynamics.

Yamada, Kazuyoshi [158] see Aoyama, Kazuo

Yang, Dongya [160] see Moss, Madonna

Yates, Donna (Scottish Centre for Crime and Justice Research, University of Glasgow)

[273] *The Prospect of Autoregulation in the Antiquities Market: Testing and Interpreting Auction Data*

For two decades auction catalogs have provided primary sources for academic inquiry into the global trade in antiquities. However, qualitative auction catalog data is often treated quantitatively and quantitative auction catalog data is rarely tested. If auction data is to be used for market analysis it requires rigorous assessment, intuition is not sufficient. In particular, pro-trade commentators claim that buyers, fearful of antiquities regulation and repatriation requests, prefer to buy antiquities with older provenance. This is so-called autoregulation: the idea that objects which surface on the market after the signing of the UNESCO convention, or are subject to a repatriation claim, will be rejected by fearful buyers. The market favoring antiquities with older surface dates is presented as evidence that the trade can police itself and that additional (even current) regulation is unneeded. In this paper we explore the idea of autoregulation of the market using the particulars of a single hotly-contested antiquities auction: Collection Barbier-Mueller Art Precolumbian, offered for sale at Sotheby's Paris in 2013. Although we employ statistical methods to test ideas of autoregulation, we ultimately believe that many important factors involved in the sale of antiquities at auction are not captured in this analysis.

[273] Chair

Yatsko, Andrew (U.S. Navy)

[125] *Managing High Densities of Archaeological Sites on San Clemente Island through Programmatic Compliance and Modeling*

Where high densities of archaeological historic properties present conflicts with required land use for military training, there are programmatic historic preservation compliance and modeling strategies that provide opportunities to develop creative balances between federal regulatory requirements, academic research and sustaining military readiness. San Clemente Island presents a case study in the use of new approaches to predictive modeling that both sustain use of the island's operational ranges for readiness training and enhance our understanding of the island's abundant and well-preserved archaeological record.

[125] Discussant

Yaworsky, Peter (University of Utah) and Jerry Spangler (Colorado Plateau Archaeological Alliance)

[43] *An Initial Inquiry into Fremont Political Unity through the Use of Spatial Data in Nine Mile Canyon, Utah*

This project was done in collaboration with the Colorado Plateau Archaeological Alliance in Nine Mile Canyon, Utah. The research presented focuses on analyzing spatial patterns in Lower Nine Mile Canyon to investigate the nature of the political unity of the Fremont that occupied the area between A.D. 500 and 1300.

Yelacic, David

[265] *The Nature and Archaeology of Spring Lake, a Persistent Place in Central Texas*

With artifacts representing periods of occupation from Clovis to Protohistoric, and up to present, the San Marcos Springs is a persistent place on the archaeological landscape of central Texas. The unique and rich combination of biological, geological, and hydrological resources could affect the suitability of this location, and the rich, hunter-gatherer history of the region adds a layer of complexity. How did availability of resources change through time? And is there evidence of differential use and varied intensity of occupation? This poster examines the natural and cultural records of this location in pursuit of explaining what makes it a perennial choice for habitation and describing how it was occupied through the Holocene.

Yellen, John (National Science Foundation) [1] *Discussant*

Yellen, John [26] see Brooks, Alison

Yepez Vasquez, Zoila

[25] *La semántica de la imagen bilobulada en la cabeza en el antiguo hombre costeño del área central andina (Perú). ¿Una relación con el culto lunar?*

El hombre desde la antigüedad tuvo la idea de modificar y decorar su cuerpo en una diversidad de coloridas formas simbólicas; y entre las prácticas corporales de más arraigo cultural, fue la modificación cefálica. Las dimensiones de lo imaginario, de ese conjunto de imágenes y sus relaciones, constituye el capital simbólico del pensamiento humano. Este imaginario es la intersección central, que permitirá esclarecer en este caso, el problema de investigación, relativo a la significación, al símbolo y a la dimensión imaginaria del antiguo hombre andino y su práctica cultural de modificar la cabeza con una forma de imagen bilobulada. Una semántica de las imágenes, que le dio una configuración metafórica a su cuerpo, lienzo de redes simbólicas de su cosmos. La imagen bilobulada, representada en el arte con la diosa lunar y la diosa del mar, estaría aludiendo, a que ¿La cabeza bilobulada de los antiguos costeños, estaba asociada con los cultos lunares? Este es el objetivo de la presente ponencia.

Yerka, Stephen [36] see Wells, Joshua

Yerka, Stephen (University of Tennessee)

[196] *An Open Access Repository of Geophysical Survey Data for Historical and Experimental Human Burial*

While geophysical instruments are excellent tools for locating subsurface anomalies, there are inherent difficulties in using these technologies to detect and characterize human burials. The problem is linked to an inability to differentiate a burial from other environmental anomalies when detection of rock, roots or other non-burial features is regarded by others as a failed or unsuccessful search. We argue that this problem does not lie in the detection threshold but more in an unawareness of the suite of geophysical characteristics that may be unique to burials. To correct for this we construct a digital “comparative collection” of geophysical survey data to over known burials to aid in the characterization of burial related anomalies. The collection includes raw and processed geophysical survey files in a standardized open access and “Linked Open Data” format within OpenContext.org. The data publication include at least five historical (several still active) cemeteries in varying soils and surface conditions that were surveyed with one or multiple geophysical techniques including GPR, soil resistivity, and geo-magnetics. Included also in the database are geophysical surveys collected on multiple experimental human burials at the University of Tennessee Anthropological Research Facility (ARF).

[81] *Chair*

Yerkes, Richard (Ohio State University), William Parkinson (Field Museum, Chicago) and Attila Gyucha (Hungarian National Museum, Budapest)

[310] *Ditches for Defense, Deterrence, and Social Delineation: Examples from the Neolithic and Copper Age of Southeastern Europe*

Ancient earthworks have fascinated antiquarians and archaeologists alike. While often shrouded in myth, many monumental ditches and palisades have been interpreted as either fortifications or symbolic structures with astronomical alignments and “cultic” significance. While criteria used to differentiate between these two functions have changed since the time of John Aubrey, Louis Siret, and Squier and Davis, until very recently, most discussions have favored one of these two interpretations or the other. While some ancient earthworks were “vacant” gathering places located away from settlements, ditch and palisade complexes that enclose tells and villages seem to have had both defensive and social functions. Research by the Körös Regional Archaeological Project in southeastern Hungary has shown that ditches and palisades surrounding Neolithic tells and small villages from the early Copper Age exhibited some of Keeley’s universal features of defensive enclosures. These earthworks also seem to have marked the

territories of settlement-shifting agriculturalists and to have served as expressions of social segmentation and substitution in the built landscape of agropastoral tribes. The communal acts of constructing the earthworks seem to have helped integrate dispersed groups of autonomous villagers and to have strengthened the social fabric and collected memories of these early Europeans.

Yeshurun, Reuven [84] see Kaufman, Daniel

Yeshurun, Reuven (Smithsonian Institution)

[109] *Late Paleolithic Taphonomy and Subsistence in the Nile Valley: Faunal Remains from Kom Ombo (Egypt) and Wadi Halfa (Sudan)*

Data on Late Pleistocene subsistence trends and settlement patterns constitute the necessary background for studying the punctuated emergence of sedentism and food production in the Near East. While the Levant and Zagros regions figured prominently in discussions of the Broad Spectrum Revolution and the domestication of animals, the archaeological record of the Nile Valley has rarely been integrated into the picture. Salvage excavations and surveys in the Kom Ombo Plain (southern Egypt) and opposite Wadi Halfa (northern Sudan), conducted in the 1960's by Yale and Colorado Universities produced several important faunal assemblages associated with Late Paleolithic (ca. 22.5-14.5 years BP) sites with diverse lithic industries. I present the results of a comprehensive taphonomic-zooarchaeological analysis of the faunal assemblages, with the aim of first, understanding their depositional, post-depositional and collection biases and second, characterizing the latest Pleistocene economy and human ecology in the Nile Valley. The degree of reliance on big game hunting, site function and occupation intensity will be used to shed light on forager life-ways in the Nile Valley during a period of major developments across the Near East.

Yeske, Kate [83] see Whittington, Stephen

Yesner, David (University of Alaska Anchorage)

[282] *Isolation and Cultural Complexity: Key Arguments from Coastal Alaska, NE Asia and Tierra del Fuego*

Coastal Alaska and Tierra del Fuego offer insights into processes by which intellectual traditions in hunter-gatherer archaeology have linked cultural complexity and isolation. Both cases reflect the "Ultima Thule" view in which distance from major urban centers (both pre- and post-contact) is linked both with primitivism and cultural stability. This view has proved to be false. Cultural stability has been assumed in spite of both early demonstrations of significant technological change in relation to intensification of sea mammal hunting, and increasing evidence (in the Alaskan case) of exchange of material culture across Bering Strait. These assumptions were frequently made even when it became increasingly obvious that such isolationist positions could not be held in adjacent NE Asia, where diffusion of pastoralism from central Asia and horticulture from north China, along with associated technological complexes related to subsistence and warfare, was often linked to the northward movement of groups. Recent reassessment of these positions has been made possible by a greatly improved understanding of regional climate change which underlay the movements of pastoral groups and, for both coastal Alaska and Tierra del Fuego, the development of cultural complexity in times and places that encouraged population growth in resource-rich, ice-free environments.

Yezzi-Woodley, Katrina [208] see Chisholm, Linda

Ygnacio-De Soto, Ernestine [68] see Johnson, John

Yi, Seonbok (Seoul National University)

[71] *From Hang Cho to Rashaan Khad - East Asia at 40,000 B.P. and after*

While evidence suggests that the Hoabinhian industry might have appeared already by 40,000 BP in northern Vietnam and adjacent areas, markedly different assemblages are known from higher latitude areas in East Asia. In central China and Korea, Acheulian-like handaxe industries appear to have had continued even after 30,000 BP. On the other hand, evidence of 'modern' human behavior is clearly seen at pre-35,000 BP sites in eastern Japan. Also, the vast dry landscape from inner and outer Mongolia is with still characteristic assemblages so that perhaps blade industry with a hint of levallois technique had appeared there before 40,000 BP. Despite all the problems and sampling biases in the available data, such inter-regional difference seems to reflect not only the different adaptive behaviors but also the biological complexities of the inhabitants during the MIS 3 in East Asia, which are only poorly understood.

Yi, Jianping (Chinese Academy of Social Sciences)

[288] *Stratified Societies without Centralized Leadership: Yi in Southwestern China*

Before 1956, societies in the Great Liang and Small Liang mountains in southwestern China were rigidly hierarchical. "Zimo," hereditary chiefs, were the first estate. The second estate, "Nuohe," were freemen. Zimo and Nuohe were protectors of the third estate, "Qunuo". The fourth estate, "Ajia," and the fifth estate, "Gaxi," were slaves. Zimo and Nuohe possessed the majority of "the basic resources that sustain life." However, members of same estate, particularly of Zimo or Nuohe, were equal. Since the mid-Ming Dynasty Nuohe gradually drove off Zimo out of major areas, especially the central area of the Great and Small Liang mountains, and as a consequence finally only four estates were left there. Interestingly, there was never any permanent leadership in the areas dominated by Nuohe; the so-called chiefs were only temporary leaders, no more than men of prestige. Nuohe and Qunuo were organized in patriarchal clans. Important decisions were made in a variety of assemblies. Customary law was used to maintain order. Such highly stratified and strictly hierarchical societies with an unique equalitarian system within the estate are strikingly different from any societies described by Elman R. Service and Morton H. Fried.

Yoffee, Norman (UNLV UNM ISAW-NYU)

[279] *Discussant*

Yonenobu, Hitoshi [158] see Aoyama, Kazuo

Young, Chris (Eastern New Mexico University)

[10] *Travelin' Rhyolite: Sourcing Lithic Raw Material in Relation To The Johannes Kolb Archaeological Site (38da75)*

Lithic artifacts recovered from excavations at the Johannes Kolb Archaeological Site (38DA75), located near the Great Pee Dee River in Darlington County, South Carolina, provide archaeologists with information that can be used to address subsistence-settlement patterns during the Early Archaic Period in the Southeast. Preliminary analysis indicates that the predominant raw material is porphyritic rhyolite, a metavolcanic rock type known to outcrop in the Uwharrie Mountains of North Carolina, located 75 miles upriver from the Kolb site. This case study will determine whether Early Archaic people traveled great distances to obtain raw lithic material for stone tool manufacture or if they took advantage of local raw material found in cobble form in the Great Pee Dee River. Sourcing of raw stone material is critical for studies of human movement across landscapes and for detecting possible trade or exchange activities. To determine the provenance of the raw stone material, cobbles from the Great Pee Dee River, lithic debitage, and stone tool artifacts associated with the Early Archaic Period at the Kolb site will be analyzed through X-Ray Fluorescence. The results stand to contribute to a better understanding of mobility, resource procurement, and territoriality among Early Archaic hunter-gatherers in the Carolinas.

Young, Alamea [95] see Galindo, Mary

Young, Tatiana (Temple University)

[130] *Ball Courts and Political Organization during the Terminal Classic in the Cochuah Region, Quintana Roo, Mexico*

Ballcourts, arenas for displaying rulers' power, were linked to the political landscape. During the Terminal Classic Period the Cochuah Region exhibited changes in distribution of ballcourts; during this time ballcourts were constructed at tertiary sites. Construction of ballcourts in tertiary settlements suggests a change in the political nature of the ball game - the capability of low ranking sites to host ball games. This action, before the Terminal Classic Period, was only a privilege of the high ranking sites where king had his sit. A number of hypotheses can be examined for comprehending possible mechanisms behind the changes.

Younie, Ashlee (University of Nevada, Reno)

[176] *Consumption in the Mining West: An Analysis of Substitute and Complementary Goods in Aurora, Nevada*

Two historical sites located in the ghost town of Aurora, Nevada are examined to understand family and household consumption in the American West. The Levy, Kaufmann, and Fleischmann families lived in the mining town of Aurora during its many boom and bust cycles, beginning in the early 1860s. Wealthy households, their material remains indicate consumption patterns based on preference and economic factors. Analysis of substitute and complementary food goods, and ultimately purchasing power, make up this study of consumption patterns. These patterns are evidence by their faunal remains, tin cans, and

ceramics.

Yu, Pei-Lin (National Park Service--Rocky Mountains CESU), stanley bond (National Park Service Washington Archeology Office) and Marcy Rockman (National Park Service Climate Change Response Prog)

[87] Hot, Dry, Flooded, and Burned: Climate Change Science and Archaeology in the National Park Service

Archaeological sites, features, and heritage values in America's national parks are under assault from climate change. Rising temperatures and changing weather patterns generate stressors like melting glaciers and ice patches, flooded coastlines and islands, extreme fire events, and aggressive invasive species. In this paper we review large-scale steps to deal with climate change threats to archaeological resources, and the silver lining: new park-based research into paleoclimate, cultural evolution, and traditional ecological knowledge.

Yu, Pei-Lin [230] see Manning, Nikki

Zakrzewski, Sonia (Archaeology, University of Southampton)

[291] Kinship, Identity and Ancient Egyptian Bioarchaeological Relatedness

With notable exceptions (such as dental non-metric studies by Irish), bioarchaeology in Egypt has tended to focus upon one site or one aspect of health and disease, rather than the interrelationships between peoples and places. This is disappointing given the complex nature of trade routes through the area, such as the contrast between the relative simplicity of movements along the Nile Valley and the more complex point to point movements involved in the caravan routes through the desert oases. These route patterns have determined implications upon kinship networks and the social knowledge of others. By contrast, Egyptology itself is developing concepts of social identities and personhood, linked with kinship and ethnicity patterning within Egypt. The paper debates the biological aspects of archaeological identity and the interactions with the understanding of kin groupings and kin relations in a series of Egyptian skeletal samples, using both postcranial and cranial variation. Results are then linked to the excavation records, which, despite the paucity of detailed records for early excavations, demonstrate potential trends in understanding of Egyptian concepts of kinship.

Zalaquett, Francisca

[122] Sounds and Rituals in Action: Prehispanic Maya Musical Instruments

This paper presents new findings concerning the archaeological and acoustic study of musical instruments from various Maya sites in the Yucatan Peninsula. The analysis of these materials combines new theoretical perspectives with a consideration of the archaeological contexts of artifacts, their relationships with other registered materials, their acoustic characteristics and the spaces in which they may have been played. This analysis reveals varied usage patterns for different contexts such as performances, sacrifice, and burial. Included in this paper is a discussion of physical methodology, such as the use of a mobile laboratory to measure the musical instruments in a controlled space. The laboratory sound analysis focuses on the rate of occurrence of different musical intervals and tones. Sound analysis along with archaeological contextual data allow us to develop a dynamic comprehension of the use and spatial distribution of prehispanic Maya musical instruments.

Zapata, Lydia [116] see Monteiro, Patrícia

Zaro, Gregory (University of Maine)

[89] Urban Transformation and Landscape Change Surrounding the Nadin Archaeological Site in the Ravni Kotari Region of the Eastern Adriatic

In antiquity, Ravni Kotari was arguably the most urbanized region along the Dalmatian coast, and the area in general has experienced a process of urbanization and landscape change spanning more than 2,000 years. The Nadin archaeological site reflects a complex history that tentatively includes incipient urbanization in the Late Iron Age (~400-150 BC), a Roman municipium (~150 BC-AD 500) followed by Late Antiquity abandonment, a light reoccupation during the late medieval period (~AD 1000-1400), a 16th century Turkish fort, and a contemporary village. However, the archaeological study of urban change and accompanying landscape evolution in the region is still in its infancy. This paper outlines current opportunities and challenges for archaeology to contribute to a more robust understanding of long-term urban-ecological relationships in northern Dalmatia using Nadin as a point of discussion. Given the tremendous mix of environmental diversity, rich cultural history, and current economic growth and development along Croatia's Adriatic coast, the implications of such studies for contemporary land use

practices and policy development are also addressed.

Zarrillo, Sonia (University of Calgary, University of British Columbia - Okanagan)

[250] *Identifying Ancient Plant Use in Ecuador: Retrospect and Prospect*

Our knowledge of ancient plant use and management in Ecuador has benefitted greatly by the pioneering work of Deborah Pearsall. This paper will provide a retrospect on the techniques used and knowledge gained, and will then focus on recent and current studies to show how advances in sampling and analytical techniques, including ancient DNA analysis and high-performance liquid chromatography, continue to revolutionize our understanding of ancient plant use. Examples of key research from the coast, cloud forests, highlands, and Amazon lowlands that focus on ancient plants will be discussed, as well as prospects for future research.

Zavala, Bridget (Universidad Juarez del Estado de Durango) and Patricia Fournier (Escuela Nacional de Antropología e Historia)

[72] *Gazing Mesoamerica from Nueva Vizcaya: Postconquest Technological Developments and Identity among the Tepehuan and Other Indigenous Groups*

Almost all the archaeological investigations carried out to date in the northern Mexican state of Durango-Colonial Nueva Vizcaya- have focused their efforts on building basic culture history of prehispanic sites in the region. Only few research projects have considered postconquest settings as part of basic settlement pattern studies, leaving material culture largely unstudied.

As part of the "Proyecto Arqueológico Sexto" we are building a "deep chronology" of a small river valley in order to contextualize a wide range of facets of the everyday lived experience of the Tepehuan inhabitants through centuries of occupation. In this paper, we analyze technological aspects of ceramic and architectural production in order to show how the indigenous and mestizo population displayed new acquired tastes as part of an intricate process of identity negotiation after the Spanish invasion.

Zavala, Bridget [200] see Reyes, Antonio

Zavaleta Lucido, Marcos Trinidad (ARQUEÓLOGO) and Rosa Maria Flores Ramirez (Antropologa Fisica)

[189] *Reflexiones Sobre Un Panteón Prehispánico Excavado En La Ciudad De Colima*

En este trabajo se expondrán algunas reflexiones en relación a los elementos arqueológicos recuperados como producto de la excavación de una tumba de tiro y diversos entierros colocados alrededor de ella, dicha hallazgo fue producto de los trabajos de salvamento arqueológico realizado al oriente de la ciudad de Colima, en el predio denominado Parcela 12 y 19. La ponencia centra su atención en el tema de la descripción de los contextos, las figuras, los restos óseos, objetos de ornato y posibles herramientas usadas en la vida cotidiana de las personas que los manufacturaron, así mismo se pretende dar una posible explicación del tratamiento funerario en el que fueron utilizados estos elementos.

Zavodny, Emily (Penn State University), Brendan J. Culleton (Penn State University), Sarah B. McClure (Penn State University), Douglas J. Kennett (Penn State University) and Jacqueline Balen (Archaeological Museum of Zagreb)

[300] *Culture Change at the End of the Bronze Age: Iapodian Burials in Croatia*

The Iapodian culture of northern Croatia provides a unique case study for the development of social and political complexity, evident, in part, through shifting burial practices during the Bronze Age (ca. 2300-800 cal B.C.). The Iapodian cultural group employed local, traditional forms of rock mound burials (tumuli) and adopted crematory practices from contemporaneous Central European Urnfield groups. The timing and nature of this shift remains unclear as the Iapodians are one of the least studied cultural groups in the region. Our preliminary analyses focus on human remains from three key Iapodian sites that are thought to span this important period: Bezdanjaca, Sultanov Grob, and Trosmarija. We report on the preservation of bone and the feasibility of collagen extraction for future studies in the Iapodian region using several standard metrics, including gelatin yield, collagen C:N ratios and stable carbon and nitrogen isotopes. We also report new radiocarbon dates and suggest a preliminary chronology for the area.

Zawadzka, Dagmara [248] see Arsenault, Daniel

Zborover, Danny (University of Calgary/ US-MEX, UCSD)

[37] *Written in the Land: The Archaeology of Indigenous Territorial-Narratives and the Formation of Oaxacan Sociopolitical Boundaries*

The demarcation of sociopolitical boundaries is an essential element of indigenous 'territorial narratives',

as is expressed by the surviving documentary record and the associated archaeological record. The need for geographical specificity in commemorating victories and demarcating territory seems to have motivated the early development of Mesoamerican logographic toponomy, and further helped to promote a place-based corporate identity. In this presentation I will argue that this tradition has its longest recorded trajectory within the Oaxacan cultures of southern Mexico, following from Monte Alban's 'conquest slabs' in the Terminal Formative; the topo-genealogical stela of the Classic period; the Postclassic historical codices; the Colonial period lienzos, mapas, and titulos; and through the contemporary community maps and territorial oral traditions. This long-term process can be exemplified through several diachronic case studies in the Chontal highlands, where indigenous domination, colonialism, factionalism, and resistance had created a multi-bounded sociopolitical landscape. This millennial convention can further explain present-day phenomena such as the multitude of municipal divisions and inter-community territorial conflicts in the state of Oaxaca.

Zeanah, David (California State University, Sacramento), Mark Basgall (California State University, Sacramento) and Ian Seah (Archae-aus)

[244] *Lithic Landscape of Barrow Island: A View from the Open Scatters*

Initial examination of surface artifact scatters across Barrow Island (BI) indicates strong reliance on extra-local lithic materials available only on the mainland, particularly in the Pilbara region. Less extensive exploitation of silica-rich limestone deposits occurring on the island is best documented at a quarry workshop at the extreme northern end of BI. Both classes of raw material occur in variable quantities in the Boodie Cave deposit, suggesting that stratigraphic pulses of the representation of inland versus coastal tool stones may have recognizable expressions in the open-air surface record of the island.

Zeanah, David [244] see Basgall, Mark

Zedeño, María Nieves [159] see Bethke, Brandi

Zedeño, María (University of Arizona)

[194] *Bison Wealth, Ritual Wealth: Rethinking the Impact of Abundance on the Rhythm of Hunter Societies*

Approximately 1,100 years ago, climate, ecology, and demography conspired to create thriving conditions for bison herds and their increasingly specialized human predators along the northern Rocky Mountain foothills. The consequences of this historical juncture are currently the focus of interdisciplinary, multi-scale studies in Canada and the United States, where researchers are mapping bison and people at large scales in order to determine landscape use, political boundaries, and the reach of interregional trade, as well as to re-conceptualize the relationships between bison abundance and organizational complexity. This paper examines the material record of abundance among pre-contact bison hunting societies on the northwestern Plains and its short- and long-term impacts on social and political systems. Specifically, it discusses the relationship between bison abundance and the generation of different kinds of wealth, in particular, ritual wealth and social power and the impact of this wealth on the rhythms of everyday life.

Zegarra, Michiel [146] see Stanish, Charles

Zeidler, James (Colorado State University)

[250] *Modeling Cultural Responses to Volcanic Disaster in the Jama-Coaque Culture, Coastal Ecuador*

The cultural impacts of catastrophic Holocene volcanism are characteristically variable throughout the world due to a wide range of factors such as magnitude of the eruptive event, proximity to the eruption, the geographic and ecological settings of the eruptive footprint, and relative social and political complexity of the societies affected. The reasons why one society succumbs to volcanic disaster while another may recover are complex and not subject to invariant laws. Even in cases where recovery is possible, different pathways may be followed depending on a host of contingent factors. Archaeological research in the Jama Valley of coastal Ecuador has revealed evidence of three volcanic eruptions emanating from the northern Ecuadorian highlands to the east, all three of which represent major stratigraphic breaks in the regional archaeological record. The third of these volcanic events, occurring at ~ 400 C.E., significantly affected the Muchique 1 and 2 chiefdoms of the Jama-Coaque Tradition in northern Manabí province. This paper offers a model of differential human response to catastrophic volcanism that focuses on human-resource imbalances resulting from such events and identifies a series of contingent circumstances in which complex chiefdoms may cope, and even flourish, in the aftermath of disaster.

[54] Discussant

Zeitlin, Judith (University of Massachusetts Boston) and Andrew J. Webster (University of Massachusetts Boston)

[72] Feeding the Senses: Technologies of Taste and Pleasure in Colonial Tehuantepec, Mexico
Excavations at the colonial-era Native hamlet of Rancho Santa Cruz near Chihuitán, Oaxaca, yielded a large inventory of locally made pottery, including an innovative ware we call Tablón Orange. Largely traditional in its manufacturing and decorative modes, the ware nonetheless represents a marked break in the ceramic traditions of the southern Isthmus of Tehuantepec. We examine here the significance of two aspects of the Tablón Orange assemblage: (1) its brightly painted decorative motifs, which we consider to be a response to the aesthetic challenge of introduced majolica wares, and (2) two novel vessel forms, palmatorias and copitas. The latter served a complex of desirable technological introductions from Spain, centered on candlelight, fireworks and distilled alcoholic beverages, introductions readily embraced by the Isthmus Zapotecs. We examine historical records for both Spanish and Isthmus Zapotec views of the behaviors associated with this complex and use these archaeological manifestations to discuss broader issues of colonial hybridity and Native agency.

Zejdlik, Katie (Indiana University), Kristin M. Hedman (Illinois State Archaeological Survey, Prairie Reise), Andrew R. Thompson (West Virginia School of Osteopathic Medicine) and Thomas E. Emerson (Illinois State Archaeological Survey, Prairie Reise)

[272] Mound 72's Principal Individuals: A Reassessment of Sex and Its Importance to Mississippian Mortuary Practices

Cahokia's Mound 72 is one of the most socially complex and frequently discussed burial features in the Eastern Woodlands. The principal feature of this mound is the interment of two individuals: a primary, extended individual buried supine on top of 20,000 shells beads and another primary, extended individual beneath the beads. Original reports indicate both individuals were male. However, recent studies conducted by multiple observers using independent lines of evidence suggest the individual beneath the beads was actually female. A female in this principal burial location requires a fresh look at how Mound 72 is viewed. In this study, we discuss the portrayal of women in Mississippian archaeology, drawing on similarities between the Mound 72 mortuary program and other Mississippian sites in the region. In light of these new insights, we offer an alternative perspective on the symbolism depicted in the burial features of Mound 72.

[272] Chair

Zeta Valladolid, María

[326] Panquima Archaeological Project: The Importance of Building Partnerships with Local Communities as a Way to Foster Social Inclusion

It has recently become increasingly important for archaeology practitioners to develop new and more inclusive lines of actions regarding management of cultural heritage and community relations. Socioeconomic development and access to cultural resources are closely linked especially in countries with high levels of poverty and social exclusion. This paper arises as a way to explore community relations around the archaeological project of Panquima in the central Coast of Peru. This research project is relevant because it has the potential to provide us with critical insights on how communities and academic circles can work together for the protection and promotion of cultural sites. The methodology used is mainly qualitative, with a strong focus on in-depth interviews with the main stakeholders in the community, which include community members, local businesses owners and local authorities.

Zetina-Gutiérrez, Guadalupe (Zona de Monumentos Arqueológicos El Tajín, INAH), Patricia Castillo-Peña (Instituto Nacional de Antropología e Historia) and Krassimir Iankov (SAP S.A. de C.V.)

[337] Archaeological Research Site-based in LiDAR in El Tajín, Ver., México

The ancient city of El Tajín, declared a "World Heritage Site" by UNESCO in 1992 and "Zone of Archaeological Monuments" in 2001 by Mexican authorities, is located in the northern Veracruz, Mexico in an area known as the "Gulf Coast Zone." It is characterized, among other important traits, by ballcourts, spiral motifs, and architecture with niches. In this context, LiDAR, as well as other remote sensing and GIS technologies, are transforming the manner in which we study and understand this important and sacred settlement. This paper will show how LiDAR has revolutionized the research tools available to archaeologists as well as the comprehension of not only El Tajín but also northern Veracruz.

Zhang, Xu, Zhongzhi Nie, Minghui Wang, Xinhua Wu and Hong Zhu

[297] *The Origin of the Skeletal Human Remains from Liushui Cemetery (about 1000 B.C.) in Southwestern Xinjiang, China*

Previous biological studies of human cranial variation of the Bronze Age in Xinjiang, the northwestern province of China, have indicated that it has long been a special area where some populations may have originated from the eastern and others from the western. Earlier archaeological studies from this region also indicated that cultural exchanges occurred across this area during the Bronze Age and early Iron Age. However, it is unclear when and how such cultural exchanges or population migrations took place. In this paper, we examined 101 individuals from Liushui cemetery in southwestern Xinjiang (BC1000±), which is the earliest group of inhabitants at the northern foot of Kunlun Mountains of China. Determining the origin of these people will help illuminate the dynamic interactions of cultures. Twenty discontinuous traits and fourteen dental non-metric traits were used to compare the sample with other samples from various areas of Eurasia and North Africa through principal components and cluster analyses. The result showed that the Liushui population might have various origins and be related with people from various areas in Eurasia. This suggests that human migrations between the eastern and the western can be traced back to as early as 1000 BC in southwestern Xinjiang.

Zhao, Hao (Stanford University), Tricia Owlett (Stanford University), Li Liu (Stanford University) and Ping Ji (Institute of Archaeology in Inner Mongolia, China)

[51] *Starch Analysis of the Grinding Stones from Sanzuodian Site*

Over 30 grinding stones from Sanzuodian site (ca 4000-3500 BP) in the southeast of Inner Mongolia were subjected to starch analyses to explore the characteristics of the agriculture during the early Bronze Age, when the social complexity further developed in this transition zone between cropping area and later nomadic area. The results show that most starch left on the grinding stones came from Triticeae and Paniceae, indicating the importance of both wheat and millet in the local agricultural activities. Furthermore, the comparison of the results of starch analysis between this Bronze-age Sanzuodian site and some earlier Neolithic and even late Pleistocene sites, in which the predominant starch types on grinding stones were tubers, demonstrates that the tool function of one single type of food processing implement changed as the fundamental economical pattern transformed. People continued the tradition of using the old grinding stone probably first designed for processing plants from gathering, but then it had been employed to mainly process the grains from the cereal cropping.

Zhao, Zhijun (Chinese Academy of Social Sciences)

[250] *Origins of Rice Agriculture in China*

Recently, the origins of rice agriculture have attracted considerable attention due to dramatic developments in paleoethnobotanical work in China. Over the past decade, systematic flotation studies have been implemented in Chinese archaeological investigations. As a result, tremendous amounts of plant remains have been recovered from archaeological sites providing direct evidence for the origins of rice agriculture in China. However, identification of rice remains is challenging. Criteria commonly used for rice identification have limitations, such as the shape and size of rice grains, the rice spikelet base, among others. Examination of other traits such as rice embryo may provide additional data on domestication that independently or in combination with other criteria provide more precise identifications of wild and domesticated varieties recovered from archaeological sites. This presentation highlights recent achievements in the investigation of rice agriculture in China and offers accurate and measurable criteria for distinguishing domesticated from wild rice.

[99] *Discussant*

ZHU, Hong [102] see Berger, Elizabeth

Zimmer-Dauphinee, James (Department of Anthropology & Archaeo-Imaging Lab, University of Arkansas), Nikos Papadopoulos (Foundation for Research & Technology Hellas (F.O.R), Michael Collins (Department of Anthropology, Texas State University) and Kenneth Kvamme (Department of Anthropology & Archaeo-Imaging Lab, University of Arkansas)

[318] *Archaeo-landscape Modeling through Electrical Resistivity Tomography: The Case of the Clovis Period Gault Site*

The Gault site, located in Central Texas, occupies an area of 16 hectares, making it the largest known Clovis occupation. The site is composed of anthropogenic fills and clay and gravel alluvial deposits overlaying limestone bedrock. In April of 2013 a geophysical project was organized to address questions about the subsurface stratigraphy in an 80 m by 55 m area. Electrical Resistivity Tomography (ERT) was

employed: a) to map the stratigraphic boundary between the alluvial sediments and the underlying limestone and b) to extract quantitative information regarding the thickness and the horizontal extent of recent cultural deposits. A dense network of 15 parallel and orthogonal ERT lines was utilized, employing diverse electrode array configurations to enhance the subsurface information context. Two-dimensional (2D) vertical resistivity models were reconstructed up to a depth of 10 m below the ground surface for each line through a 2D inversion algorithm. Elevation variation of the stratigraphic units was modeled through individual ERT sections. Maps representing the spatial variation of the stratigraphic units were also created. ERT results agree with older seismic reflection imaging approaches extrapolating the local geological model to a wider area and signifying its contribution in capturing the dynamics of a cultural landscape.

Zimmerman, Larry (IUPUI/Eiteljorg Museum)**[30] Repatriating Buhl Woman, Keeping Our Word, and Making NAGPRA Work**

Before NAGPRA, repatriation often seemed fraught with tension, rancor, and suspicion. Many archaeologists fought it, and as Kennewick amply demonstrates, retain the will and capacity to do so. Others worked toward compromise, which increasingly raised levels of experience and trust between archaeologists and Indians, but because each incident seemed unique, archaeologists involved tended to think of each successfully completed repatriation as "a first," "a sea change," or a "model." None really was. Positive outcomes resulted as much from improvisation, luck, and stubbornness and character in the face of criticism, as they did from any planning or negotiation skills. With each success, and reflecting local compromises, about 30 states passed "reburial" laws by the time NAGPRA became law. In 1989, however, accidental recovery of the 10,000-year-old Buhl woman skeleton nearly derailed much of the progress. Working under Idaho law, then State Archaeologist Tom Green negotiated study of the remains and promised their return to the Shoshone-Bannock people. Facing criticism and intense pressure not to do so, Green repatriated the remains, keeping his word to the tribe. Green's actions became an exemplar of the respect it takes to make collaboration with Indigenous people work.

[135] Discussant

Zimmermann, Udo [19] see Bertolino, Silvana Raquel Alina

Zimmermann, Emily and Stanley Ambrose (University of Illinois)**[40] Late Pleistocene and Holocene Environmental Reconstruction with Micromammals from OI Tepesi Rockshelter, Central Rift Valley, Kenya**

OI Tepesi rock shelter (GsJi53) is located in the Naivasha Basin of the Central Rift Valley of Kenya at 2,150 m above sea level on the lower slopes of Mt. Eburu, at the montane forest-savanna ecotone. Its archaeological sequence spans substantial portions of the Late Pleistocene to the late Holocene, beginning earlier than >15,730 BP. The forest-savanna ecotone likely shifted in elevation in response to regional and global climate change during the terminal Pleistocene and Holocene. Archaeological evidence suggests that Later Stone Age (LSA) Eburran Industry foragers, like their modern counterparts in this region, preferentially settled on this ecotone. Neolithic pastoralists may have also used this rockshelter or foragers may have interacted with them. We report on an environmental reconstruction based on analysis of the micromammals from this sequence. These data shed light on local microenvironmental change, and provides clues as to why the location was preferred by LSA foragers and herders. The expected trends of increased aridification and grasslands during the Holocene dry-phase are reflected in the data. These results show that the savanna/forest ecotone was near the site during the Eburan occupation, and was a moisture rich haven for much of the time that the site was occupied.

Zobler, Kari (University of Illinois, Urbana-Champaign)**[59] Households and Local Resilience at Talambo, Jequetepeque, Perú**

The household is a constitutive social and economic unit in community resilience and regional political change. Although the key role exchange networks played in Late Moche regional diversification is well established in Moche archaeology (particularly for San José de Moro in the Jequetepeque Valley), community resilience strategies exhibited at economically insulated sites, and the role water management played in Cajamarca territorial arrogation and local autonomy, has not been fully explored. Excavations in 2012 at the site of Talambo – located near the intake for the Talambo Canal in the Jequetepeque Valley – highlighted Late Moche and Transitional household strategies that were expressed locally, through two contemporary domestic contexts yet resonated on a regional scale. I argue that Talambo's unique location, water access, and socioeconomic independence enabled households to engage in alternative strategies of resilience during the political and environmental destabilization of the Late Moche and

Transitional periods.

Zori, Colleen

[121] Local Toasts in Imperial Cups: Inka Queros in the Provinces

Reciprocal toasting using queros, or Inka-produced wooden drinking vessels, was an integral part of the ritual hospitality that created and subsequently reaffirmed politico-economic relationships between the empire and provincial communities. A number of queros have been recovered from several distinct contexts at the imperial administrative center of Moqi, located in the Locumba Valley of southern Peru, including from tombs, a structured ceremonial deposit, and in a closing ritual terminating use of both a particular building and the site as a whole. Using the concept of inalienability, I argue that the local community viewed these queros as objects of memory, symbols of a new identity as participants in the Inka world order, and a potential nexus of social power. Analysis of the contexts in which the queros have been found demonstrates how the inhabitants of Moqi used this form of Inka material culture to materialize changing relations both within the local settlement and between the community and the empire.

[121] Chair

Zorn, Andrea (University of Louisville)

[299] New Data on Animal Exploitation during the Upper Paleolithic at Lapa do Picareiro

Ongoing excavations and research at the cave site of Lapa do Picareiro in the Estremadura region of Portugal have recovered a large number of faunal remains. These remains have yielded new data and insight on human exploitation during the Upper Paleolithic. This poster focuses on with the spatial distribution of faunal remains within the cave site, and attempts to quantify observed patterns throughout the course of recent field investigations. Faunal remains found in situ during excavations were piece-plotted by a laser total station and added to a three-dimensional representation of the cave. Additional faunal remains recovered from screening sediment from excavated units are analyzed and the distribution patterns of these materials are represented on plan maps of the cave in this poster. This work aims to show new information on the human use of animal resources at Lapa do Picareiro during the Upper Paleolithic.

Zorogastúa, Paolo [146] see Tantaleán, Henry

Zorzin, Nicolas [100] Discussant

Zovar, Jennifer (Southeastern Louisiana University)

[150] Growing Apart, Coming Together: The Late Intermediate Period in the Former Tiwanaku Heartland

Archaeological investigations in the southern Titicaca Basin have tended to focus on the growth, expansion, and collapse of Tiwanaku, while our understanding of the region's Late Intermediate Period was mostly based on analogy with the North Basin. However, recent research has shown that the LIP experience in the former Tiwanaku Heartland was both unique from the experience further north and more complex than previously imagined. Following Tiwanaku collapse (ca. A.D. 1150), the ceremonial centers of the altiplano were virtually abandoned, initiating a period of nomadic pastoralism, with associated ritual and quotidian use of some pre-Tiwanaku sites. However, around A.D. 1300, some of these scattered populations began to come together into larger communities. Changes in ceramic styles appear to correlate with these shifts in settlement patterns. This paper summarizes recent findings and outlines the direction of future research.

Zuckerman, Molly (Mississippi State University), Nicholas Herrmann (Mississippi State University), Amber Plemons (Mississippi State University), Michael Murphy (Mississippi State University) and Derek Anderson (Mississippi State University)

[126] Institutionalized Lives, Institutionalized Bodies: Preliminary Data from Excavations at the Mississippi State Lunatic Asylum (1855-1935), Jackson, MS

Little is known about the lived experiences of poor, marginalized residents of public institutions in the 19th and early 20th centuries in the U.S. This is particularly true for the Southeast in the midst of the political, social, and economic upheaval wrought by the Civil War, Reconstruction, and Jim Crow. Preliminary evidence from ongoing excavations of the cemetery of the Mississippi State Lunatic Asylum in Jackson, MS, which was active between 1855 and 1935, can shed some light on these contexts. Here, skeletal data (N=66)—primarily oral stress indicators due to poor preservation of postcranial material—is integrated with and interrogated against archaeological evidence recovered from the burials and

surrounding site as well as extensive demographic data, including admission records, health records, residential histories, and death records, for the Asylum's thousands of residents. Uniquely, because of the asylum's urban location and recent antiquity, we also incorporate preliminary ethnographic evidence on the Asylum from contemporary descent communities. This enables an early stage but holistic reconstruction of the patterns of morbidity, mortality, frailty, and life history trajectories of the Asylum's population and an assessment of the biosocial impacts of institutionalization and associated processes of symbolic, structural, and physical violence in the Southeastern U.S.

Zuckerman, Molly [232] see Kamnikar, Kelly

Zvietcovich, Fernando [104] see Saldaña, Julio

Zych, Thomas [264] see Kolb, Michael