

INDIVIDUAL ABSTRACTS OF THE SAA 83RD ANNUAL MEETING

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ABSTRACTS OF INDIVIDUAL PRESENTATIONS

Abbott, David (Arizona State University), Caitlin Wichlacz (Arizona State University) and J. Scott Wood (Tonto National Forest)

[267] *Demarcating Spheres of Interaction in the Uplands of Central Arizona with Electron Microprobe Analyses of Phyllite-Tempered Pottery*
Various conflicting ideas pervade debate about how 13th century occupation was organized in the upland zone of central Arizona, which overlooks the Phoenix Basin to the south. Some researchers characterize the upland settlements as subservient and peripheral to the densely packed irrigation-based Hohokam communities along the Salt River. Others, instead, describe the upland populations as independent communities with rich histories of their own. Still others speculate about the extent to which different parts of the region were connected. As a contribution to this debate, we have used electron microprobe assays of phyllite-tempered ceramics to trace the movement of pots across the uplands and thereby demarcate networks of interaction among neighboring settlements. Several pertinent results have emerged. First, two disconnected spheres of interaction divided the upland region. One sphere included close connections with the Hohokam to the south; the other did not. One sphere engaged the populations on Perry Mesa to the north; the other did not. Second, Hohokam farmers probably imported seasonal agricultural labor from one part of the upland zone. Third, an integrated community along Cave Creek shared the same pottery until the area became an abandoned frontier, where unaffiliated farmsteads moved in without exchanging pottery with one another.

Abdelsalam, Heba

[32] *Implementing American Interpretative Methods for Better Preservation of a Cultural Heritage Site (Case Study: Mallawi Museum, Minya, Egypt).*

Heritage interpretation is one of the best methods for preserving cultural heritage since it assists a neighborhood in having a better understanding of the importance of its museums and historic sites. Lately, the world has witnessed the loss of many such sites in the Middle East. Therefore, the adaptation of the American models of interpretation would be ideal for addressing this problem. This paper provides an example of the use of these methods of interpretation for the preservation of sites in Egypt. The current research took place in the Mallawi Museum in Minya, Egypt. This museum was looted in 2013 when people broke into the museum and stole and destroyed its objects. After the reopening of the museum in 2016, it was important to establish a community engagement project to assist the stakeholders in understanding the value of its cultural heritage sites. Intensive workshops were held in the museum to inform people about the significance of historical and archaeological sites in Minya by using several interpretative methods such as storytelling and living history. An assessment survey shows that this kind of project can make a significant impact in the effort to protect cultural heritage sites in the Middle East.

Abdolahzadeh, Aylar (University of Pennsylvania), George Leader (Department of Sociology and Anthropology, The Coll), Tamara Dogandzic (Department of Anthropology, University of Pennsylv), Li Li (Department of Anthropology, University of Pennsylvania) and Harold Dibble (Department of Anthropology, University of Pennsylvania)

[304] *Raw Material Variability and Its Effects on Flake Production*

Archaeologists have long studied the effects of raw material variation on different aspects of lithic technology, primarily focusing on raw material availability and nodule size and shape. This paper presents the results of a controlled experiment designed to compare different rock types (obsidian, flint, basalt, quartzite, and silcrete) and assess their effects on flake production. The experiment utilizes a mechanical robot that applies force to pre-shaped cores, controlling for known independent variables such as exterior platform angle, platform depth, and angle of blow. Dependent variables include linear dimensions, surface area, and weight, as well as the force required for flake removal. All of the cores have been shaped to be of similar size and shape, and all have similar core surface morphologies. In comparing these results to those obtained using molded glass cores of similar design, we discuss and evaluate the applicability of previously published controlled experiments to a wider range of raw material types.

Abo, Stephanie (Brigham Young University)

[38] *Examining Fremont Snake Valley Black-on-gray Pottery through Neutron Activation Analysis*

Archaeologists widely argue that Fremont potters from the Parowan Valley, in southwestern Utah, manufactured Snake Valley pottery. I explore the distribution of Fremont Snake Valley Black-on-gray pottery using chemical analyses, metric data, and statistical methods. In my research, I compare neutron activation analysis data from Snake Valley Black-on-gray (SVBG) sherds found at archaeological sites within the Parowan Valley to SVBG sherds found at Fremont sites over 200 kilometers to the north. Through this project I hope to confirm whether the northern sherds were products of potters in the Parowan Valley, or if these sherds were made elsewhere.

Aboulhosn, Jad [130] see Lercari, Nicola

Abraham, Shinu [137] see Dussubieux, Laure

Acabado, Stephen (UCLA) and Marlon Martin (Save the Ifugao Terraces Movement)

[275] *Rice, Rituals, and Identity: Resistance and Maintenance of Ifugao Agricultural Practice*

The shift to wet-rice cultivation and construction of rice terraces in Ifugao, Philippines has recently been associated with Spanish colonization. Previously thought to be at least 2,000 years old, investigations in the region have now established that wet-rice cultivation was a response of highland populations to the Spanish conquest at ca. 1650 CE. The shift to an intensive cultivation drastically changed Ifugao social organization that allowed them to successfully resist multiple attempts of the Spanish to place them under the colonial administration. Contemporary Ifugao identity is based on the narrative of being uncolonized as well as centered on wet-rice cultivation. Even when the market economy exerts pressure on the agricultural system, Ifugao families endeavor to continue producing wet-rice and sponsor rice-planting rituals. The persistence of wet-rice farming and rice rituals are interpreted as an active resistance of the Ifugao against assimilation to the larger Philippine society and conscious acts of maintaining their identity. Utilizing archaeological, ethnographic, spatial, productivity, and energetics data associated with wet-rice cultivation, this presentation aims to illustrate the continuity of Ifugao struggle against hegemonic cultures. As such, we show that resistance against Spanish colonialism became the foundation of Ifugao identity and resistance continues in the present.

Acabado, Stephen [117] see Echavari, Mikhail

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Acevedo, Veronica (Licenciada Veronica J. Acevedo)

[95] *Tecnología cerámica, análisis petrográfico y técnicas arqueométricas en cerámicas policromas de las fronteras de Quebrada de Humahuaca, Jujuy, Argentina*

Los materiales cerámicos arqueológicos policromos denominados "vírgulas o comas" tienen una amplia pero desigual distribución espacial y son hallados en cantidades limitadas en sitios arqueológicos de las regiones de Puna norte, central y Quebrada de Humahuaca, Jujuy, Noroeste de la República Argentina.

Estas regiones mantienen límites ambientales y geográficos fronterizos. En el pasado los habitantes de ambas zonas sostenían una fluida comunicación, manteniendo formas identitarias diferentes entre el "Ser Quebradeño" y el "Ser Puneño". Estas vasijas han transitado las dos regiones desde el 900 d.C. hasta el postcontacto con el español. Lo que nos ha conducido a reflexionar sobre la circulación de piezas cerámicas entre fronteras con importante uso y consumo ceremonial.

En este trabajo se presentan los resultados del análisis de caracterización petrográfica y pigmentaria de fragmentos de vasijas de sitios de la región de Puna y de Quebrada de Humahuaca, Jujuy. La aplicación combinada de técnicas arqueométricas con las cuales se estudiaron los materiales permitió reconocer las dinámicas fronterizas dadas en el pasado entre poblaciones de las regiones mencionadas. Las técnicas analíticas usadas fueron: análisis sobre cortes delgados, microscopía óptica, microestratigrafías, espectroscopia Raman, DRX, entre otras.

Acosta, Esteban [132] see Lippi, Ronald

Acosta, Jocelyn (California State University, Los Angeles)

[134] *Caves, Copper, and Pilgrimage: Reinterpretation of Quimistan Bell Cave in Northwestern Honduras*

In 1910, A. Hooton Blackiston discovered a cave 25 miles from Naco containing a cache of 800 copper bells, a possible mosaic mask of turquoise, and other materials. Blackiston interpreted the cave as a place of worship dedicated to the bat god. Copper, however, has very rarely been reported from caves in Honduras. Metals enter Mesoamerican late in its history but quickly assume an importance equal to jade in the native value system. The only other cave known to have held copper bells is Tauleve Cave, near Lake Yojoa. The cave was known as a cache cave for a quantity of copper bells but these disappeared without being reported. Significantly, Tauleve Cave is known to have been a pilgrimage center of such importance that the Lenca in the area were known as the Taulepa. Interestingly, some of the copper bells from the Cenote of Sacrifice at Chichen Itza, another pilgrimage location, are reportedly from Quimistan. Copper bells may have assumed such importance that they were reserved as offerings only for the most important pilgrimages. I propose that the Quimistan Bell Cave was a pilgrimage center, possibly serving the people of ancient Naco.

Acosta-Ochoa, Guillermo (Instituto de Investigaciones Antropológicas), Emily McClung de Tapia (Instituto de Investigaciones Antropológicas UNAM) and Joaquín Arroyo-Cabrales (Instituto Nacional de Antropología)

[59] *Preceramic Cultures of the Basin of Mexico*

The period from early peopling until the appearance of pottery in the basin of Mexico is poorly known despite its importance to know the emergence of the early sedentary communities and the development of the first political centers in the area. This study summarizes the state of knowledge about hunter-gatherer communities in the basin and presents recent studies that have allowed us to expand our knowledge of this period, particularly for the so-called Archaic period. We highlight the profusion of findings for this period, mainly human remains, but with little information about the cultural, subsistence and environmental context of these societies. Recent studies in the areas of Texcoco, Tepexpan and Xochimilco allow us to obtain new data on cultural remains, paleoethnobotanical and paleoenvironmental data and also new 14C datings that allow us to expand our knowledge about this period.

Acosta-Ochoa, Guillermo [262] see McClung de Tapia, Emily

Acuña, Mary Jane (Washington University in St. Louis), Carlos Chiriboga (Yale University), Varinia Matute (University of Calgary) and Francisco Castañeda (San Carlos University of Guatemala)

[252] *Preclassic Landscape Modifications and Regional Networks at El Tintal, Petén, Guatemala*

The site of El Tintal, located in northern Petén, Guatemala, provides early evidence of monumental construction, initiating with the large-scale transformation of the landscape in preparation for the site's ceremonial core, followed by construction programs consisting of pyramids, elevated causeways, and a diversity of hydraulic features. Recent investigations at El Tintal have shed light on its Preclassic settlement, organized around what we propose was an ancient lagoon which settlers connected to the larger regional fluvial network by the construction of a 2.4 km-long artificial canal. Preliminary investigations show that this canal, although mostly constructed following a traditional open-channel design, appears to have had two sections flowing underground, with tunnel sections carved into the underlying bedrock, providing the first evidence of complex hydraulic engineering at such an early stage. El Tintal maintained a complex interregional network relying on both foot travel over causeways and trails, as well as canoe transportation across what is increasingly looking like a significantly more humid regional landscape. In this paper, we present our findings and supporting evidence, as well as initial interpretations which we believe are consequential in the understanding of Preclassic geopolitics.

Adams, E. (University of Arizona)

[122] *Complex Closure Practices Involving Ash at a Small Pueblo in Northeastern Arizona*

Excavation of a four-room pueblo in northeastern Arizona revealed complex closure practices that involved ash. A 5-cm thick layer of ash deposited on a defined, but extensive, exterior occupation surface adjacent to the pueblo, then covered with artifacts prior to the pueblo's wall being pushed on top, suggests the essential role ash played in the life and "death" of the pueblo. By reconstructing the pueblo's life history, the role of ash is examined and argued to be essential in the transformation of the village to its afterlife. The integral role of exterior space to the life (and afterlife) of the pueblo is a reminder that more of pueblo life was spent outside than inside pueblo rooms.

[218] *Discussant*

[122] *Chair*

Adams, Jesse (Logan Simpson Design, Inc.) and Danny Mullins (Logan Simpson Design, Inc.)

[92] *Paleoarchaic Occupations in the Eastern Great Basin: The Beast and Paleolandscapes in West Central Utah*

Within west central Utah, site locations dating to the Pleistocene-Holocene Transition (PHT) are generally associated with specific geographical features; such as, the Old River Bed (ORB), inverted stream beds/channels, and the barren playas of the Great Salt Lake Desert (Dugway). Over decades of cultural resource management inventories, numerous PHT-aged archaeological sites have been identified along the maximum extent, and subsequent shorelines and resulting feeder streams, of receding Lake Bonneville across the west desert of Utah. Sites include; The Beast—a massive PHT-age site identified at Dugway with an artifact assemblage consisting of over 800 formalized, a possible thermal feature, and 160 Great Basin Stemmed projectile points; as well as numerous PHT-age sites identified along Cove Creek. Here we explore the interconnectivity of these two areas separated by over 100 miles focused on the ORB. XRF studies conducted on obsidian artifacts provide more fine-grained information regarding PHT

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mobility and transfer networks. Additionally, site formation processes at The Beast, suggest that intact buried cultural materials from the PHT may be present.

Adams, Karen (Crow Canyon Archaeological Center) and Susan Smith (Consulting Archaeopalynologist)

[218] *Food for Thought: Engaging Field School Students in the World of Plants*

Field schools run by Chuck Adams and Rich Lange introduced students to many archaeological disciplines. Together an archaeobotanist and a palynologist pulled students into the world of plants via introductory lectures on plant macrofossils and microfossils. Hands-on activities then focused on learning the important plant resources currently available. Student pairs were sent into three different plant communities to collect samples of all the different plants they encountered. When re-assembled the group learned the names and facts about these plants. Later, students accessed ethnographic resources for historic uses, and gave short presentations on plants of interest. Sessions ended with tasting edible wild plants.

Adams, Karen [115] see Smith, Susan

Adams, Ron (AINW)

[140] *Examining Patterns of Toolstone Procurement in an Edible Lithic Landscape on the Columbia Plateau*

Expansive outcrops of high-quality cryptocrystalline silicate toolstone occur in many localities within the Columbia Plateau region of North America. Archaeological evidence indicates that these locations were utilized extensively by pre-contact Native American groups. The geological processes that shaped these landforms and produced outcropping lithic material also created ideal conditions for the growth plant food resources, particularly root crops. These root crops thrive on the lithosols containing outcropping toolstone and were extensively harvested by Plateau groups in the past. The Columbia Hills of south-central Washington State exemplifies this pattern. Myriad lithic extraction sites cover the ridgelines and slopes of the Columbia Hills, a landform that is also blanketed with important root crops. This paper examines the relationship between food resources, toolstone, and settlements in the Columbia Hills area. The distribution of Columbia Hills quarry sites and their spatial orientation in relation to subsistence resources and habitation locales in the surrounding area is indicative of the intensified use of the landscape for both food and lithic resource procurement. Comparisons to other areas within the Columbia Plateau suggest the presence of a regional pattern of intensive lithic procurement coinciding spatially with collector systems involving intensified plant resource gathering.

Adderley, Paul [167] see Woollett, James

Adler, Daniel [177] see Brittingham, Alexander

Adler, Michael (Southern Methodist University)

[122] *Fire, Ash and Sanctuary: Pyrotechnology as Protection in the Pre-Colonial Northern Rio Grande*

Ash deposits are commonly associated with site disuse and termination deposits across the Ancestral Pueblo region of the American Southwest. This paper contextualizes the use of fire, and fire-related products, as part of a larger suite of practices employed to protect past, present and future occupants of villages from malevolent "others" across the pre-colonial northern Rio Grande region.

Admiraal, Marjolein (University of Groningen), Alexandre Lucquin (University of York), Matthew von Tersch (University of York), Peter Jordan (University of Groningen) and Oliver Craig (University of York)

[50] *Investigating Organic Residues on Prehistoric Cooking Technologies in the Aleutian Islands*

Stone bowls and griddle stones were in use in the Aleutian Islands for the past 9,000 years. People invested great time and effort into the manufacture and maintenance of these artefacts which insinuates their importance in prehistoric Aleutian food processing practices. A sudden increase in stone bowl occurrence around 3,500 years ago emphasizes their importance during this particular time. What was it that made these artefacts so important? We believe the answer to this question lies in their function.

Despite their importance these artefacts have never been thoroughly investigated and mention of them is mostly absent in the literature. Exceptionally well-preserved organic residues found on the surfaces of stone bowls and griddle stones offer the opportunity to investigate function through molecular and chemical analysis. Using GC-MS and GC-c-IRMS we identified organic residue origins and were able to carefully suggest function for both artefact groups. Additionally we explored environmental change in the light of artefact function as a factor in the sudden change of stone bowl occurrence during the Margaret Bay phase (4,000–3,000 cal BP) on Unalaska Island.

Adovasio, J. M. (Florida Atlantic University), C. A. Hemmings (Florida Atlantic University), F. J. Vento (Clarion State University), J. S. Duggan (Florida Atlantic University) and J. H. Higley (Florida Atlantic University)

[35] *Preliminary Assessment of Recent Research at the Old Vero Site (8IR009), Vero Beach, Florida*

Intensive excavations and attendant analyses conducted at the Old Vero Site (8IR009) from 2014–2017 have revealed a long and complex stratigraphic succession which dates from ca. 30,000 B.P. to the present. The excavations have documented not only 195 species of plants and animals but also a human presence which extends back to at least 11,000 B.P. and, perhaps, earlier. Terminal Pleistocene extinction dates are provided on several taxa as well as observations about the environments within which they lived. Evidence of previously undocumented anthropogenic activities are also offered, including a very tentative Late Pleistocene tapir kill as well as later Archaic utilization(s) of this venerable site.

[193] *Discussant*

Aebersold, Luisa (University of Texas at Austin)

[243] *Seeds that Germinate: Models, Paleobotanical, and Archaeological Evidence for Colha's Early Inhabitants*

The archaeological site of Colha, located within the northern Belize chert-bearing zone, is well-known for being one of the largest Maya lithic production sites in Mesoamerica. The site has occupation dating to the Archaic Period as well as the Middle Preclassic through the Early Postclassic. Pollen and geomorphologic evidence suggest intensive forest clearance, wetland soil manipulation, swamp margin, and upland manipulation dating as early as the Archaic Period. Evidence for intensive blade production coincides with pollen evidence from Cobweb Swamp for economic species such as maize and manioc.

During the Archaic Period, a warmer, wetter environment jumpstarts an archaeologically visible trend in cultivation and domestication. Mesoamerica's biologically diverse landscape had much to offer its early revolutionary inhabitants. Research involving the cultural transition from complex hunter-gatherers to agriculturalists supports evidence that the early inhabitants of Colha can be studied as a regional model to understand their larger role during the commencement of the Maya civilization. These cultural phenomena and environmental trends are not exclusive to the region, but are also visible around the world. This paper discusses the chronology and significance of this pivotal era with preliminary archaeological and paleobotanical evidence recovered from the 2017 field season.

[243] *Chair*

Aebersold, Luisa [243] see Burns, David

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Aebersold, Luisa [243] see Kotsoglou, Anastasia

Afonso, Marisa (University of Sao Paulo)

[34] *Chronological Investigations at Coastal Shell Mounds, Southeastern Brazil*

Shell mounds (sambaquis) are a focus of scientific interest in Brazilian archaeology since the 1950's and also for interdisciplinary approaches. Located along the Brazilian coast from north to south, they present geographical and chronological variabilities. This paper discusses the chronological aspects of large and small sized shell mounds located on the coast of São Paulo State, Southeastern Brazil. Radiocarbon dates suggest a long occupation of coastal hunter-gatherer-fisher groups spanning from 8,000 to 500 years BP. This culture collapsed after the arrival of inland ceramic groups. We will focus on the synthesis and analysis of the radiocarbon record, using a geo-referenced archaeological database of radiocarbon dates. The analysis of previous excavations and lab reports helped to understand the exact sample location, and the archaeological and paleoenvironmental contexts. The review and contextualization of the shell mounds chronology allowed the comparison with other Brazilian regions and the study of the occupation of coastal landscapes during the Holocene.

Agarwal, Sabrina [66] see Miller, Melanie

Agbe-Davies, Anna (UNC-Chapel Hill)

[327] *Pragmatism, Archaeology, and the Race Woman*

At the Phyllis Wheatley Home for Girls in Chicago, and at Pauli Murray's childhood home, in Durham, NC, black women were in motion, actively reshaping their social worlds. Pragmatism, a philosophy of actions, effects, and consequences is a useful framework for 1) drawing out their theoretical contributions to 20th century social thought and civic activism; 2) understanding their actions via the archaeological record; and 3) thinking through what archaeologies of their lives might mean for us today. This project considers the intersection of two domains—institutional culture and the world of work.

Agorsah, Emmanuel (Professor Emeritus, Portland State University,)

[337b] *Historic Kormantse in the Formation of the African Diaspora in the Americas: Migration Routes*

The impact of "Kormantse" as a cultural entity on the interpretations of the formation and transformations of the African Diaspora remains a major challenge among academics as many questions about the origins, migration episodes of populations, events and the process(es) involved remain unanswered. While bio-anthropologists explore DNA evidence, using various techniques of sequencing for possibly identifying common African ancestral connections or relationships, the need to review various routes and sources of the migrations, as well as the associated historical circumstances and places continue to be very critical. This presentation examines selected maps and other related documentation for speculating about the possible origins or combination of origins and routes that may have triggered off or played various roles in the processes of the creation of what we often consider today as "Kormantse in the African Diaspora." Maps of selected slave trade and migration routes are reviewed against the backdrop of selected recent speculations and interpretations of "Kormantse" in the history and culture of the African Diaspora.

Agorsah, Emmanuel [337b] see Schaffer, William

Agostini, Mark

[269] *Technological Knowledge, Migrations and Ancestral Puebloan Communities of Practice in The Northern Rio Grande of New Mexico*

In the mid-late Classic period (AD 1250—1400), Ancestral Pueblo people living on the Pajarito Plateau of New Mexico experienced cultural change due to difficulties in farming during periods of drought. As a result, communities abandoned pre-contact plateau villages to join their Tewa-speaking relatives at the earliest historic period Rio Grande settlements. Oral histories from descendant communities from the 19th and early 20th centuries recount how the remaining members of these communities resettled at the extant pueblos of Santa Clara (Kapo), San Ildefonso, and Cochiti. In conjunction with ethnographic lines of evidence, this poster evaluates the possibility that the manufacture of ceramic vessels from sites in the Pajarito Plateau and the aggregating migrant sites of the Northern Rio Grande were crafted within crossing-cutting technological and belief based communities of practice that bridge the prehistoric and historic period divide. Time of flight-laser ablation-inductively coupled plasma-mass spectrometry (TOF-LA-ICP-MS) was used to characterize the chemical composition of a large sample of white ware sherds from ancestral sites within both culture areas, which can be used to better define the organization of production, the exchange of technological knowledge, migration, and the transformation of social networks in the pre-contact and contact American Southwest.

Aguilar, Joseph [138] see McBrinn, Maxine

Aguilar, Magdalena and Hirokazu Kotegawa (Museo de Córdoba, Veracruz)

[285] *La lítica tallada de Estero Rabón. Un estudio durante la Fase Villa Alta en la Costa del Golfo*

El empleo de la lítica fue una constante desde los primeros grupos humanos, solucionando sus problemas cotidianos. Por ello, estos artefactos nos aportan información importante para la comprensión de actividades domésticas, sociales, rituales y económicas de una sociedad. El sitio arqueológico Estero Rabón está ubicado en el Sur de Veracruz. A través de las excavaciones en dicho sitio se recuperaron materiales arqueológicos de la fase Villa Alta correspondiente al Clásico Tardío/Terminal. En este trabajo se pretende dar un panorama preliminar del análisis de la lítica tallada obtenida en el lugar. Dentro de las líticas analizadas se pudo identificar la obsidiana de distintos colores como material predilecto para la fabricación de artefactos, siguiendo en menor cantidad el pedernal; con ellos produjeron navajas prismáticas, lascas con huella de uso, desechos de talla, etc. A pesar de que este material arqueológico se encuentra frecuentemente en la superficie y durante las excavaciones, no siempre es localizado con el contexto primario que nos indique sus actividades; pero debe haber algunos indicadores como su forma, huella de uso, calidad y diferencia de materia prima, etc. Así, el presente estudio busca alguna manera para comprender las actividades realizadas con la lítica a través de distintas perspectivas.

Aguilar Diaz, Miguel (Pontificia Universidad Católica del Perú)

[333] *"Rimasinkuchun Amawtapaq: Luis Lumbreras y Ayacucho en la formación de la tradición científica de la arqueología andina"*

En esta presentación se exponen los aspectos fundamentales de la vida y obra del arqueólogo peruano Luis Lumbreras desde sus vivencias en su natal Ayacucho y la trascendencia de su formación personal y académica en la configuración de la consolidación de la tradición científica de la arqueología en el Perú, desde una perspectiva ofrecida por él mismo a partir de una serie de conversaciones entre Lumbreras y los autores, apelando a la memoria y la tradición oral como fuente histórica en la práctica y trayectoria de uno de los principales arqueólogos científicos del Perú y

América Latina. La presentación buscará entender los detalles fundamentales de su formación arqueológica y el impacto de su labor a partir de su propia interpretación de sus aportes como arqueólogo, antropólogo y su labor política en la arqueología andina.

[273] *Chair*

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Ahlman, Todd [90] see Schroedl, Gerald

Ahrlrichs, Robert (UW-Milwaukee)

[52] *Range and Variation of Copper Tools from Two Archaic Localities in Wisconsin*

Great Lakes Archaic copper artifacts have been well documented and typed for many decades. However, there is a lingering tendency to think of copper as primarily a social signifier and to shy away from development of economically oriented copper theory. One component of the problem is rooted in copper's innately malleable nature. Copper was made into a wide range of tools and non-utilitarian items during prehistory. While most of these types have been enumerated, there are no published resources suggesting the morphological range or variation of copper artifacts one might expect in any given region. This paper will report the morphological range and degree of variation measured on a collection of over 1000 copper artifacts from two localities in central Wisconsin. This data is then used to characterize copper usage in these two localities and provides comparative context for artifacts recovered in small numbers or through unconventional means. Ultimately, the goal of this project is to illuminate the economic significance of copper artifacts, and to encourage the development of useful archaeological theory for this component of the Archaic Hunter-Gatherer tool kit.

Ahrlrichs, Robert [89] see Sterner, Katherine

Ahlstrom, Richard [164] see Roberts, Heidi

Ahmadzai, M. Hussain [268] see Rawan, Atifa

Aimers, Jim (SUNY Geneseo)

[147] *The Pottery of a Problematic Deposit from Cahal Pech, Belize, and Its Implications for the Interpretation of Similar Deposits*

During the Belize Tourism Development Project (2000–2004), Awe excavated dense on-floor deposits on the stairs and stairside outsets of Structures A2 and A3 at Cahal Pech. These deposits were mainly pottery sherds but included a variety of other materials including whole and partial vessels, projectile points, obsidian blades, deer antlers, figurines and ocarinas, spindle whorls, and jade pendants. A standard interpretations of such deposits is that they represent garbage left behind by Terminal Classic or Postclassic occupants of the site. In this paper we focus on the pottery remains of this deposit and their implications for alternative interpretations of others like it.

[147] *Chair*

Aimers, Jim [147] see Awe, Jaime

Ainsworth, Caitlin (University of New Mexico), Patricia Crown (University of New Mexico), Emily Lena Jones (University of New Mexico) and Stephanie Franklin (Santa Fe National Forest)

[115] *Ritual Deposition of Avifauna in the Northern Burial Cluster at Pueblo Bonito, Chaco Canyon*

Birds are an important part of both modern and historic Puebloan ceremonialism: live birds, stuffed birds, and bird wings and feathers are used in prayers, in ceremonies, as sacrifices, and in the creation of ritual paraphernalia. Archaeological evidence suggests birds held a similar role in the past for some prehispanic Southwestern groups, including members of the Chaco phenomenon. Pueblo Bonito is one member of the Chaco system that might be expected to contain evidence of ritual use of birds, given other evidence for ritual activity at this site. Using a new avifaunal assemblage excavated from Room 28 in 2013, in this paper we assess evidence for ritual use of birds in Pueblo Bonito's northern burial cluster rooms. Multiple quantitative analyses establish the dissimilarity of this assemblage to other Chacoan sites and demonstrate that an unusually wide variety of avian species were recovered here. Wing elements are particularly abundant and may indicate the deposition of wing fans in the northern burial rooms.

Ainsworth, Caitlin [115] see Mack, Stephanie

Aitchison, Kenneth (Landward Research Ltd)

[32] *Who Works in African Archaeology?*

There are shortages of professional archaeologists in many African countries. It is a widely held view that there just aren't enough professional experts in Africa to carry out the work needed in projects, both large and small, that are affecting African cultural heritage and landscapes.

And these views are relevant, and important, and true—but they are often anecdotal rather than evidence-based. The first step in building capacity is to measure current capacity, then to use the results to identify what is needed and how to move towards.

The Heritage Management Organization, together with Landward Research Ltd, is developing a project with the support of the PanAfrican Archaeological Association and the Society of Africanist Archaeologists to measure African countries' professional archaeological capacities.

Learning from previous work in Europe (www.discovering-archaeologists.eu), we want to look at how many people work in archaeology across Africa (in all work situations—academia, private companies, governmental), what they actually do, what their ages, genders and qualifications are, and how archaeology "operates" in each country.

This project is building up a network of partners in Africa who want to share methodologies and results to support African archaeology today and to plan for its development tomorrow.

Aitchison, Kenneth [331] see Majewski, Teresita

Aiuvalasit, Michael (Southern Methodist University)

[297] *Placing Ancestral Pueblo Water Management Practices into Ritual Contexts*

Across cultures, the ritual use of water is nearly ubiquitous, yet most archaeological studies of water focus primarily on its socio-economic importance. The large (~200–1500 person) mesa-top Ancestral Pueblo (AD 1100–1700) villages of the Jemez Mountains, New Mexico are particularly good contexts for the archaeological study of water because small water storage features, often referred to as reservoirs, are found at many villages across the region. Alternative hypotheses for feature function, such as water storage for domestic use, watery shrines, mortar mixing pits, or some combination thereof, have been proposed, but not tested. Also, archaeologists have given little consideration to how these features may serve as archaeological proxies for Ancestral Pueblo collective action surrounding water in domestic, social, and ritual spaces. As part of recent interdisciplinary investigations into the vulnerabilities of prehispanic Ancestral Pueblo communities to climate change, I used behavioral geoarchaeological approaches to reconstruct the use-life histories of fifteen of these features at nine sites. In this presentation, I focus on the potential ritual significance of feature use-life histories for Ancestral Pueblo of the Jemez Mountains by integrating ethnological and ethnohistorical records of Pueblo water use with geoarchaeological evidence from reservoirs.

Aiuvalasit, Michael [103] see Burger, Rachel

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Ajithprasad, P. [297] see Chase, Brad

Ajú, Gloria [176] see Arroyo, Barbara

Akina, Kaila (University of Minnesota)

[197] *"Filled with Faith and the True Spirit of Mormonism": Ritual and Belief at Iosepa, Utah*

In this paper, I investigate the intersections between ritual, belief, and practice at Iosepa, Utah, a historic townsite built by diasporic Polynesian members of the Church of Jesus Christ of Latter-day Saints (LDS). In 1889, the LDS Church assisted approximately 50 Polynesian LDS to establish and relocate to Iosepa for 28 years before disbanding the settlement in 1917. I explore how the Church leadership and the Polynesian LDS created and actively negotiated the landscape of Iosepa into a community and home according to often fluid social and religious ideals and practices. I argue that this case can lead to interesting questions on the archaeology of belief and ritual as well as how both can play into the archaeology of colonial entanglement and mission contexts. Focusing on an existing collection of materials from one LDS family's household along with spatial organization and historical documentation from the broader community, I first consider the implications of ritual, belief, and practice between the individuals and the community and second, I show how this understudied context expands the discussion on belief and ritual in mission studies and recent historical archaeology.

Akman, Melis [137] see Wales, Nathan

Akoshima, Kaoru (Tohoku University)

[89] *Lithic Micro-wear Traces at Morphological Junctions: Function vs. Typology Reconsidered in Terms of Technological Organizations*

The paper investigates some fundamental aspects of use-wear of lithic artifacts, concerning the relations between function and morphology. During the course of micro-wear research since the 1960s, it was often questioned whether tool typologies actually reflects their functions, or which morphological attributes are diagnostic of their utilization. Case studies in the Upper Paleolithic of East Asia also revealed variability in end-scrapers whose functions seem to be relatively consistent as hide working tools, to burins which exhibit diversified usage, as well as projectile points whose functions are less evident from traceological data. A more theoretical approach to use-wear is proposed here for understanding the complex diversity of tool function. The concept of "technological organization" (by Binford) combined with settlement patterns along a river basin, is applied to traceological research in the Paleolithic of northeastern part of the Japanese archipelago. The Mogami River archaeological project and standardized experimental program of the Tohoku University team provide concrete data bases for this methodological discussion. Investigations at the Kamino A site, the Takakurayama site, the Hakusan E and B sites of blade industry, the Araya and Kakuniyama sites of microblade industry, shed light on the theme of the organizational approach to lithic use-wear.

Alaica, Aleksa (University of Toronto) and Véronique Bélisle (Millsaps College)

[217] *Middle Horizon Cusco and Long-Distance Networks: Reconciling Spatial Variation through a Zooarchaeological Lens at Ak'awillay, Peru*

The ten years of research at the Middle Horizon site of Ak'awillay in the Cusco region of Peru have attested that local elites were the main interlocutors of trade with Wari colonists (Bélisle, 2013). In the era of interdisciplinary research, zooarchaeological methods have the capacity to shed new light on patterns that are seen in other material remains. In the case of the Middle Horizon (AD600–1000) contexts of Ak'awillay, new insights into the extent of trade networks and long-distance interaction are visible through the faunal record. The presence of sea lion, penguin, and coastal shell within house contexts dominated by New World camelids demonstrates that the villagers of Ak'awillay had access to long-distance exchange networks. A comparison between the public building and house contexts further reveals that these exotic species were not exclusively used and discarded in public areas but also kept within private domestic spaces. This paper will argue that the presence and use of exotic species, which could have been distributed by local elites to their loyal followers during large feasts, are possible evidence for the interconnectedness of Ak'awillay to coastal and highland communities without the dominance of Wari influence.

Aland, Amanda (Southern Methodist University) and Kylie Quave (Beloit College)

[100] *From Heartland to Province: Assessing Inca Political Economy through Material Culture Signatures*

Archaeological studies of Inca hegemony often focus on the intensity or degree of "Incanization," or assimilation to Inca material culture. These studies particularly rely upon well-preserved and highly visible remains, especially well-fired polychrome ceramics and monumental architecture. While Inca scholars have begun to analyze Inca hegemony in theoretically sophisticated ways that reveal how material culture legitimizes imperial rule, these approaches present several weaknesses: (1) sampling complications that can bias assessments of intensity; (2) insufficient consideration of the nature of Inca hegemony in diverse provincial settings; and (3) undue assumptions about the Inca heartland material assemblage to which provincial remains are compared. Because heartland sites have not been systematically reported in great numbers, we propose that more rigorous comparisons of horizontal excavations in the heartland are necessary for productively evaluating provincial contexts. Comparisons of Inca material signatures from recently-excavated heartland sites and one provincial site (Chao Valley) underpin our plea for more robust analyses of the nature of Inca hegemony. We further argue that rather than assess Incanization directed from center to periphery, we must acknowledge that the archaeological record was formed by local decisions and actions as much as by imperial policies.

Alarcón, Teresa [59] see Winter, Marcus

Alberti, Benjamin (Framingham State University)

[259] *Rock Art, Hunting, and Life*

Archaic rock art in the Rio Grande Gorge in northern New Mexico demonstrates an intimacy with the ecologies of which it is a part, from the microscopic life with which it shares its surfaces, to the talus slopes it occupies or watches over. Knowledge of materials and the ecological processes with which they were thoroughly entangled encouraged hunters to lay down tracks and traces of their own, including the geometric patterns and animal and bird prints that constitute the archaic rock art tradition of the area. The rock art appears as either isolated, often barely visible, communications with the heavily patinated basalt surfaces on which it is pecked; or as sites that are made up of the dense iterative marks left by itinerant hunters, marks that transformed boulders, reshaping them in line with the natural ecologies of which they are a part. Through a consideration of several sites investigated by members of the Gorge Archaeological Project in the light of recent work on ecology and hunter-prey relations, this paper examines the ways in which rock art exists on a continuum with other, older practices, rather than being indicative of a moment of radical separation.

Albornoz, Ximena [153] see Belmar, Carolina

Alcalde, Veronica [34] see Flores-Fernandez, Carola

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Alcalde Gonzales, Javier I. (Universidad Nacional Mayor de San Marcos)**[273]** *Mito y rito, en tanto política y gobierno, en la costa de los Andes Centrales durante el Tawantinsuyu*

Las formaciones sociales de carácter imperial se articulan desde sus propias dinámicas, reproducidas desde sus relaciones y su territorio. Estos mecanismos deben ir reformulándose en el proceso de expansión, integrando las dinámicas sometidas políticamente, desarrollándolas y transformándolas, originando nuevas formas políticas dentro los antiguos procesos regionales y en el propio centro imperial.

El caso particular del Tawantinsuyu parece generar tres tradiciones integradoras diferenciadas, y que representan también los particulares procesos históricos previos de cada territorio social. Hacia el norte del Cusco nos encontramos con dos ejes, que son distinguibles a pesar de sus procesos complementarios: un eje cordillerano y uno yunga. Hacia el sur se puede distinguir un eje de “discurso legitimador” que desde la cordillera andina integra también sus flancos.

Nos interesa en este caso discutir la tradición del eje yunga, que como estrategia política se desarrolló desde Ica (Perú) hasta las costas septentrionales (Ecuador). Estrategia que se sustentaría en integrar los mitos regionales como una política de cohesión, y que se manifiesta en la particular arquitectura imperial que conjuga lo local, lo regional y lo imperial, como expresión de un discurso hegemónico, sobre la base material de estas sociedades: el paisaje entre el mar y la cordillera.

Alcantara, Keitlyn (Vanderbilt University Department of Anthropology)**[257]** *Conquering Aztecs and Resisting Tlaxcaltecas: The Body as a Site of Creating and Challenging State Narratives*

Narratives of Aztec grandeur dominate portrayals of Late Postclassic (AD 1325–1519) Mesoamerica. While imperial influence spread rapidly and thoroughly throughout the central valleys, Tlaxcallan appears as a rift in imperial control, resisting the encircling empire. Aztec narratives relegate Tlaxcallan to the peripheries, downplaying Tlaxcaltecas as one-dimensional barbaric enemies, unconquered by choice. In contrast, ethnohistoric accounts from within Tlaxcallan emphasize a state that intentionally separated itself from the Aztecs in ideology, social organization, and political and economic alliances, actively challenging the encroaching empire. For both groups, rising political tensions at the end of the Postclassic served as a catalyst for specific constructions of identity, demonstrating the political value of an image of cohesion. While these identities are often portrayed as fixed, this presentation will analyze human skeletal remains excavated from the urban center of Tepeticpac, Tlaxcallan to explore how the body serves both as a point of state defined identity, while also capturing lived experiences that depart from controlled social and political categories.

[257] *Chair***Alcock, Susan (University of Michigan)****[1]** *Discussant***Alconini, Sonia (University of Texas At San Antonio)****[100]** *To the East of the Titicaca Basin: The Yunga-Kallawayas and the Inka Frontier*

The Kallawayas region was an important imperial breadbasket of the Collasuyu, located to the east of the Titicaca basin. Formed by a set of narrow temperate valleys, this region was a natural corridor that led to Apolo and the Mojos savannas to the north, and to the east to the tropical Yunga mountains. Because of its marked altitudinal variation, this region was suitable for pastoralism, the production of corn and coca, and farther east, the exploitation of gold mines. The Inkas at their arrival expanded dramatically the system of agrarian terraces along the set of valleys, and promoted the influx of a large contingent of mitmaquna colonies for farming and productive ends. This was accompanied by the establishment of sizable storage facilities, including the control of key trading networks that crossed the frontier. Using a regional-scale perspective, this poster explores the scale of such socioeconomic shifts, and the ways in which indigenous Yunga-Kallawayas populations reacted and adapted to such changes.

[100] *Chair*

Alconini, Sonia [207] see Hoyle, Alesia

Alcover, Omar (Brown University), Thomas Garrison (Ithaca College) and Stephen Houston (Brown University)**[248]** *Bridging the Gap: Spectral and Structural Analysis of Archaeological Settlement in El Zotz, Guatemala*

In the last decade, archaeologists have successfully employed active remote sensing technologies, such as LiDAR, to identify ancient settlement in the Maya lowlands. Near the site of El Zotz in northern Guatemala, this technology has aided in the identification of fortresses, terraces, and a network of raised roads. Archaeologists who employ LiDAR focus principally on the structural data acquired from the LiDAR point clouds. Building on these methodologies, we assess the benefits of incorporating both structural and spectral derived data from LiDAR sensors. Specifically, we address the use of intensity measurements attained during a 2016 flight over the northern Peten by a Titan Multispectral Mapping LiDAR. Intensity measurements are used to create multispectral datasets of above and below canopy measurements that clarify spectral properties of the archaeological landscape. These datasets allow archaeologists to assess how structural components of tropical environments (canopy height, varying vegetation, and surface elements) relate to their spectral properties. Additionally, these multispectral datasets allow researchers to regionally assess long-term effects of landscape use and change in Mesoamerica.

Alcover, Omar [163] see Matsumoto, Mallory

Alden, John**[246]** *Discussant***Aldenderfer, Mark (University of California)****[174]** *Discussant*

Aldenderfer, Mark [155] see Iizuka, Fumie

Alencar, Soraya**[25]** *Aging and Funerary Practices at Monte Alban, Mexico*

In the past decades, new theoretical and methodological developments in bioarchaeology and archaeology of death have allowed the exploration of age categories that are very challenging to access archaeologically: infants and older adults. Although Mesoamerican archaeology has largely used evidence for representations of aging in different sources of information (textual and iconographic) to engage in a broader consideration of funerary practices, approaches of old age as an identity category has been neglected by archaeological inquiry. This article explores the funerary practices of the elderly at Monte Alban and how it contributes to an understanding of the longevity in the past and the attributions based on age in the context of the organization of the domestic labor in complex societies. Aged bodies were selected considering pathologies and markers of senescence that include, for example, joint diseases, osteoporosis, traces of wear and tooth loss (n=40; 12.1%). Some symbolic aspects of longevity were introduced in the

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funerary practices to give meanings to the preservation of the memory of the house. Equally, older people are engaged in occupational specializations of the residential group, as ceramic production and trade of prestige goods, throughout the time of occupation of the site.

Alessi, Joe (Slippery Rock University)

[274] *John White's Playboy Black vs. Playboy White, Part 2*

John White once published a piece comparing the depiction of both Native Americans and Blacks in the cartoons of Playboy Magazine from its inception to 1970. In this work, John discovered that as a result of the Civil Rights Movement of the 1960's the image of Blacks in cartoons changed from ones oriented on cultural and racial distinctions to ones that merely displayed blacks in the cartoon. In short, the humor of the cartoon was no longer fixated on Black race or culture, but on other subjects such as politics. In contrast, John also discovered that the image of Native Americans never changed. That the humor of all cartoons in playboy fixated on Native American culture. In honor and at the encouragement of John, he asked me to pick up where he left off and to see if the dynamics changed. This work is the follow up to John's work and looks primarily at the images of Native Americans through not only the lenses that John used in his original research but also from the concept of Cultural Appropriation.

Alexander, Katharine [52] see Hummel, Rebecca

Alexander, Rani (New Mexico State University)

[173] *Cross Markers and Commemorating Place in the Titles of Ebtún, Yucatán*

Cross markers that consist of a wooden cross supported by a stone cairn (multun) are among the most pervasive landscape features encountered in rural Yucatán. They delimit water sources, features along roadways and paths, agricultural parcels, and the entrances of rural towns. The cross markers show substantial formal variation and are associated with material evidence indicating diverse practices of veneration. Cross markers were first established in the sixteenth century after the Spanish invasion, and they are documented in both Maya- and Spanish-language land surveys that run from the 1550s to the present day. These boundary markers, however, commemorate places long abandoned by inhabitants. They convey multitemporal notions of history and social memory, as well as spatial movement and circulation. In this paper, I examine how present-day cross markers in the areas surrounding the towns of Ebtún, Cuncunul, Kaua, Tekom, and Tixcacalcupul relate to the historical contingencies of movement documented in the Titles of Ebtún, a corpus of Maya-language land survey documents. Activities known as tzol pictun, taking a tour of the boundary markers, is a contemporary place-making practice that has continually reproduced local authority and renewed social memory from the sixteenth century to the present.

Alfonso-Durruty, Marta (Kansas State University, Universidad Alberto Hurtado), Miguel Vilar (National Geographic), Manuel J. San Román (CEHA, Universidad de Magallanes) and Flavia Morello Repetto (CEHA, Universidad de Magallanes)

[283] *mtDNA and the Peopling of Fuego Patagonia*

Information regarding the prehistoric human migration into Southernmost Patagonia and Tierra del Fuego provides a baseline against which it is possible to compare interpretations regarding the colonization of the Americas, including its timing and rates of human dispersion. The earliest archaeological evidence in Fuego- Patagonia dates to the Late Pleistocene (c. 10.500 BP). By the Middle Holocene archaeological record (c. 8000–4000 BP) shows marked differences between the technological, economic, and cultural practices of inland and coastal peoples. These differences, indicate the presence of two divergent adaptations: nomad canoe/marine hunter-gatherers and pedestrian terrestrial hunters, although the archaeological record shows several complementary economies. To date, proposed migration routes into Fuego-Patagonia include the Pacific rim, the Atlantic coast, and inland or intermountain corridors. This study presents mtDNA results from 50 prehistoric individuals dated to ca. 6,000–390BP. The results identify three main haplogroups (C1, D1, and D4h3a) which distribution suggest the presence of at least two migration routes into the region, one through the inland and east of the Andes, and one through the coast, along the Pacific. The results agree with archaeological evidence, which reveal the sudden appearance of a marine adaptation strategy c.a. 6500BP.

Alfonso-Durruty, Marta [155] see Morello Repetto, Flavia

Alizadeh, Karim

[71] *Climate Change or Muslims? Collapse of the Late Antique Sasanian Settlements, Mughan Steppe, Iranian Azerbaijan*

Recent research in the borderlands has increased our knowledge on the irrigation systems and urbanization plans of the Sasanian Empire in the late antiquity. In particular, surveys and excavations in the Mughan Steppe indicate that irrigation canals connected nearly all Sasanian settlements. Evidence suggests that after the 7th century AD most of the elaborate settlement system was abandoned and its irrigation infrastructure went out of use. While the exact date of this abandonment is unclear, it is possible that the collapse of the irrigation system itself could have brought an end to the Sasanian settlements which happened before the appearance of the Muslim army in the region in the mid-7th century. In this paper, I will present evidence of climate change that could have caused the abandonment of the Sasanian irrigation systems and associated settlements. Unlike a popular explanation of the decline of the Near East and the role of Islam, the evidence suggests that climate change could have contributed significantly to the collapse of Sasanian settlements before the arrival of Muslims. Understanding the causes of collapse is significant and may shed some light on the socio-political transformation of the southwest Asia at the end of late antiquity.

Allaby, Robin [143] see Kistler, Logan

Allan, Pamela, Moira McMenemy (University of Strathclyde), Kelly Brown (University of Strathclyde), Matthew Baker (University of Strathclyde) and David Robinson (University of Central Lancashire)

[214] *Testing the Trance Hypothesis: Identifying Hallucinogenic Compounds from Quids at Pinwheel Cave, California*

For decades, debates have raged over the role of trance in the origination of rock-art. However, there remains almost no direct evidence of the ingestion of trance inducing material at any rock art site world-wide. The site of Pinwheel Cave has a large element thought to represent the opening of the flowering Datura. Dozens of quid, or 'chews'—i.e. masticated fibres of unidentified plant material—are found within the ceiling of the cave. A sample of this was taken and analysed to determine if they contain the Datura plant. Extraction and analysis methods were developed for the two main toxic alkaloids within Datura: atropine and scopolamine. The alkaloids were successfully extracted, identified and quantified from standard solutions and spiked eggplant leaf samples. Low concentrations of atropine and scopolamine were detected within one 'chew' sample extract. A further six 'chew' sample extracts await analysis by high performance liquid chromatography mass spectrometry (HPLC-MS). This paper discusses this procedure and the implications of this discovery and the community aspects of both the past and present local Native population.

Allard, Francis (Indiana University of Pennsylvania)

[196] *Centering the Periphery: The Case of Southeast China during the Early Imperial Period*

First incorporated into China in 214 BCE, the southern region known as Lingnan (which consists of the present-day provinces of Guangxi and Guangdong), has traditionally been regarded as one of China's peripheral regions. Not only was Lingnan distant from imperial centers in the north, its native pre-literate 'Yue' inhabitants spoke non-sinitic languages and were known for their distinctive 'uncivilized' behaviors. Along with its location at the

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southern margin of modern China's territory, the fact that political, cultural and material elements originating north of it did have a significant impact on Lingnan's long-term development further helps mark the region as 'peripheral'. However, by focusing on unidirectional currents emanating from distant political centers, one risks underestimating the influence of areas 'beyond the periphery', as the case of Lingnan illustrates when one takes into account material and cultural elements which reached southern China along the 'Maritime Silk Road'. Having said this, the mere act of 'centering' so-called peripheral regions for the purpose of understanding local change is in itself insufficient, as the analysis must consider not only the origin of single elements of interaction, but also their magnitude, impact, and the extent of their social and spatial penetration at the local level.

Allcock, Samantha [4] see Jenkins, Emma

Allen, Kathleen (University of Pittsburgh)

[301] *Pottery Analysis as a Window into Site Function and Community Identity: A Haudenosaunee Case Study*

Previous analyses at two early contact period Haudenosaunee village sites in the Cayuga region of central New York State (Parker Farm and Carman) have provided evidence for differences in the intensity of occupation and in the distribution of activities. Interpretations of site activities have included a more intensive focus on pottery production and utilization at Parker Farm and greater emphasis on hunting and shell bead production at Carman. Although differences in the reasons for the occupation of these sites have focused on seasonality, gender, and production, another possibility is that they may have been occupied by different groups moving into the area during the early contact period. Variability in the material culture might indicate increased interaction and entanglement with their neighbors. This paper presents results from an analysis of pottery designed to elicit patterns of design, function, and technique with implications for discerning community identities and activities during this period of rapid change. This analysis also sheds light on the processes of engagement with other groups and the environment in the early contact period.

Allen, Melinda S. [85] see Huebert, Jennifer

Allen, Mitch (University of California Berkeley) and William B. Trousdale (Smithsonian Institution)

[3] *The Iron Age Culture of Sistan, Afghanistan*

Our knowledge of the cultural history of western Central Asia is spotty and incomplete between the collapse of complex societies of the Bronze Age and the middle of the first millennium BCE. This is particularly true of the little-studied Sistan region of southwest Afghanistan and eastern Iran. The Helmand Sistan Project, conducted by the Smithsonian Institution and Afghan Directorate of Archaeology and Historic Preservation through the 1970s but hitherto unpublished, uncovered through survey and excavation an extensive settlement system along the lower Helmand River dating to this time period. This presentation will outline the basic elements of the Iron Age culture of this region. We will document the construction of a regional irrigation canal system that allowed for extensive desert cultivation in the Sar-o Tar region and along the Helmand River, describe the series of platform-based sites that anchored this system, and show key elements of material culture on those sites uncovered by the project. The presenters will situate these finds in the context of other cultures known from neighboring areas in the late second and early first millennia BCE

Allen, Susan (University of Cincinnati), China Shelton (American Center for Oriental Research) and Calla McNamee (Wiener Laboratory for Archaeological Science, ASCS)

[298] *Preservation and Perception: Archaeobotanical Patterning and Site Formation Processes in Mycenaean Messenia*

Despite the increased application of spatially intensive sampling for archaeobotanical remains at large Mycenaean sites in Greece, the recovered assemblages are typically small and show poor preservation. Here, we consider the macrobotanical assemblage recovered through flotation of more than 7000 L of sediment at the site of Iklaina, in Messenia, in conjunction with microbotanical remains (starches, phytoliths) to illuminate cultural and natural site formation processes that have either negatively or positively affected plant preservation and recovery. We have observed three tentative patterns: the relative absence of materials in both natural and anthropogenic drainage areas, compounded by the downhill erosion of deposits leading to "shallow sites"; heavy clay content which is destructive for both micro- and macro-remains; and the importance of dumping episodes in relatively undisturbed areas that had fallen out of active use. This combination of patterns means that where evidence is preserved, it is rarely in primary contexts that can be used to discuss active-use spaces. Instead, it is better suited to discussions of disposal processes that reflect general and cumulative near-by activities and long-term patterns of resource use. Nonetheless, extensive horizontal excavation at Iklaina has revealed intra-site variation perhaps related to administrative zones vs. combined-use domestic/industrial areas.

Allentoft, Morten [143] see Lynnerup, Niels

Allgaier, Paul (University of Utah Archaeological Center) and Brian Coddig (University of Utah Archaeological Center)

[92] *Prearchaic Settlement Decisions in the Great Basin*

Researchers propose that the first people to occupy the Great Basin preferentially settled near pluvial lakes to exploit highly profitable wetland habitats. However, a systematic evaluation of this hypothesis has yet to be undertaken. Here we test predictions from an ideal free distribution model to determine if the settlement decisions of Prearchaic foragers were indeed biased toward pluvial ecosystems. The results not only elucidate Prearchaic settlement patterns, but also establish expectations about the subsistence practices and technology of central Great Basin foragers prior to 9000 BP.

Allison, James (Brigham Young University)

[164] *Ceramic Production and Exchange among the Virgin Anasazi, 30 Years Later*

At the 1988 SAA annual meeting in Phoenix, Margaret Lyneis presented a paper with the title Ceramic Production and Exchange among the Virgin Anasazi. In that paper she presented convincing evidence that, despite its abundance in the Moapa Valley of southeastern Nevada, Moapa Gray Ware was produced 70–100 km to the east, near the north rim of the western Grand Canyon. She also defined a new type of pottery, which she was calling Shivwits Brown at the time (later Shivwits Plain). Shivwits Brown (or Plain) was also abundant in the Moapa Valley, but Lyneis argued that it was made on the Shivwits Plateau, also north of the western Grand Canyon but west of the main Moapa Gray Ware production zone. That 1988 SAA paper inspired much subsequent research, including my doctoral dissertation, which (in part) examined the distributions of Moapa Gray Ware and Shivwits Plain across the western part of the Virgin region and within the Moapa Valley. In this paper, I update and expand on that study, adding data from recent excavations, from my unpublished fieldwork on the Shivwits Plateau and in the St George Basin, and from recent reanalysis of ceramic assemblages from the western Virgin region.

[234] *Discussant*

Almeida, Fernando [70] see Klokler, Daniela

Alonso Olvera, Alejandra [173] see Smith, J. Gregory

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Alonzi, Elise (Arizona State University)

[23] *Traveling Monastic Paths: Mobility and Religion in Medieval Ireland*

Monasteries were powerful social institutions in early and late medieval Ireland that took drastically different forms over time. Medieval historical records, such as annals and Saints' Lives, and archaeological data, such as the layout of monastic buildings, suggest that small communities of monks at early medieval Irish monasteries followed ascetic or austere ways of life. Contrastingly, historical and archaeological sources indicate that monks at late medieval monasteries, founded by English and continental religious orders, lived in large communities and interacted with lay or non-religious people. Historical texts also record that high-status Irish monks and nuns traveled throughout Ireland, Scotland, England, and continental Europe. However, documents record little information about lower status monks and lay people. Thus, it is unknown how frequently people traveled as part of monastic life and how frequently local individuals participated in monasticism. This study leverages unique burial contexts of 88 individuals at five Irish monastic sites spanning nine centuries (8th-16th centuries AD) through biogeochemical analysis of human bones and teeth based on three isotopic systems (radiogenic strontium, oxygen, and carbon), compared to a geological baseline of plant samples, to uncover patterns of medieval Irish mobility in connection to the changing practices of Irish monasticism.

Alqahtani, Mesfer

[12] *GIS Investigations on Stone-Circle Structures in the North of Saudi Arabia*

The theme of the poster will address archaeological phenomena in the north of Saudi Arabia. The archaeological phenomena are stone-built structures that can be seen by satellite images. These stone-built structures have various types, and one of them is the circle type.

The poster will show the method of creating predictive models of stone circles by using the Geographic Information System (GIS). To create these models, two zones from the north of Saudi Arabia should be selected: study zone and applied zone. The study zone is where the distribution of stone circle locations will be analyzed to create predictive models. The applied zone is where predictive models will be applied to be testable in the future. The predictive models will be based on quantifiable attributes of stone-circle locations from the study zone. These attributes will include the relationship between stone-circle locations and environmental variables such as the landform and the distance of water resources. These attributes will be analyzed by ArcGIS to obtain environmental characteristics representing high, middle, or low probability models for the presence of stone-circle locations. In the applied zone, similar environmental characteristics will be identified to determine high, middle, low predictive models.

Alsgaard, Asia (University of New Mexico), Carolyn Freiwald (University of Mississippi), Stephanie Orsini, Douglas J. Kennett (Pennsylvania State University) and Keith M. Prufer (University of New Mexico)

[155] *Quantifying the Exploitation of Faunal Remains by Pre-ceramic Societies in Southern Belize*

Beyond occasional reports of Pleistocene megafauna, there is a paucity of faunal data from the Mesoamerican Paleoindian and Archaic periods. This poster presents faunal data from three rockshelters in southern Belize located in two distinct environmental regions. Tzib'te Yux, is located in the Rio Blanco Valley in the foothills of the Maya Mountains and has an intact deposits from Cal. 14,000 to 6,000 BP. In contrast, Maya Hak Cab Pek and Saki Tzul, are both located in the interior of the Maya Mountains. They have intact deposits from Cal. 12,000 to 1,100 BP. Despite varying degrees of bone fragmentation, the analysis of the deposits from all three rockshelters during these early periods of human occupation provides a unique insight human subsistence choices and food processing. Our precise chronologies are anchored by over 100 precise AMS dates, giving us a high-resolution view into animal exploitation by pre-agricultural hunting and foraging societies in the Central American tropics

Altamirano-Sierra, Ali [64] see Chen, Peiyu

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

[151] *Discussant*

Altschul, Jeffrey [24] see Ciolek-Torello, Richard

Alvarado, Aimee I. [7] see Wisner, Gavin

Alvarez, Arlene and Corinne L. Hofman (Leiden University, The Netherlands)

[108] *Archaeological Heritage Market and Museums in the Dominican Republic*

The first Dominican heritage legislation indicates that there were private collecting practices of local archaeological materials already by the end of the 19th Century. Heritage museums formed archaeological collections with donations or purchases from private collectors who often depended on individuals that made a business out of locating sites with the desired pieces. The continued institutionalization of collections without context that gave rise to several museums has contributed to the perpetuation of an antiquities market that has negatively impacted the community's connection to the country's indigenous heritage and its perceived value and relevance.

Heritage legislation regarding the protection of pre-Columbian archaeological materials continues to be weak. Despite the bureaucratic control over international scientific research, there are no local regulatory mechanisms that register the sale of archaeological objects by street vendors, huaqueros, or between private collectors that continue, at a lesser but impactful rate, to expand their collections, prestige, and market value.

Examining lessons learnt, museums can work towards a more coordinated effort to minimize looting of archaeological sites. Through collaborations, museums can develop internal policies that discourage acquisitions of looted objects, and create best practices to provide contextual information, improving the way communities access collections on display.

Álvarez, Ana María [285] see Rivera, Luz Stephanie

Alves, Diana [116] see Maezumi, S.

Alveshere, Andrea (Western Illinois University)

[26] *Burning Down the House: Evidence for Controlled and Uncontrolled Structure Fires among the Late Woodland and Mississippian Settlements at the Orendorf Site in Fulton County, Illinois*

The Orendorf site (11F107), located on a bluff overlooking the central Illinois River valley, comprises a mound group and a series of Late Woodland and Mississippian habitations. The occupation of the site is characterized by a gradual migration of the community to the west through successive abandonment and rebuilding. Burned structures have been found in all Orendorf settlements, and at least two of the abandonments followed complete burning of all structures. Intensive salvage excavations of the westernmost areas were conducted during the 1970s, and research has continued through the 2017 field season, during which a Mossville-phase Late Woodland/Mississippian structure was excavated in the easternmost habitation area.

Although structure fires appear to be common to all Orendorf settlements, there is substantial variation in several characteristics of the burned house features. An analysis of these variations suggests that both controlled (intentional) and uncontrolled (either accidental or malicious) structure fires are

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represented among the settlements at Orendorf. "Controlled" and "uncontrolled" classes of burned structures are considered within the context of other archaeological, ethnohistoric, and ethnographic evidence for ceremonial burning, utilitarian burning, wildfires, and warfare. Special challenges in the detection and excavation of these different classes of burned structure features are also examined.

Alvitre, Cindi [306] see Kennedy Richardson, Karimah

Amador, Julio (UNAM)

[180] *Rock Art at Chalcatzingo, Morelos: Methodology and Techniques for Recording, Documenting and Elaborating Preservation Strategies*
This presentation describes the process of recording and documenting the pictographs found at the site of Chalcatzingo, Morelos, in central Mexico. It shows the way in which state of the art technology is used for the first time at the site for this purpose. Iconographic analysis, landscape archaeology and the analysis of painting techniques and materials are as well employed to enrich the interpretation of rock art at the site. Upon this basis we elaborate a hypothesis about their relations with landscape, astronomical phenomena and the other elements of material culture. We also present a preliminary description of the preservation conditions of the pictographs.

Ambrose, Stanley (U. Illinois, Urbana-Champaign), Andrew Zipkin (U. Illinois, Urbana-Champaign), Douglas J. Kennett (Pennsylvania State University), Abigail Fisher (Southern Methodist University) and Jessica Thompson (Emory University)

[198] *Dietary and Environmental Reconstruction with Stable Isotopes of Early, Middle and Late Holocene Humans from Northern Malawi*
The early Holocene African humid period (AHP, ~12,000–6000 bp) was followed by the Middle Holocene dry phase (MHDP, ~6000–3500 BP), and the modern climatic regime was established during the later Holocene (~3500 bp to present). The relationship of environmental change to human social and territorial organization adaptations are fairly well-documented in northern, eastern and southern Africa. However, the Holocene terrestrial record of environmental change in east-central Africa is poorly documented. Stable carbon, nitrogen and oxygen isotope analyses of human bones and teeth from northern Malawi suggest that hunter-gatherers exploited humid closed woodlands during the AHP (low 13C, low 15N), drier more open habitats during the MHDP (higher 13C, very high 15N), and relatively closed, humid woodlands during the later Holocene (low 13C, low 15N). Iron Age peoples consumed substantial amounts C4 plants (high 13C, low 15N). Strontium isotope data for small subset of these skeletons are insufficient to reconstruct residential life histories. With a more detailed terrestrial environmental history, more human Sr isotope data and a strontium isoscape, it may be possible to test ecological models of hunter-gatherer social and territorial organization in changing Holocene environments in Malawi.

Ambrose, Stanley [99] see Hu, Lorraine

Ameen, Carly, Anna Linderholm (Department of Anthropology, Texas A&M University), Ellen McManus-Fry (Department of Archaeology, University of Aberdeen), Kate Britton (Department of Archaeology, University of Aberdeen) and Keith Dobney (Department of Archaeology, University of Liverpool)

[212] *Friends in High Places. An Integrated Examination of the Long-Term Relationship between Humans and Dogs in Arctic Prehistory*
Dogs are arguably the most significant domestic species in the circumpolar North, in both their universal importance to life-ways and their near-uniqueness as a regional domesticate. The Arctic was the gateway for at least 4 independent waves of migration of dogs into the Americas, beginning as early as ~17,500–13,000 years ago, making this region particularly important for investigating not only the cultural and technological functions of Arctic dogs, but also the impact of successive introductions in the past 1,000 years on the high-latitude adaptations of prehistoric Arctic human populations.
This paper will focus on the integrated use of genetics, GMM and isotopes to reconstruct individual and population life-histories of prehistoric Arctic domestic dogs. This combination of interrelated analyses allows for a comprehensive investigation into genetic, morphological and dietary variability for the identification of domesticates from archaeological assemblages, and for examining the relationship between domesticates and wild canids in archaeological contexts. Our results demonstrate that this three-strand analytical investigation can shed new light on continuity and change in human-canid relationships during these periods of migration, providing valuable information about the relationship between humans and animals in prehistory, and the complex cultural and technological diffusions of successive human migrations across the Arctic.

Ameen, Carly [212] see Dobney, Keith

Ames, Nicholas (University of Notre Dame)

[296] *Objects in Motion: The Materiality of Irish Emigration in the 19th Century World*
When departing one's home, how does an emigrant decide what to bring? In arriving at a destination, in what ways does an emigrant (re)construct their understanding of place? This paper addresses the question of materiality in emigration by investigating the objects surrounding the act departure, and (re)structuring of one's life in emigration. I focus on three facets of the material expression of emigration: the things they bring, the worlds they build, and the resulting influences they have 'back home.' Using the prism of local and regional experiences, I demonstrate how these acts of object-movement reflect wider narratives of national and international affect. Namely, how those emigrated objects reflect perceived values within a country; how the materiality of public and private spheres displays multifaceted identities and engagement with particular (and often overlapping) communities; and the ways in which emigrants shape, through remittances, letters, and return, the narratives of expectation and acts of consumption practiced 'back home.' By looking at the ways in which networks and social identities are expressed in the materiality of emigrant's lives, I aim to engage with the complex narratives of trans-locational experiences, and the act of movement, from an archaeological lens.

Ames, Nicholas [54] see Ullah, Isaac

Amgalantugs, T. [24] see Ciolek-Torello, Richard

Amico, Jennifer [156] see Gilleland, Sarah

Ammerman, Steven

[171] *Animal Agents in the Human Environment*
Humans' increasingly close relationship to animals constitutes one of the most important cultural, social, and economic developments of the past ten thousand years of our history, as well as being a key factor in the changes in climate referred to as the Anthropocene. Animals are important resources of food, labor, and secondary products in many societies, as well as symbolically important features of the ritual landscape. As relationships with animals intensify, processes such as domestication ensure that humans are potentially able to control the behavior and deployment of large numbers of animals, altering ecosystems and creating an anthropogenic landscape. However, these types of relationships are heavily structured by the innate attributes of the animals involved. Pre-evolved characteristics create the set of possibilities on which human agents can act, and actions undertaken by

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animals without the influence of humans can have major impacts on human behavior. Because of this, evaluating “human” environments as complete ecosystems with multiple players is an important part of understanding how we exist within the environment.

Amorosi, Tom [155] see Morello Repetto, Flavia

Anaya, Tanya [248] see Mercure, Danielle

Anaya Hernandez, Armando [252] see Reese-Taylor, Kathryn

Ancona, Iliana [142] see Pantoja, Luis

Anderson, Amber (RIT, Medaille College)

[257] *Inka Conquest Narratives along the Northern Frontier: Evidence from the Pais Caranqui, Ecuador*

When the Inka moved into Northern Ecuador at the end of the 15th century, they were met with fierce resistance from the semi-autonomous societies of the Pais Caranqui. Chronicler accounts and Inka narratives note that conflict occurred and fortifications were constructed before the Inka were eventually victorious and continued their conquest northwards. However, these accounts do not accurately highlight the true complexity of the groups the Inka encountered, the prolonged nature of the conflict that occurred, and the massive changes that were implemented in the region after conquest. Excavations and the resulting material evidence indicates that unlike elsewhere in the empire, the Inka had a high interest in control and fortification construction, with a low emphasis on imperial architecture, and locales within the Pais Caranqui were not all affected the same way.

Anderson, Arthur (University of New England)

[199] *Strategies for Exploring the Protohistoric Period on the Southern Maine Coast*

As investigations of the Protohistoric period move away from a reliance on the reliable material culture recovery found in burial contexts, our basis for investigation of protohistoric sites and landscapes in the Far Northeast often begins with European historical records. Recent excavations in the area described in 1607 by Champlain as the village of Chouacoet in Saco Bay, Maine highlight the fact that many of the equivalencies drawn between the archaeological record of the protohistoric and European accounts can be tenuous. This demonstrates that archaeologists must be wary of focusing on seeking the sites, or the types of sites, described by Europeans.

We should acknowledge that European visitors did not experience the same sensory or cultural landscapes as the indigenous populations. A fuller understanding of the experiences, cultural transitions and tragedies of the Protohistoric period can be gained by shifting focus to the way the indigenous inhabitants experienced and inhabited sites and landscapes. This requires a move away from European sources for exploring protohistoric archaeology, more detailed radiocarbon dating of potential protohistoric sites and components (with or without demonstrable European material culture), and an integration of the Protohistoric into wider understandings of the prehistoric Northeast.

[199] *Chair*

Anderson, C. Broughton (Berea College), Annie He (Berea College), Bianca Godden (Berea College), Samantha Sise (Berea College) and Alicia Crocker (Berea College)

[241] *A Study of George White through Flight and Light*

Imaging is a critical part of the archaeologist's toolkit. Likewise, the capture, manipulation, enhancement, and interpretation of images has been the subject of significant research in computing over the past 20 years. This project brought together five students studying archaeology and computing to collaborate on fieldwork—and the hardware and software that supports that fieldwork—to engage in an exploration of the life of George White, a freed slave and property owner in Madison and Jackson counties during the mid- to late-19th century, that would otherwise be impossible undertaken separately. This interdisciplinary research project relied on macro-scale, overhead drone images of sites as well as high-resolution, micro-scale RTI dome images of excavated artifacts. George White's story will add a new dimension to our understanding of the lives of freed blacks in the 19th century in Madison County and add to the growing database of significant archaeological resources located within the Berea College Forest. More broadly, this research will contribute to a greater understanding of how enslaved individuals in Kentucky purchased their freedom and established themselves as property owners in an unstable pre-Civil War world.

Anderson, David (University of Tennessee), Thaddeus Bissett (Northern Kentucky University), Stephen Yerka (University of Tennessee), Joshua J. Wells (Indiana University South Bend) and Eric Kansa (The Alexandria Archive Institute/Open Context)

[135] *Drowning the Library: Sea-Level Rise and Archaeological Site Destruction in the Southeastern United States*

The impacts of past and projected climate change and specifically sea level fluctuations on heritage resources are examined across the southeastern US using site and environmental data integrated in DINAA (Digital Index of North American Archaeology). Minor changes in sea level have shaped human settlement from the late Pleistocene onward, including in recent millennia when shorelines are incorrectly assumed to have stabilized at or near present levels. In the near term, tens of thousands of known archaeological sites and historic structures, and countless more currently unknown or undocumented, will be lost given modest (1–5m) changes in sea level. Millions of people will also need to move, which, depending on where they relocate and how potential flooding is to be mitigated, will also lead to the vast destruction of heritage resources. Consideration of large linked datasets is essential to developing procedures for the sampling, triage, and mitigation of predicted losses to our collective heritage. DINAA is one of several emerging solutions to the challenge of working with the vast record about the past that has been generated. Positive, multi-organizational collaboration facilitating open access to linked heritage and environmental data from multiple sources is essential to saving the past for the future.

Anderson, David S. (Radford University)

[160] *Discussant*

Anderson, Emily (Johns Hopkins University)

[146] *Like a Lion, as a Man: Seals and Poetry in Minoan Crete*

This paper investigates how parallels were drawn between lions and human in Bronze Age Crete, and how this parallelism potentially developed concurrently through material culture worn on the human body and oral narrative. I argue that the unique qualities of seal stones, namely their close association with human identity and their physical location on the human body, positioned them to be potent venues for asserting parallels between man and beast. I begin in the late Early Bronze Age, with a small group of seals engraved with a novel composition type that set humans in a direct visual and conceptual parallel with lions. I then trace the re-invention of this parallel in the glyptic of the subsequent palatial periods. Here the seal's position as a worn object was capitalized on, with the body of the beast engraved on the seal being juxtaposed with the body of the human wearer. I investigate how this parallelism was established and emphasized through the objects and compare it to the distinctive narrative device of the animal simile in Homeric epic, which was likely taking root in oral traditions at the same time.

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Anderson, Mark [5] see Stroh Messerole, Megan

Anderson-Cordova, Karen

[123] *Indian Ethnic Complexity in Hispaniola and Puerto Rico and Its Implications for the Study of European/Indian Contact During the Early Colonial Period*

Scholarly interest utilizing archaeological and ethnohistorical studies to understand the genesis and development of Caribbean creole societies has grown in the last few years. Perspectives have shifted to emphasize the diversity of groups in the Caribbean during precolonial times, and how this continued into the colonial period as Europeans and Africans coalesced in the area. The conflictual aspect of this interaction whereby Europeans imposed a system of forced labor, along with drastic Indian population losses have obscured the contributions of indigenous peoples to colonial societies and culture.

This paper summarizes archaeological and historical data for Puerto Rico and Hispaniola on the diversity of Indian groups in the early colonial period and the different ways they reacted and responded to Old World peoples. It postulates the concept of cultural transformation to explain the process of change occurring among these populations, and how they employed strategies which varied from island to island. It discusses the evidence for the persistence of Indian groups well into the colonial period and what this may imply for the formation of creole societies, and ends with a call for further archaeological research focusing on early colonial sites.

Andrade Pérez, Axel (Arqueólogo) and Karla Itzel López Carranco (Pasante en Arqueología)

[158] *Proyecto Arqueológico Cuenca del Río el Maíz: investigación científica y trabajo comunitario en Santos Reyes Nopala, Juquila, Oaxaca*

Se muestra el trabajo realizado por el Proyecto Arqueológico Cuenca del Río el Maíz en coparticipación con las autoridades municipales y la comunidad de Santos Reyes Nopala, la Fundación Mexicana para la Educación Ambiental y el Departamento de Mecatrónica de la Universidad Tecnológica de los Valles Centrales de Oaxaca, como una contribución al estudio científico de la arqueología de la región, cuyo objetivo principal consistió en la investigación, salvaguarda, rescate y difusión consciente del patrimonio arqueológico.

Andreou, Georgia (Cornell University)

[34] *Coastal Erosion Management in Archaeology: Turning Challenges into Opportunities*

Coastal erosion is a known problem in cultural heritage management, particularly in the Mediterranean, which lends itself exceptionally well to studies of maritime trade and connectivity. The loss of coastal land to erosion presents a serious obstacle to our understanding of the archaeological coastscape, due to the unpredictable rate in which it exposes and damages archaeological features. The exposure and subsequent disappearance of material culture is seldom accompanied by systematic archaeological recording. As a result, a wide range of past activities associated with the coast remain unrecorded, their context poorly understood and our understanding of past human interaction at local, regional and inter-regional scales impaired. Coastal erosion is, thus, both a predicament of cultural heritage preservation and an epistemological problem.

Since 2014 the Cyprus Ancient Shoreline Project employed integrated methodologies to record, monitor and contextualise the impact of coastal erosion on the cultural heritage of the south-central coast of the island of Cyprus. In this paper I present some of the results of the lab- and field-based methodologies we implemented to quantify and monitor the loss of information. I also demonstrate how we turned the problem of coastal erosion into new opportunities for understanding the Cypriot coastscape.

Andrews, Anthony (New College of Florida)

[271] *Discussant*

Andrews, Bradford W. [242] see Franklin, Paris

Andrews, Brian [44] see Eren, Metin

Andrews, E. Wyllys (Tulane University)

[162] *Discussant*

Andrieu, Chloé (CNRS Université Paris I La Sorbonne), Edgar Carpio (Universidad San Carlos de Guatemala), Brent Woodfill (Georgia State University) and Arthur Demarest (Vanderbilt University)

[176] *Not All Distance Is Kilometric... Obsidian Procurement and Exchange at Salinas de los Nueve Cerros and Cancuen*

During the Classic period most lowlands cities imported obsidian from the El Chayal source, the other two major high quality outcrops (SMJ and Ixtepeque), being in the minority by comparison. Despite the fact that much has yet to be understood about the way this material was transported from the Highlands to the Lowlands, the recent discoveries at Cancuen of a single cache containing hundreds of complete prismatic cores demonstrated that this site played a major role in the production and export of El Chayal obsidian blades to the rest of the Lowlands during the Late Classic period. However, Salinas de los Nueve Cerros, located only 40 km from Cancuen, happens to be the only Lowland Late Classic site presenting a higher rate of SMJ than the El Chayal material. This data raises many questions about the possibility of Salinas being related to another exchange sphere than the classic Lowland Maya one, and enables us to discuss questions of contacts, and frontiers between these two major sites.

Andrieu, Chloé [121] see Victor, Bart

Anfinson, Scott [74] see Scott Cummings, Linda

Angiorama, Carlos [132] see Franco Salvi, Valeria

Ankele, William (University of Oklahoma)

[21] *An Early Archaic Melting Pot in the Southern Rocky Mountains: Early Holocene Mobility and Settlement Patterns in the Gunnison Basin, Colorado*

In comparison to the Late Paleoindian Period (10,000–8,000 rcybp), the Early Archaic (8,000–6,500 rcybp) in the Gunnison Basin, Colorado is a poorly understood time because of its relatively light archaeological signature. Not only is the archaeological record more ephemeral, but we also see a change in technologies, such as projectile points types, in this transitional period. Some archaeologists explain these observations as a result of changing environments and shifting settlement processes as new populations moved into the basin. Preliminary research has shown that Early Archaic projectile point types from the Rocky Mountains, Great Basin, Southwest, and Great Plains are all present in the Gunnison Basin. Using multiple lines of evidence, I investigate the settlement and mobility patterns of the people who lived in the Gunnison Basin during the Early Archaic Period.

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Anklam, Andrew and Dan Wendt**[239]** *Modeling Proglacial Shore Lines of Glacial Lake Agassiz around Prehistoric Quarries in Northern Minnesota*

Since 2009 the Knife Lake siltstone quarries in the Boundary Waters Canoe Area Wilderness of Minnesota U.S. quarry district have been the focus of archaeological and geoarchaeological research. A recent survey conducted in 2014 and 2015 identified several relic beach features at varying elevations above the current water line of Knife Lake. GIS was used to model and predict these proglacial lake shoreline features to better understand the procurement patterns of Knife Lake siltstone, a prominent lithic material in Minnesota. It is believed that these beachlines were formed by successive phases of a proglacial lake and may relate to an eastern extension of glacial Lake Agassiz during the Late Paleoindian period when several of the Knife Lake quarries were active.

Using the elevation of relic beach features identified by survey, several different inundation maps were made using GIS to visualize the Knife Lake area during each of the different phases of the hypothesized proglacial lake. The maps were made using LiDAR data freely available from the Minnesota Geospatial office. These maps are being used to help archaeologists better understand the potential distribution of archaeological sites on relic beaches at an unexpected distance from the present extent of Knife Lake.

Anschuetz, Kurt F. (Rio del Oso Anthropological Services, LLC) and Richard I. Ford (University of Michigan, Emeritus)**[297]** *Earning Their Living: Archaeologies of Ideation, Ritual, and Agricultural Practice in the Southwestern Pueblo Landscape*

Agriculture among the northern Southwest's Pueblo communities traditionally and historically was more than merely an economic activity through which the people "made their living." Steeped in ritual and informed by principles of stewardship, spiritual ecology, and ensoulment that explicate their orientation within the Natural World and their obligations to the Supernatural World, indigenous agricultural practice was literally and figuratively a key element in each individual's everyday observation of their respective community's spiritual belief. Interacting with their plants, soils, and water in terms of these fundamental understandings, Pueblo people "earned their living." Our discussion draws from our ethnographic work with Tewa and Western Keres Pueblo representatives, as well as our field studies of the archaeological traces of late prehispanic and early historic agricultural fields and associated blessing features in the greater Tewa homeland of northern Rio Grande Valley and the Western Keres Culture Province of west-central New Mexico. We examine the organization of agricultural field rotation and short-term sedentism through the lens of the Pueblo cultural landscape theme of movement to contribute a richer understanding of the body of interrelated rituals metaphors expressed in the core Pueblo idea that "People are Corn."

Anthenien Jr., Ralph A. [46] see Sagripanti, Jose-Luis

Anthony, Alexander**[296]** *"Irishness" and Tea Consumption: The Materiality of Ethnicity*

Excavations at the McHugh Site (47WP294), a mid-to-late Nineteenth Century homestead in Wisconsin, resulted in the recovery of a large material culture assemblage. Historical documents reveal the site's occupants to have been pre-famine Irish emigrants who settled in Ohio before moving to Wisconsin in 1850. However, analyses of the material culture have thus far failed to uncover evidence of an Irish identity distinct from an American identity. This paper presents results of an analysis of the teaware component of the McHugh ceramic assemblage that attempted to identify potential markers of traditional pre-immigration behaviors. Since tea is consumed by cultures across the world, the presence of teaware alone is not enough to indicate "Irishness." Thus, this study explores the correlates of the material manifestation of tea consumption within the McHugh household and offers a comparison with selected contemporary sites as well as modern Irish and Irish American households. The aim of this study is to discover if there is an inherently Irish style of tea consumption and to determine whether or not the associated behaviors can inform our understanding of the McHugh assemblage.

Anthony, David (Hartwick College) and Dorcas Brown (Hartwick College)**[212]** *The Dogs of War: A Bronze Age Initiation Ritual in the Russian Steppes*

At the Srubnaya-culture settlement of Krasnosamarskoe in the Russian steppes, dated 1900–1700 BCE, a ritual occurred in which the participants consumed sacrificed dogs, primarily, and a few wolves, violating normal food practices found at other sites, during the winter. At least 64 winter-killed canids, 19% MNI/37% NISP, were roasted, fileted, and apparently were eaten. More than 99% were dogs. Their heads were chopped into small standardized segments with practiced blows of an axe on multiple occasions throughout the occupation. The repeated violation of the canid eating taboo, unique to this site, combined with the metaphor of human transformation into male canids, suggests that the participants entered a liminal state typical of a rite of passage. Parallels from comparative Indo-European (IE) mythology provide the indigenous narrative that gave meaning to this ritual: we argue that it was an initiation into the widely attested IE institution of youthful male war-bands, symbolized by transformation into a dog or wolf.

Antonelli, Caroline (University at Albany—SUNY)**[254]** *Landscape Modification Seen from Above: Remote Sensing Analysis at Postclassic Mayapan*

This paper examines shifting environmental paradigms in the Maya realm. Using Mayapán as a case study, a site long-considered to be located in a "marginal" environment for agricultural productivity, I will evaluate site resilience, sustainability, and self-sufficiency and use these concepts to create a more nuanced perspective of human-environment interactions. Data from Mayapán will be cross-referenced to other similar sites across the Maya region. I will show that assumptions about the environment in the Northern Yucatán Peninsula is rooted partly in culture historical interpretations of the previous century. Modern investigative techniques from the last twenty years have allowed for more robust scientific research that contrast the environmental perspectives of the past, challenging these long-held beliefs and opening up new avenues of research. These new investigations show that the environmental history of the Maya in the Northern Yucatán Peninsula is even more complex than previously understood. Occupation in this area is both highly adaptive and stable at different points in time.

Antonio, Luz (Proyecto de Investigación Arqueológica Prehistoria Urbana de Huari)**[300]** *Relaciones estilísticas y culturales en un contexto temprano del Horizonte Medio*

Enmarcado dentro del Proyecto de Investigación Prehistoria Urbana Huari 2017 se realizó un hallazgo peculiar de objetos cerámicos interrelacionados temporal y espacialmente. El grupo de objetos encontrados—que preliminarmente tiene relevancia simbólica temprana—fue hallado como un relleno de prepiso y con posibilidad de uso ritual. Su importancia es que es el primero en encontrarse de manera intacta e interrelacionado con una posible arquitectura doméstica.

Entre las preguntas preliminares que genera este grupo de objetos está su función, la filiación estilística y la temporalidad dentro de las actuales cronologías propuestas y al interior del propio sitio arqueológico Huari.

El trabajo se enfocará en el análisis de los rasgos estilísticos, para la cual se revisaran los estilos analizados y descritos por Menzel y los planteamientos de autores posteriores. La observación de pastas servirá para diferenciar estas vasijas de otros objetos cerámicos asociados que los

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circundaban. El objetivo es establecer las relaciones estilísticas y culturales de este interesante hallazgo y lograr un aporte para este importante proyecto de investigación que ha generado inquietantes luces en su primera temporada de excavación.

Antoniou, Anna (University of Michigan) and Earl Davis (Shoalwater Bay Tribe)

[250] *Collaborative Archaeology in Willapa Bay, Washington: Supporting Communities through Scientific Research*

How can archaeologists and indigenous communities work together to transform an understanding of prehistory into something that serves the community's goals? Since the 1990's archaeologists have become increasingly dedicated to developing new ways to directly and meaningfully engage descendant communities. This paper presents a case study of collaborative and applied archaeology from the Pacific Northwest Coast. In it, we describe our ongoing efforts to collaboratively define the questions, methods, and outcomes of archaeological investigations at Nukaunanlh Village in Willapa Bay, Washington. Through rigorous scientific analyses of archaeological deposits, oral histories, and ethnohistorical accounts pertaining to prehistoric subsistence practices, we aim to support and reinvigorate culturally important foodways that are in danger of being lost within the current descendant community. In particular, we hope that results stemming from our collaboration will aid in the community's legal battle to regain their ancestral fishing rights.

Anyon, Roger [72] see Sezate, Adam

Aragon, Leslie (Archaeology Southwest)

[91] *Identity and Ideology in the Hohokam Ballcourt World*

The Hohokam Ballcourt World encompassed much of the middle Gila River watershed from around A.D. 800 to 1100. The widespread ideology that many archaeologists associate with the use of ballcourts correlates with an expression of group identity that manifests itself in the archaeological record as the suite of traits that mark the Hohokam pre-Classic period. Despite the fact that archaeologists commonly define groups based on their material culture, these groups are not static. Parts of identity within them are often fluid, changing with the prevailing socioeconomic tides, while other parts of identity are more persistent. This project will combine multiple material classes into a framework capable of assessing multiple scales of identity during an important period in the Hohokam pre-Classic, when a new religious ideology—the Hohokam Ballcourt World—developed, spread, and eventually declined. The goal of this study is to use a multiscale approach to identity, emphasizing both active and latent expressions, to demonstrate that outward displays of cohesion at Hohokam sites mask underlying social diversity related to persistent local identities.

Aragon, Leslie [91] see Schaefer, Jonathan

Arakawa, Fumiyasu [91] see Crawley, Andrea

Aranda, Claudia [105] see Peralta, Eva

Araujo, Astolfo [2] see Correa, Leticia

Araujo, Astolfo (Museum of Archaeology and Ethnology—USP)

[2] *A Major Hiatus in the Mid-Holocene Archaeological Record of Eastern South America: Reassessing the "Archaic Gap"*

A decade ago, we suggested that the low frequency of archaeological sites dated from the mid-Holocene in several portions of Lowland South America (what we have called the "Archaic Gap") was due to an increase in the magnitude of dry periods. Since then, data regarding paleoenvironmental reconstructions for Lowland South America, coupled with an increase of the archaeological knowledge, allows us to reassess the idea of the "Archaic Gap" and redefine both the areal extent of the phenomenon and its possible causes. However, as expected when larger data sets are available, it is possible to perceive oscillations in the archaeological signal that suggest reoccupation of some areas. Although we maintain that the main reasons underlying these patterns are still related to climate, they are most probably related to an increase in climatic variability, and not necessarily to an increase in dryness.

[2] *Chair*

Arbolino, Risa (National Museum of American Indian)

[139] *Chair*

Arbuckle MacLeod, Caroline (University of California, Los Angeles)

[32] *Ethnoarchaeology in Egypt's City of the Dead*

Many of the initial approaches to understanding ancient cultures were centered on ethnographic observations. These early studies tended towards overly simplistic arguments that often either overtly or inadvertently supported social Darwinism. Recent applications of ethnoarchaeology have also been accused of falling into similar pitfalls. While the critics are right to highlight the limitations of this approach, scholars can avoid making dangerous assumptions by working alongside the societies they wish to study. Working with modern communities to interpret the past is a valuable technique that can reveal different ways of doing that may not have originally occurred to the investigator. This paper shows how the assistance and guidance of carpenters living and working in Cairo's City of the Dead has enabled a more nuanced and realistic view of ancient woodworking practices. These modern artists have inspired hypotheses that, when tested against the material evidence, have led to a new understanding of technological processes and the position of craftspeople in ancient Egyptian society. Through this case study, the responsible application of ethnoarchaeology is explored in order to demonstrate its use as an invaluable tool for archaeological interpretation.

[32] *Chair*

Archuleta, Bernardo [27] see Sosa Aguilar, Danny

Ardagna, Yann (UMR 7268 Marseille), Emeline Sperandio (UMR 7268—ADÉS Marseille) and Bruno Bizot (Service Régional de l'Archéologie, DRAC PACA and U)

[88] *The "Provence-Alpes Côte d'Azur" Regional "Human Bone Library": A Tool for Anthropological Research and for the Preservation of Human Remains*

Following an evaluation between 2004–2006, it appeared that more than 200 anthropological series had been assembled following excavations led in Provence Alpes Côtes d'Azur (PACA) region. These extremely scattered series had not all been subjected to a precise inventory, were disparately curated or even lost. Therefore, most of these collections were not or no longer accessible to scientists. Faced with this question concerning the heritage preservation, different regional actors invested in anthropological research argued on the best way to improve this situation. It was decided to create the "human bone library of PACA region". Today, the "human bone library" is part of the regional archeological deposit of the French Ministry of Culture and Communication in charge of curating archeological material. The "human bone library" comprises close to about 6000 subjects overall dating from the Neolithic to the Modern period. Now, with a little perspective, we can confirm that this "human bone library" is starting to impact

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anthropological research and valorises the collections on regional and national levels.

Besides presenting the "human bone library", this talk aims to highlight the conditions of the collections and of anthropological research in Southern France before and after this scientific management tool was implemented.

Ardelean, Ciprian (University of Zacatecas, Mexico)

[79] *The Chiquihuite Cave in Zacatecas, Mexico: Cultural Components, Lithic Industry and the Role of This Pleistocene Site in the Peopling of America*

The high altitude Pleistocene site of Chiquihuite Cave, in the Central-Northern Mexican Highlands, is slowly turning into one of the most important players on the sensitive stage of the debates about the earliest human presence in North America. After the first three exploration seasons and before the imminent continuation of the excavations at this multi-component archaeological site, we can surely talk about several important Late Pleistocene, older-than-Clovis occupational phases. Dozens of radiocarbon and luminescence dates confirm the chronological sequence of this prehistoric locality spanning over millennia. The sediments produced chemical signatures of human presence, as well as interesting palaeoenvironmental indicators. The complicated lithic industry at the Cave, based on silicified limestone, shows a large array of taxonomic units, revealing strange but consistent technological approaches: flakes and blades, scrapers, burinated points, points on transversal flakes, bifacial and unifacial tools, intentionally fractured calcite and quartz laminae and so on. The explorations at Chiquihuite are the result of an international and interdisciplinary effort. Novel techniques have been implemented and the results produced a complex view of the ancient archaeological record. Dennis Stanford himself and the Smithsonian Institution played an important role at the very beginning of this scientific endeavor.

Ardren, Traci (University of Miami)

[254] *Household Garden Plant Agency in the Creation of Classic Maya Social Identities*

Domestic gardens are a well-established aspect of Classic Maya residential settlement, and they are rightly considered important components of food security and even food sovereignty strategies utilized by the ninety-nine percent. Taking inspiration from the emerging field of human-plant studies, I argue daily interactions with household garden plants exerted a profound influence on not only the daily habits of ancient Maya populations, but also on their memories and sense of social identity. Tending gardens was a repeated behavior that almost all members of the social majority shared in common. Taking a perspective that common Maya garden plants such as chaya and chile were agents in, rather than objects for, the production of knowledge and social meaning, this paper argues that household garden plants actively helped shape crucial aspects of Classic Maya social identities along gendered and age based axes. Data on domestic compounds from the site of Yaxuna are used to illustrate how, through human circulations within garden spaces located between structures, plants and humans co-generated cultural values, practices, and relations.

Ardren, Traci [66] see Palacios, Horvey

Areche, Rodrigo (Qhapaq Ñan Project)

[65] *Evaluando la explotación de los recursos malacológicos en el Cerro Azul prehispánico*

El impacto de la expansión Inca a lo largo de los Andes Centrales ha sido documentado y conceptualizado de diferentes maneras. Ciertas elites de los grupos culturales locales inmersos en este proceso tuvieron un escenario beneficioso que permitió una reformulación en las relaciones políticas y económicas en diferentes grados y escalas. Presentaremos el caso de Cerro Azul o también conocido como la gran fortaleza del Huarco en el valle de Cañete de la Costa Centro Sur de Perú. Este sitio es reconocido etnohistóricamente por su fuerte componente inca, también como lugar de elites de pescadores locales. Los datos de excavación del Proyecto Qhapaq Ñan en Cerro Azul sugerirían un crecimiento y reorganización espacial a la llegada inca.

Los análisis y comparaciones del material malacológico proveniente de basurales en edificios de élite evalúan el rol de la explotación, se plantean áreas de captación y una variabilidad y densidad de especies malacológicas que indicaría una jerarquización económica y política entre las élites de pescadores en Cerro Azul durante la ocupación inca.

Arend, Tiffany [261] see Barnes, James

Arias, Pablo (Universidad de Cantabria)

[136] *Paleolithic Art and Ritual: An Exploration on Human Activity inside Caves in Southwestern Europe*

Caves provide a privileged context for the study of Prehistoric ritual activity. Inside them, we enjoy the unique possibility of directly observing and analyzing spatial features that have hardly changed (and in some cases have not changed at all) since the Paleolithic. However, the poor preservation of the archaeological evidence during the earliest years of the research, and particularly the enormous cultural gap between the Paleolithic codes and systems of beliefs and the modern observers hinder the reconstruction of the events that may have taken place in those places.

In this paper, the available evidence on human action in caves with rock art of southern France and northern Spain will be described and analyzed. We will address relevant topics such as the spatial relationship between Paleolithic graphics and scenographic features of the caves (visibility of the paintings and engravings, capacity of the chambers, sound properties of the decorated areas...) and the evidence of human actions inside the karst (footprints, paths, archaeological items in passages and walls, artificial modifications of the cavern space...). The case of areas of concentration of portable art inside caves, such as Enlène and La Garma, will also be included in the discussion.

Arias, Veronica (West Texas A&M University)

[44] *An Isolated Middle Archaic Bison Kill Site in the Northern Texas Panhandle*

The discovery of a nearly complete, articulated *Bison occidentalis* in association with a Calf Creek projectile point in the northern Texas Panhandle in 2002 constitutes one of the few known Middle Archaic archaeological sites in the region. As the remains were found incidental to the construction of a

new municipal swimming pool, documentation of the excavation and any subsequent analysis were less than ideal. A recently obtained AMS radiocarbon date of the remains at 5115 RCYBP falls within the established time range for the Calf Creek Horizon. This paper reports on the results of new faunal, lithic sourcing, and paleobotanical analyses conducted on materials from this site. It focuses on the context of the discovery of the Stinnett Bison Site, the material culture, and the implications for past human activity in the area. As the only Middle Archaic site excavated in the Texas Panhandle to date, it offers insights into the nature and timing of occupation during the late Allthermal period. The results of the present study both conform to what has been established about the Calf Creek Horizon elsewhere and expand our understanding of it.

Aricanli, Sumru [333] see Barnes, Monica

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Arieta Baizabal, Virginia (Universidad Veracruzana)

[19] *Estudio arqueológico preliminar de un posible sitio olmeca: Antonio Plaza, Veracruz*

El objetivo de la ponencia es presentar los resultados preliminares del programa de mapeo intensivo en Antonio Plaza, Veracruz—un posible sitio olmeca ubicado en la cuenca alta del río Uxpanapa en la costa del Golfo de México—. Dicha etapa de análisis revela información proveniente de la superficie terrestre y es portadora de numerosas ventajas para el futuro planteamiento de un programa de reconocimiento de superficie. El estudio empleó el análisis de la información a través de Sistemas de Información Geográfica (SIG) lo que permitió la comprensión de la superficie y la ubicación geográfica y gráfica de los sitios. Se presentará el análisis espacial y la elaboración de mapas temáticos sobre delimitación de áreas próximas, costos y distancias, rutas mínimas, accesos, índice de vegetación de diferencia normalizada (NDVI), modelos de superficie en 3D. Los resultados preliminares dan cuenta de lo que se ha realizado en el proyecto, así como de la identificación de elementos claves para el planteamiento de una etapa siguiente en torno al recorrido de superficie sistemático, esta vez con información previamente valorada de manera intensiva a través de las nuevas tecnologías en la arqueología.

Arikan, Bulent

[71] *Modeling the Changes in the Surface Processes at Arslantepe (Malatya) during the Early Bronze Age-I (ca. 5000–4750 cal. BP)*

Agent-based modeling of land use not only illustrates how ancient production mechanisms evolve, but such models also have the power to reconstruct changes in spatio-temporal changes in the dynamics of surface processes in relation with the changes in climatic conditions and varying type and intensity of human land use. Early Bronze Age-I at Arslantepe represents a time period when the paleoclimatic dynamics changed towards more arid conditions while the economy of the site shifted from intensive irrigation farming to site-tethered pastoralism. Concurrently, the social organization moved from a hierarchic to a heterarchic structure. Extensive geoarchaeological research around the site suggests a low rate of sediment deposition for this phase. Under more arid climatic conditions, it is expected that various modes of land use would have different impacts on the surface processes. The results of numerous scenarios tested in agent-based models at Arslantepe during the Early Bronze Age-I show that the rates of erosion and deposition change as patterns of precipitation and the mode of land use change. The results of simulations prove that the shift in economic and social organization alleviated the environmental disturbance that the residents of Arslantepe were faced with at the onset of the Middle Holocene.

Arksey, Marieka (Office of the Wyoming State Archaeologist), Paddington Hodza (University of Wyoming Geographic Information Science) and Greg Pierce (Office of the Wyoming State Archaeologist)

[42] *WyoARCH: Increasing the Impact of Archaeological Repositories through Spatially-Enabled Collections Management*

The University of Wyoming Archaeological Repository (UWAR) is the largest archaeological collection and the only federally-regulated repository in Wyoming, providing an unprecedented centralized location for researchers and the public to discover and engage with the 16,000 years of human occupation in this part of North America. However, the current collections management system at UWAR does not facilitate public dissemination of this data, nor does it enable curatorial staff the ability to properly support researchers, educators, or the public in making effective use of the collections. The Wyoming Archaeological Research and Community Hub (WyoARCH) project seeks to resolve this situation through a collaboration between UWAR and the Wyoming Geographic Information Science Center (WyGIS) to develop a public access interface to interact with a new spatially-enabled collections management system.

Arkush, Elizabeth (University of Pittsburgh)

[207] *Land Use, Settlement Patterns, and Collective Defense in the Titicaca Basin: The Constitution of Defensive Community*

This paper starts from the hypothesis that “community” in the Andean highlands in the Late Intermediate Period (LIP) had a great deal to do, not only with kinship and territory, but also with collective defense, including the defense of important common resources. If so, how would the socioeconomic activities of farming and herding have affected the practical organization of defense, and the formation of communities based in part on common defense? I draw on the archaeological record of the Titicaca Basin for a preliminary exploration of this question. The production regimes used by Titicaca Basin peoples changed markedly over time, shifting from intensified agriculture in the Middle Horizon to relatively risk-averse strategies of pastoralism and rain-fed terrace cultivation in the LIP. But notwithstanding many basic cultural similarities among LIP Titicaca Basin societies, there are significant contrasts across this large region in the opportunities the land affords for farming and herding and the relative importance of these activities in late pre-Columbian times. These regional contrasts provide an opportunity to explore how farming, herding, and related settlement patterns influenced the organization of defense and the constitution of LIP communities.

[75] *Discussant*

Armijo Torres, Ricardo [30] see Ek, Jerald

Armit, Ian (University of Bradford)

[144] *Can We Define a British Iron Age?*

The Iron Age in Britain has traditionally been seen as a period of hierarchical, warrior-based, Celtic societies, characterised by hillforts, defended settlements and elaborate weaponry. The dominant interpretive models have emanated from Wessex—that area of central southern England where the largest and most impressive hillforts are found. In recent decades, however, archaeologists have increasingly recognised the marked regional differences inherent in Iron Age societies across different parts of Britain. As a result, the conventional, Wessex-dominated models have fallen from favour and been replaced by a myriad of regionally-focussed analyses. This approach, however, has its own problems. Different regions of Britain might have very different archaeological sequences in the Iron Age, yet there are some traits (including the uptake of continental La Tène art styles, the paucity of visible burial rites and the use of the roundhouse as the normative domestic form), that display a layer of cultural unity underlying this apparent variation. This paper explores how we might reconcile these tensions between regional distinctiveness and broad-scale cultural similarities across the British Iron Age.

Armstrong, Aaron and Martha Tappen (University of Minnesota (Twin Cities))

[217] *Implications of Efe Ethnoarchaeology for Recognizing Human-Derived Faunal Assemblages and Carcass Processing Decisions*

Archaeological analyses of faunal remains frequently rely on observations derived from ethnoarchaeological studies to identify bone surface modifications that were the result of animal capture, butchery, and consumption by humans. In addition to the accurate identification of human-derived modifications, ethnoarchaeological studies in which carcass processing and consumption were observed and documented can provide a more precise means to recognizing specific human behavioral choices, such as carcass skinning, defleshing, disarticulation, marrow and grease extraction, and, ultimately, culturally-mediated processing decisions. However, many zoo-ethnoarchaeological studies have focused on larger bovids, and it is not clear that smaller animals retain similar types and frequencies of human-induced surface modifications. In this paper, we present analyses of size 1 bovids (<20 kg body weight) captured, butchered, and consumed by Efe foragers of the Democratic Republic of Congo and ethnoarchaeological observations of animal capture, carcass processing, and consumption. We document the frequency, location, and morphology of bone surface modifications as well as skeletal part frequencies, butchery patterns, and processing decisions. Our study provides a control assemblage focused on size 1 bovids and reveals that their carcass remains exhibit numerous bone surface modifications that are the residues of specific behavioral choices of the Efe.

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Armstrong, Chelsey Geralda and Christina Sam-Stanley (Research Office, Kitsumkalum First Nation)**[114]** *Fruits from the Ancestors: Tsimshian Forest Gardens in the Pacific Northwest*

The historical ecology of Dalk Gylakyaw, the ancestral village of the Gitsm'geelm Tsimshian, is a community-based research program that focuses on connecting the past to the present using a heterarchy of ethnographic, ethnohistorical, and archaeological methods that are organized from Tsimshian Adawx, worldviews, and community objectives. Traditional resource management and environmental wisdom are explored as a means of investigating the archaeological past in less invasive ways. In this context, we explore how descendant communities connect as intensely with the plants that continue to grow above ground at ancestral village sites—their names, smells, stories, tastes, and management practices—as they do with traditional archaeological materials and features found below the ground, such as stone tools or cultural depressions. Living heritage embodied by plants provide touchstones of memory and literally bring forth the fruits of the ancestors.

[195] *Discussant*

Armstrong, Douglas (Syracuse University)**[123]** *Indigenous and Transcultural Implications in the "Seasoning" of Early 17th-Century Settlers of Barbados*

The early 17th century settlement of Barbados is often projected as "Little England" and the settlers unidimensional as "Englishmen Transplanted" onto a rather blank slate of an abandoned island (Puckrain 1984, Gragg 2003). Current archaeological investigations of the initial period of colonial settlement on Barbados focusing on Trents Plantation, and the pre-sugar era (1627–1640s) project an all-together different picture. The archaeological and historical record projects a multivalent, multicultural, mix of engagements between Indigenous, African, and European settlers. This complexity is expressed in the material record, particularly with the mix of locally produced and imported ceramics from the early 17th century plantation context at Trents. The emerging colony on Barbados was English in name, but backed by the Dutch, and assisted by a group of Indigenous people who joined them from Guyana and Africans captured from a Portuguese ship. Moreover, this colony was established in the 17th century Caribbean, a theater contested by the Spanish, Portuguese, Dutch, and English, as well as a complex array of Indigenous peoples. The result was the construction of a complex multi-vocal cultural ensemble of cultural and material expressions that is consistent with the dynamic cultural diversity that emerged in the region.

Arnauld, Charlotte [80] see Marken, Damien

Arnauld, Marie (CNRS)**[169]** *Cities on the Move across Northwestern Mesoamerica: Contribution by Dominique Michelet*

The paper aims at enhancing the contribution by Dominique Michelet and his teams to the knowledge of sedentism and urbanization on the northern and northwestern fringes of Mesoamerica (mainly San Luis Potosí, Guanajuato, Michoacán, Mexico). Distinct processes of mobility, migration and agglomeration developed in those regions, in particular with reversibility of sedentary life related to multiple factors, among which climatic and agrarian cycles are only partly known so far. Specific community organizations were plausibly experienced through a series of 'transformative relocations' (Nelson et al.). The latter would have produced Postclassic urban capitals like Tula, Hidalgo, as well as 'pre-Tarascan' and 'Tarascan' large and compact settlements like Milpillan, and Malpais Prieto, (Malpais de Zacapu, Michoacán). Michelet brought up detailed results of fieldwork explorations combined with acute perception of broad environmental, subsistence and cultural changes on a Mesoamerican scale.

[80] *Discussant*

[80] *Chair*

Arneborg, Jette [34] see Madsen, Christian K.

Arnett, Abraham (Logan Simpson), S. Joey LaValley (Logan Simpson) and Travis Cureton (Logan Simpson)**[325]** *The Undiscovered Country: New Insights into the Anchan Tradition of Central Arizona*

Between November 2016 and September 2017 archaeological surveys performed by Logan Simpson on behalf of the Tonto National Forest in the Hell's Hole region of central Arizona revealed an abundance of previously undocumented Anchan and early Salado Tradition Settlements. Numerous single room habitations or field houses and large masonry structures with fully enclosing plaza or compound walls indicate a substantial population in an area traditionally considered a hinterland between the Sonoran Desert and the Colorado Plateau. GIS-based analysis of the distribution of architectural features and artifacts demonstrates changes in settlement and land use patterns across the landscape over time. Comparisons with survey data from other areas of the Tonto National Forest, the southern Colorado Plateau, and the Phoenix Basin suggest a blending of in-situ social and economic developments with in-migration from adjacent areas to the north and south.

Arnold, Dean (Field Museum)

[246] *Discussant*

Arnold, Philip (Loyola University Chicago)**[128]** *A Fettered Serpent? Quetzalcoatl and Classic Veracruz*

Great is the conflation of Ehecatl Quetzalcoatl and Topiltzin Quetzalcoatl: a mythical player in the world creation of Mesoamerican groups vs. a semi-historical personage who presaged the arrival of Hernán Cortés. Veracruz, a region implicated via the activities of both avatars, is particularly enmeshed in this duality.

The Postclassic narrative whereby Quetzalcoatl journeyed to the Gulf lowlands appears to be foreshadowed in the desecralization of Teotihuacan's Feathered Serpent Pyramid at the end of the third century AD. This ritual destruction has been linked to a political realignment at Teotihuacan, instigating the departure of refugee groups who fled the Basin of Mexico.

The founding of Classic Period Matacapán, in the Tuxtla Mountains of southern Veracruz, may have been linked to this exodus. This paper considers the regional impact of this relocation via the appearance of Quetzalcoatl imagery along the Veracruz lowlands, both through overt representations as well as potential proxies (e.g., Reptile Eye glyph, Venus symbolism, the Ehecaocozatl "wind jewel"). Variations in how Feathered Serpent imagery is manifest could well reflect autochthonous lowland ideals versus notions related to an intrusive highland cosmivision. Thus, not all Quetzalcoatl imagery is equal, nor is it equally unfettered.

[150] *Discussant*

Arredondo, Ernesto (Dr.)**[337]** *Excavations at El Achiotl: Changing Political and Religious Institutions Reflected in Architecture*

The archaeological site of El Achiotl is located on the southwestern fringe of the region known as the Mirador Basin. During the Late Preclassic period (300 BC—250 AD), it participated in mainstream architectonic traditions of the Central Maya Lowlands, exemplified by its main building, Structure 5C-

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01. With the advent of Early Classic times (ca. 250 AD), changes appeared in the architecture of Structure 5C-01 and at the adjacent Structure 5C-08. These later changes express the political fluctuations in the region. In this paper we will review the construction sequence observed at the site, after three field seasons as part of the larger La Corona Regional Archaeological Project.

Arriaza, Bernardo [87] see King, Charlotte

Arroyo, Barbara (Instituto de Antropología e Historia de Guatemala), Gloria Ajú (Proyecto Zona Arqueológica Kaminaljuyu) and Javier Estrada (Proyecto Zona Arqueológica Kaminaljuyu)

[176] *Residential Compounds At Kaminaljuyu: Evidence Of Long Distance Interaction*

Kaminaljuyu is a site of critical importance that has been partly destroyed by Guatemala City. However, there is important evidence buried in locations that have not been previously considered for research. Most of the excavations at Kaminaljuyu have taken place inside mounds, offering information on a sector of the society. This research has yielded data on the site's chronology, function of the mounds, and site layout. Recent excavations have uncovered important information regarding specific activities near domestic areas as well as remains within these areas. This information has provided data on the extension of the prehispanic settlement, learning that spaces that had not been previously considered as being inhabited represent important domestic areas. This paper will present results from recent excavations in various locations of the site, indicating interaction with various sites in the Maya highlands and the Pacific Coast and beyond. They contribute to the larger understanding of Kaminaljuyu's long history of occupation.

Arroyo-Cabrales, Joaquín [59] see Acosta-Ochoa, Guillermo

Arroyo-Kalin, Manuel (Institute of Archaeology, UCL) and Santiago Rivas Panduro (DCC-, Loreto)

[178] *Revisiting the archaeology of the Napo River*

This paper provides an overview of results of a recent archaeological survey of the lower Napo River, from its better known Ecuadorian reaches to its discharge point into the Amazon river, within Peruvian territory.

Arruza, Antonio [35] see Savarese, Michael

Arthur, John (University of South Florida St. Petersburg), Matthew Curtis (UCLA Extension), Kathryn Arthur (University of South Florida St. Petersburg) and Jay Stock (University of Cambridge)

[198] *From Bayira, the Earliest African Genome, to a Place of Refuge: Mota Cave's History in Southwestern Ethiopia*

Mota Cave located in southwest Ethiopia was found in 2011 in collaboration with local Gamo elders and partially excavated in 2012. The cave has exposed a long sequence of occupation (5295 Cal BP to 305 BP) revealing remarkable technological, subsistence, and cultural changes. We uncovered a burial of a male with the earliest complete ancient genome recovered from the African continent. We have named him Bayira, meaning "first born" in the Gamo language where the cave is located. Bayira begins to tell a story of how people were utilizing the Gamo highlands 4500 years ago. In addition to Bayira, Mota Cave contains a diverse lithic assemblage, as well as the onset of pottery. The cave has revealed evidence for the beginning of food production in the region. Fauna and flora remains suggest that agropastoralism began over the last two millennia. The excavations suggest that Mota Cave was utilized for a variety of purposes from a mortuary site to a living site to a place to seek refuge in times of conflict. The southwest Ethiopian highlands provides a unique perspective on the ending of the African Humid Period and its aftermath providing us with exciting insights on Eastern Africa's past.

Arthur, Kathryn (USF St. Petersburg), Sean Stretton and Matthew Curtis

[210] *Mapping Historical Sacred Spaces in Southern Ethiopia*

In 2011, we began a collaborative project with Boreda Gamo communities of southern Ethiopia to understand the spatial and historical relationships between settlements and sacred areas. Community elders guided us along winding footpaths that ascended 9 mountain tops leading to settlements that were first occupied in the early 13th century and have now been abandoned for nearly 100 years. Surrounding these historic settlements are sacred groves with springs, caves, and boulders that give physical evidence in their Indigenous religion of the animation of the non-human world. Yet, the canopy of trees also harbored cemeteries, Orthodox Churches, and stacked stone walls, berms, and trenches that reveal a history of conflict. We use Geographic Information Systems software in conjunction with collected locational data, physiographic and land cover data, oral traditions, toponymical associations, historic maps, and other documents to build historic settlement and environmental models. Using spatial data in collaboration with community knowledge we can begin to understand the complex local histories related to the introduction of Christianity, conflict, and environmental change.

Arthur, Kathryn [198] see Arthur, John

Asher, David [33] see Kinsman, James

Ashlock, Dawn [53] see Ashlock, Phillip

Ashlock, Phillip (CIRCA) and Dawn Ashlock (CIRCA)

[53] *Exploring the Use of 3D Technologies, Virtual Reality, and Immersive Media in Public Archaeology to Advance Awareness of Material Culture across Social Media Platforms*

With the increasing issues surrounding access to remote sites, record low attendance of traditional museum settings, and trends involving greater interaction with social media platforms among upcoming generations, this poster presentation attempts to explore the use of 3D technologies, virtual reality (VR), and immersive media in Public Archaeology to advance awareness of material culture across social media platforms. These methods provide the ability to disseminate content to the public en masse, and are considered a critical tool in challenging anti-science rhetoric by demonstrating accurate visual representations of the past.

Ashmore, Wendy (University of California, Riverside)

[220] *Discussant*

Askan, Kevin [183] see Darrington, Glenn

Asrat, Seminew [200] see Reeves, Jonathan

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Atalay, Sonya (University of Massachusetts Amherst)**[110]** *Indigenous Knowledge in Dangerous Times: Research Partnerships, Knowledge Mobilization, and Public Engagement*

What are the impacts of the contemporary political climate on community-based research with Indigenous communities? When archaeologists work in partnership with communities what added complexities do they face during a time when accusations of “fake news” are ever-present, conspiracy theories abound, and the science of climate change is questioned. Contrary to the way some have framed indigenous knowledge as being at odds with science, I'll discuss approaches in which community-based research follows a model of “braiding knowledge”. Rather than thinking of archaeology as being at odds with indigenous knowledge or as being based on fundamentally competing systems of viewing and understanding the world, I'll discuss research partnerships with indigenous communities in which archaeological ways of knowing compliment indigenous knowledge systems. I will discuss use of graphic novels, animations, and virtual reality within my research and teaching, and will share ways of using these methods to ‘mobilize knowledge’, moving it into places where it's accessible by multiple public audiences.

[1] *Discussant*

Athassopoulos, Effie F. [70] see Salem, Rebecca

Athenstädt, Jan (University of Konstanz), Lewis Borck (Faculty of Archaeology, Leiden University), Leslie Aragon (Archaeology Southwest), Corinne L. Hofman (Faculty of Archaeology, Leiden University) and Ulrik Brandes (University of Konstanz)**[287]** *Plain Ware and Polychrome: Quantifying Perceptual Differences in Ceramic Classification*

In the course of the NEXUS1492 project in the Caribbean we are interested in potential differences in the perception of archaeological ceramic sherds. A pilot study was conducted across four states in the US Southwest, to explore how different groups of peoples cognitively sift experiential information of ceramic sherds.

In different sorting exercises, participants of the study were asked to arrange the sherds according to their perceived similarity based on standardized questions. The spatial arrangement of the sherds is averaged within the groups and used to quantify variation and similarity between individuals and between groups.

In this presentation we will discuss the results of the study and evaluate the results in regard to the following questions:

- Does the perception of pottery differ within and between groups of peoples?
- Are there implications of these differences for archaeologists?

Ideally the results can help archaeologists refine their social interpretations of ceramic data.

Atici, Levent (University of Nevada, Las Vegas)**[217]** *Explanatory Frameworks in Zooarchaeological Research: Are Dichotomies Necessary and Meaningful?*

Zooarchaeologists have often employed binary oppositions such as “urban consumers” and “rural producers” and distinguished between centralized/regulated and decentralized/unregulated animal economies with direct/indirect food provisioning systems to elucidate pastoral economies of early complex societies. As zooarchaeologists, we are tasked with bridging more abstract and ideational anthropological variables with the archaeological hard evidence as well as with a narrower set of more explicit zooarchaeological measures, thus moving from heavily fragmented animal bones to complex and abstract human behaviors. A large corpus of cuneiform tablets from the Middle Bronze Age (ca. 2000–1750 BC) urban center of Kanesh (the archaeological site of Kültepe, Kayseri, Turkey) provide direct and indirect evidence for various aspects of agropastoral economy and offer detailed information on food ways with specific reference to animals. Thus, we have a unique opportunity to question the applicability and meaningfulness of dichotomized approaches to organization of every state or society in the ancient Near East or elsewhere. Theoretically, I focus on centralization and bureaucratic control, asymmetrical access and inequalities, and production-distribution-consumption dynamics. Methodologically, I bring together as many independent lines of evidence as possible with special emphasis on combined use of zooarchaeological and historical data to develop comprehensive and fine-resolution pictures.

Atici, Levent [71] see MacIntosh, Sarah

Atkins Spivey, Ashley (Pamunkey Indian Tribe)**[255]** *“To leave a part of who you are here:” Reusing and Reimagining the Archaeological Record on the Pamunkey Indian Reservation*

Archaeologists rarely examine the reuse and reimagining of artifacts within contemporary Indigenous communities. The Pamunkey Indian Tribe, located in the Tidewater region of Virginia, has a long history of utilizing materials from the Reservation's archaeological record in a variety of ways. For over a century, tribal members have reused artifacts in methods similar to their intended function, and they have reimagined them to create artwork and encourage artistic inspiration. Archaeology has always played a visible role in the lives of Pamunkey tribal members, from the exhibitions displayed at the community's museum, to the multitude of artifacts one can find along the surrounding banks of the Pamunkey River. Unfortunately, this visibility and engagement on the Reservation is in stark contrast to the archaeology of Native Americans elsewhere in the region. Interweaving Pamunkey perspectives, opinions and memories with ethnographic and archaeological research, this paper contextualizes tribal members' reuse and reimagining of the Reservation's archaeological record throughout the past century. Recognizing that the purpose, use and meaning of the archaeological record are varied among Native communities, the research conducted with the Pamunkey community demonstrates those various perceptions can aid archaeologists in our interpretations of the archaeological and material records.

[255] *Chair***Attarian, Christopher****[37]** *Complementary Economic Specialization in an Emerging Decentralized Exchange System: A Case from the Late Classic Naco Valley, Honduras*

This paper describes the reuse of a small structure at Late Classic (CE 600–900) Site 426 in the Naco Valley, northwest Honduras. The structure shows evidence of being converted from residential use to firing ceramic vessels. The current interpretation of the structure's reuse is that it emerged as a center of ceramic manufacture as power waned at La Sierra, the valley's previous political capital. In this context, Site 426's residents, along with their immediate neighbors, sought some prominence and economic security by engaging in the complementary production of different goods for their own use and exchange with others within and beyond the valley. Recovery of a cached Peten polychrome vessel at the structure implies that this strategy enjoyed some success.

Auchter, William (Aarcher, Inc.)**[42]** *Cell Towers: Where the Archaeology Is a Mile Wide and an Inch Deep*

Cultural Resource Management investigations associated with the deployment of telecommunications infrastructure in the United States are unique. From the size of the undertaking, to the task that CRM/NEPA professionals are prescribed to accomplish, cultural resource professionals are able to see a wide breadth of cultural landscapes from across the country for short periods of time. Using examples from across the country, a critical examination will be made of this unique aspect of CRM. How has this type of archaeological investigation contributed to the larger understanding of the

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past, if at all? What lessons learned from this field can be applied to the broader archaeological/CRM world? What understandings from the broader archaeological community can be incorporated into this field to create more effective opportunities from the thousands of projects that are performed? What can be learned from these infrastructure undertakings to better understand the past and prepare to understand the future past?

Auffray, Jean-Christophe [125] see Cucchi, Thomas

Auld-Thomas, Luke

[337] *El Achiotal in Context: Settlement and Geopolitics in the Northwest Peten, Guatemala*

This paper presents research carried out by members of the Proyecto Regional Arqueológico La Corona at the site of El Achiotal since 2009, with emphasis on new findings since 2015. Occupation at the site spans the Late Preclassic and Early Classic periods (roughly the 1st to 5th Centuries AD, with the possibility of some earlier occupation). An inscribed stela discovered in 2015 provides critical insight into the geopolitics of the Early Classic period and establishes greater time-depth for some known aspects of Classic Maya statecraft. Moreover, an airborne LiDAR survey carried out in 2016 and ground-truthed during the 2017 field season indicates that El Achiotal may have been part of a larger and more complex settlement system than was previously recognized. The survival of this political and demographic system during the transition to the Early Classic period, when monumental construction decreased or stopped altogether at many large centers in the region, will be considered in ecological and political terms.

Auld-Thomas, Luke [337] see Canuto, Marcello

Austin, Anne (University of Missouri—St. Louis)

[316] *Discussant*

Austin, Anne [130] see Kansa, Sarah Witcher

Austin, Rita (University of Oklahoma)

[143] *Strategies for Understanding Biomolecular Preservation within Archaeological Collections*

Technological and analytical advancements of biomolecular techniques allow scientists and museums to explore and assess archaeological collections from a new perspective, revealing new insights into past peoples, health, and the environment. One of the major challenges for biomolecular research on archaeological remains are uncertainties surrounding biomolecule preservation. Information on how samples were collected, washed, preserved, and maintained are valuable for generating and interpreting biomolecular data. This presentation will discuss reasonable tactics museums and researchers can utilize to help direct and optimize archaeological biomolecular sampling approaches and requests. Specifically, how and why museums should document collection-specific preservation methods and materials, and calling on researchers to assess biomolecular preservation for a collection prior to larger sampling requests. Together these approaches can preserve collections for the future while providing critical information about the potential of museum collections for biomolecular research.

[143] *Chair*

Austvoll, Knut Ivar (Department of Archaeology, Conservation and History, University of Oslo)

[29] *Seaways to Complexity. Sociopolitical Strategies in Northwestern Scandinavia in the Early Bronze Age*

Along the northwestern coast of Scandinavia the reliance and utilisation of the sea set the stage for a more advanced sociopolitical organization. The technological innovations prompted by the Late Neolithic (i.e. ship technology), turned the sea into a connective arena of interaction and trade. This is seen with the widespread distribution of finely crafted Jutish flint daggers from Late Neolithic I, followed by a steady increase of metal, burial mounds, and settlement sites in Late Neolithic II and the Early Bronze Age. Despite having a material culture expressive of a region well-integrated within a Nordic World System, these societies are juxtaposed by a long coastline of climatic and ecological distinctiveness that forces insular practices in subsistence and organization. This paper will explore the contrasting practices in sociopolitical organization and the strategies implemented to take advantage of the local resource potential. The dependency of trade is identified as a key element to uphold power in certain regions, exercised through coercive strategies, but the paper also points to the inevitable fragility of such an organisation and the more long-term stability of cooperative strategies.

Avila Peltroche, Mary Claudia (UNMSM)

[7] *Camelids Consumption and Utilization at the Archaeological Site of Huayuri, South Coast of Peru*

In this work the author presents the preliminary results of the animal bones analyzes from the archaeological site of Huayuri. This site, located in the south coast of Peru, shows evidences of occupations since the Late Intermediate Period to the Late Horizon. The materials were recovered during the excavations that took place in 2002 and 2005 in the Compound 03, located at the south part of the site. The analysis was primarily focused on the camelid bones, taking into consideration the cultural modifications, pathologies and age groups present in the bone assemblage. The results give insights on the situation of the domestic camelids and the herd management in the archaeological site of Huayuri. These animals were usually used for consumption and also there was an exploitation of secondary products, giving them an important role in the foodway practices of the people at the site.

Avilez, Monica [99] see Merritt, Stephen

Awe, Jaime, Julie Hoggarth (Baylor University), Christophe Helmke (University of Copenhagen) and Jim Aimers (SUNY Geneseo)

[147] *The End Is Nigh: Applying Regional, Contextual and Ethnographic Approaches for Understanding the Significance of Terminal "Problematic" Deposits in Western Belize*

The discovery of cultural remains on or above the floors of rooms and courtyards at several Maya sites has been interpreted by some archaeologists as problematic deposits, de facto refuse, or as evidence for rapid abandonment. Investigations in the Belize River valley have recorded similar deposits at several surface and subterranean sites. Our regional and contextual approach to the study of these remains, coupled with ethnohistoric and ethnographic information provide limited support for previous interpretations and suggest that the deposits are more likely associated with peribandonment ritual activities and/or the reoccupation of sites following their abandonment.

[147] *Chair*

Awe, Jaime [14] see Harvey, Amanda

Ayala, Max

[55] *Obsidian Debitage Sequence in Three Sites in West Mexico during the Late Classic Period: A Proposal*

During the years A.D. 550/600 to A.D. 900/1000 there was a significant emergence of sites with large populations who at one point were subjected to Teotihuacan's control. This period is known in Mesoamerica as the Late Classic or Epiclassic period. At this time emerging groups sought to control specific resources that would give them power over other groups. One of the most sought after and exploited resources was obsidian. It is known that

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some deposits were not exploited as intensively and systematically by nearby populations as others. For prehispanic groups obsidian was a raw material used for commerce and in everyday life. This work will propose a theory about what really happened with this raw material in West Mexico specifically at sites within the modern state of Michoacán during the Late Classic period.

Ayers-Rigsby, Sara (Florida Public Archaeology Network) and Rachael Kangas (Florida Public Archaeology Network)

[53] *Save Our Sites! Using Archaeology to Educate the Public about Climate Change in South Florida*

Miami is often presented as the poster child of sea level rise; while climate change is generally accepted as an observable fact in south Florida, elsewhere this issue is regarded as too politically charged for frequent discussion. This renders sensitive archaeological sites vulnerable to coastal erosion, storm surge, and other factors. The Florida Public Archaeology Network's Heritage Monitoring Scouts (HMS) Florida program is designed to raise awareness of how these factors will impact archaeological sites and to engage the public in monitoring these sites, through workshops which include basic climate science, an overview of Florida archaeology, and laws that protect archaeological sites. This citizen science initiative encourages people to actively document the effects of sea level rise, and gives them the tools they need to educate climate skeptics. Additionally, it provides archaeologists with a venue to discuss how early Floridians adapted to rising sea levels. This poster will address the efficacy of this workshop at the frontline of climate change in south Florida.

Ayers-Rigsby, Sara [135] see Walker, Karen

Baaske, Benjamin (Center for Heritage Conservation, Texas A&M University) and Kevin Austin (Maya Research Program)

[238] *Study of Historical Visualization: Case Study in Process Documentation at Xno'ha*

The presentation of heritage sites is critically important to the perception of historical narratives. A key goal is to help both scholars and the general public to see heritage as dynamic and living. This project explores the visualization of archaeological excavations through preservation technologies, specifically photogrammetric data. Our study focuses on a patio group at the Maya site of Xno'ha (occupation dates range from the Late Preclassic to the Terminal Classic) in northern Belize, and the current excavation and photogrammetric documentation of three administrative structures (32, 33, and 34). Sequential photogrammetry was conducted throughout the entire stratigraphic excavation of Structure 34's unit, resulting in 9 layers of photogrammetric documentation. The same process was applied to a chultun feature (single chamber) at Structure 33, creating 18 layers of photogrammetric data at regular intervals. For Structure 32, a single-phase, 3D model was generated, successfully stitching the above-ground unit to its corresponding, subterranean chultun (three chambers). Additionally, photogrammetry was used to create a plan view of the patio group area, and to create wall elevations. This methodical documentation of the process of excavation, in the span of months, records a three-dimensional time-lapse dialing back architectural conditions of the site hundreds of years.

Babbitt, Bruce

[96] *Discussant*

Baca Marroquin, Ancira Emily (University of Illinois at Chicago)

[257] *Constructing Local Identities in the Central-South Coast. The Coayllos in the Asia Valley*

Narratives regarding the response from local groups to the Inca conquest of the Peruvian Central-South coast portray two confronting scenarios: resistance and acceptance. Resistance to the Inca conquest would have required a more violent Inca military campaign meanwhile acceptance would have required specific diplomatic negotiations. Written documents describe the actions taken by the Incas when a group resisted to be conquered. These actions include removing original populations and dispersing them along the empire to repopulate the new region with groups loyal to the Incas. These relocation measures would have created disruption in the regional interaction networks. In the Central-South Coast, written documents indicate that the Coayllos from the Asia valley repopulated the Cañete Valley after the Inca conquest. Current archaeological evidence from the Asia valley, Central-South Coast of Peru indicates that interactions were maintained with Central South Coastal groups after the Inca conquest. This data provides insights to evaluate the relationship established between the Inca and the Coayllos after the conquest of this region and how these coastal groups (re)defined their position and affiliations within the Inca empire apparatus.

Bachelet, Caroline (National Museum, UFRJ-Rio de Janeiro), Veronica Wesolowski (Museum of Archeology and Ethnology (MAE) University) and Levy Figuti (Museum of Archeology and Ethnology (MAE) University)

[2] *Holocenic Occupations on Central Brazil: The Archaeological Complex Morro Solteiro*

Central Brazil includes archaeological sites dating from the Pleistocene/Holocene transition, mainly rock shelters and more rarely open-air sites. However these are important for understanding patterns of subsistence and settlement of populations. In Mato Grosso, research on the left bank of the southern course of Rio Vermelho has revealed a complex of occupations, in shelter and open-air, pre-ceramic and ceramic, dated since the middle Holocene. On the opposite side of the river, in a conspicuous sandstone hill, Morro Solteiro exhibits shelters of rock art. Although Morro Solteiro I (MS1) and the contiguous open air site, Aldeia Morro Solteiro (AMS), have rich ceramics occupations, dated to around 1000 years BP, pre-ceramic occupations only have been recognized in AMS and dated from 6000 years BP. Homogeneous data obtained in AMS and MS1 indicate that this site was occupied successively by groups, at first hunter-gatherers then horticulturalists, from the beginning of the Holocene. Similarities between ceramics and lithic industries from MS1 and AMS suggest that it could be a unique archaeological ensemble in litho-ceramic horizons. This type of association shelter/open-air site is rare in the Rio Vermelho region, which makes the Morro Solteiro complex an exceptional site and probably an important center of occupation.

Bacon, Wendy (The History Center of Tompkins County NY)

[33] *The Dwarf Motif in Classic Maya Monumental Iconography: A Spatial Analysis*

Although scholars of Classic Maya art have described certain short-statured figures as dwarves and endowed them with mystical significance, the motif has gone undefined. This contextual analysis identifies the anatomical and cultural attributes of the dwarf motif and interprets its meaning within the ancient Maya conception of time and their ideological integration of the natural and supernatural.

A spatial analysis of 45 depictions of short-statured individuals on archaeologically provenienced monuments reveals that the dwarf motif follows the trajectory of political power in the Maya lowlands, beginning within the Caracol-Calakmul polity and expanding with its reach. The dwarf motif appears at Tikal, in new stylistic configurations, upon its defeat of the Caracol-Calakmul alliance. Sites with flexible allegiances display the dwarf motif as a combination of local and regional stylistic elements. Evidence from small, dependent sites and regional superpowers reveals ancient Maya artists adapting broadly shared iconography to express locally the relationship between identity and power.

Monumental depictions of dwarves associate with symbols of liminality, implying that the Maya channeled the 'otherness' of dwarves into a visual metaphor for transition. Such depictions reveal an ancient society in which the 'other' expressed the integration of the natural and supernatural realms.

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Badilla, Adrian (Museo Nacional de Costa Rica)

[260] *Arquitectura Habitacional: Sistema Constructivo y Organización Espacial en el Sitio Finca 6, Delta del Diquís, Costa Rica*

El Delta del Diquís en el sureste de Costa Rica se ha postulado como un centro diferenciado en la producción de bienes (cerámica, oro, esculturas de piedra) durante el Periodo Chiriquí (800—1550 d.C.) como parte de una sociedad jerárquica. La arquitectura y la configuración interna que presentan los sitios reflejan manifestaciones particulares donde destaca la construcción de montículos de tierra compactada con mampostería de cantos rodados y ornamentación de rocas calizas. Las estructuras varían desde formas circulares, rectangulares hasta formas compuestas en la que se articulan varios volúmenes. Recientes investigaciones realizadas en el sitio Finca 6 han permitido estudiar un conjunto de dos unidades habitacionales cuyo análisis se ha enfocado en la exploración del sistema constructivo, forma, distribución y uso del conjunto artefactual asociado a estas unidades. Lo anterior en procura de documentar los procesos de cambio social que ayudan a entender la organización espacial y complejidad social en el asentamiento.

Badillo, Alex E. (Indiana University) and Marc Levine (Oklahoma University)

[248] *Mapping from the Heavens: UAV(Drone) Data Collection at Monte Albán, Oaxaca, Mexico*

The use of Unmanned Aerial Vehicles (UAVs) in archaeology has increased rapidly in recent years as drones have become more affordable and easy to use. Accessible commercial grade equipment can quickly capture data to produce maps and 3D models of high accuracy and precision. During the Summer of 2017, the Proyecto Geofísico de Monte Albán (PGMA) integrated the use of a UAV technology into their geophysical survey project at the UNESCO world heritage site of Monte Albán located in Oaxaca, Mexico. The main plaza and the surrounding monumental architecture was captured using aerial photographs and digitally reconstructed to scale in 3-dimensions. In this presentation, we present on data collection techniques, post-processing methods, and discuss some of the results of UAV mapping and photogrammetry within the context of the broader geophysical project at Monte Albán. Throughout, we discuss some of the successes and challenges of UAV mapping and post-processing. Finally, we explore the use of UAVs and 3D modeling in archaeology that go beyond visualization.

[320] *Discussant*

Badillo, Alex E. [248] see Levine, Marc

Baert, Patrick (University of Cambridge)

[327] *Pragmatist Philosophy of Social Science: A Proposal*

This paper explores the potential of a pragmatist-inspired philosophy of social science for both archaeology and social anthropology. Firstly, we explain the main tenets of contemporary pragmatism and the variations within it. Secondly, we analyse the potential methodological ramifications for both archaeology and social anthropology. Thirdly, we discuss some of the critique of this pragmatist stance.

[327] *Discussant*

Baggio, Jacopo [105] see Nabity, Samantha

Bagheri-Jebelli, Niloofar [4] see Cioffi-Revilla, Claudio

Bailey, Chris [331] see Edwards, Briece

Bailey, Deanna

[85] *Landscape Archaeology & the Irish Chalcolithic—Early Bronze Age: Discovering Termon, Co. Clare, Ireland*

The Burren is a region located in southwest Ireland containing the highest concentration of wedge tombs in the county showing a significance of place in the Chalcolithic—Early Bronze Age. Contemporary to wedge tombs are large complex systems of settlement enclosures, farm fields, and other ritual monuments, which can be seen at sites across the Burren, such as Roughan Hill, Coolnatullagh, and Carran Plateau. Excavations at these sites have provided cohesive radiocarbon dates within the Chalcolithic—Early Bronze Age. The context and patterns seen within this time period have yet to be explored at other locations across the Burren where wedge tombs are present. In 2016 a survey was conducted by the author as a part of a M.A. in Landscape Archaeology at the National University of Ireland, Galway with the central aim to identify Chalcolithic—Early Bronze Age farming, settlement, and ritual patterns in the Burren townland of Termon. A secondary aim sought out to compare patterns seen at Termon to Roughan Hill, Coolnatullagh, and Carran Plateau in effort to shed further light into the Chalcolithic—Early Bronze Age Burren. Cross-site analysis revealed several similarities between features with differences expressing complexities within the Chalcolithic—Early Bronze Age.

Bair, Daniel A. [288] see Terry, Richard E

Baird, Graham [130] see Lercari, Nicola

Baitzel, Sarah (Washington University in St. Louis) and Arturo Rivera

[100] *In the Land of Llamas and Aji: New Insights into the Late Horizon Inca Occupation of the Middle Sama Valley, Southern Peru*

Since the 1970s, the Sama valley on the far south coast of Peru has been known to house the Inca site of Sama Grande since the excavations of German archaeologist Hermann Trimborn. Situated at the crossroads of the Quapaq Ñan running parallel to the Andean foothills and from the coast to the highlands, Sama Grande was assumed to direct people, animals, and goods across the region during the Late Horizon (14th–15th century AD). In 2017, full-coverage pedestrian survey of the coastal desert plain overlooking the middle Sama valley near the foothill zone (400–600 masl) revealed a wider Inca presence dating to the Late Horizon and early Colonial period in the form of architecture and other material culture. The predominance of Inca-Cusqueño and Inca-Altiplano ceramic styles, with an emphasis on depictions of llamas and ajies (chili peppers), suggests that under Inca control the valley was principally used for camelid pasture and ají cultivation.

These research results highlight the importance of the Sama valley, a previously unexplored area, within the broader regional network of Inca imperial presence on the far south coast of Peru, and add to current models of the transformative impacts of imperial strategies on local landscapes and resources.

Baitzel, Sarah [335] see Baka, Abby

Baka, Abby (Washington University in St. Louis), Sarah Baitzel (Department of Anthropology, Washington University) and David Broman (Department of Anthropology, Washington University)

[335] *Settlement Patterns in the Upper Mantaro Valley Revisited: Assessing the Effects of Wari State Expansion on the Central Andes during the Middle Horizon (A.D. 500–1000)*

Archaeological studies of the Upper Mantaro Valley region in the central Andean highlands have played an essential role in shaping current models of Andean complex societies and state expansion during the Middle Horizon (A.D. 500–1000) and subsequent periods. Among the pioneer studies of this

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region was Browman's pedestrian survey of the Upper Mantaro valley between Jauja and Huancayo, Peru for his doctoral dissertation, during which he registered over 106 sites dating to the Middle Horizon. Using temporal data, qualitative descriptions of features and artifacts, photographs and maps from Browman's original field notes and dissertation, we reconstruct his findings in ArcGIS to re-analyze changes in settlement patterns, architecture and ceramic distributions through time and space. By integrating these patterns with newly available information about the environmental, social, and political contexts of the region, we build on previous work using technology unavailable at the time of the initial field research. Our re-examination focuses on the Middle Horizon period to specifically assess the influence of the Wari state on the Upper Mantaro region.

Baker, Joe

[148] *Discussant*

[334] *Chair*

Baker, Matthew [214] see Robinson, David

Baker, Matthew (University of Strathclyde), Clare Bedford (University of Central Lancashire) and David Robinson (University of Central Lancashire)

[214] *Integrating Portable Spectroscopy into Rock Art Investigations*

Molecular spectroscopy is an information rich technique that is rapid, non-destructive and easy to operate. These qualities combined with a mature market in handheld spectrometers makes molecular spectroscopy an ideal technique for on-site analysis which is suitable for austere environments.

This paper will discuss the use of Fourier Transform Infrared (FTIR) and Raman spectroscopy to in the Gordian knot project based upon the Californian polychrome rock art site Pleito in order to provide a deeper understanding of the pigments and binders used in creating Pleito. We will show strategies and results from a survey of Pleito highlighting opportunities for data analysis (e.g. multivariate analysis) and future data fusion of techniques to provide greater understanding of Rock Art processes and procedures

Bakken, Rikka [39] see Myster, James

Balcarcel, Beatriz [252] see Hansen, Richard

Balco, William (University of North Georgia), Scott Kirk (University of New Mexico) and Michael J. Kolb (Metropolitan State University of Denver)

[85] *Pixellated Survey: Archaeology at Monte Bonifato, Sicily*

Site-specific archaeological survey of forested environments can be challenging, particularly when ground disturbance is prohibited. Site-specific archaeological survey serves as an essential component of archaeological exploration, delineating areas of past human activities on complex multi-component sites. This paper presents the preliminary results of the first season of the Alcamo Archaeological Project, a site-specific survey of the forested summit of Monte Bonifato in western Sicily. This area poses a challenge to archaeologists as Iron Age, Roman, and Medieval occupants have used and modified this landscape intensively. Field methods employed during the survey are presented as well as how these methods were adapted to local conditions and regulations, demonstrating the necessity for flexible survey strategies in conjunction with intensive data collection. Furthermore, this paper addresses the need for balance between collecting high-quality data and survey coverage during short field seasons.

[112] *Discussant*

Baldi, Norberto (School of Anthropology, University of Costa Rica)

[260] *The Role of Kinship Networks and the Lowland Ecology in the Interpretation of the Caribbean Archaeology of Greater Chiriquí*

Archaeological investigations in the Caribbean region of Greater Chiriquí conducted over the last two decades have documented occupations dating to the second millennium BCE. Similarities in material culture suggest local and trans-isthmian cultural relationships within Greater Chiriquí and a pattern of scattered hamlets associated with the exploitation of marine and lowland ecosystems. In order to provide a model for this settlement pattern, we offer a theoretical model based on ethnohistorical accounts, ethnographic information and current biodemographic research based on living indigenous populations of southern Central America. Kin-based population structure is the result of a migratory behavior of a familial group in which fragmentation, movement and relocation occurs among populations of high mobility such as hunter-gathers and mobile agriculturalists. The information provided by these lines of research suggests that ecological conditions and kin-based population structure may be responsible for the population aggregation along the Caribbean coast of Central America and can explain similar behavior seen in the archaeological record of the Caribbean lowlands of Greater Chiriquí.

Balenquah, Lyle

[61] *Discussant*

Ball, Christopher (University of Toronto)

[86] *Micro-habitat Production in the Late Woodland Period*

This paper presents the results of recent statistical analyses focused on relative plant species distributions among six Princess Point sites in Late Woodland Southern Ontario and explores potential markers of micro-habitat production in the region.

Ball, Joseph [258] see Reents-Budet, Dorie

Ballenger, Jesse (EcoPlan Assoc., Inc./U. of Arizona)

[182] *Doc Holliday Goes to Tombstone*

In 2002 Vance won the role of Executive Director for the Argonaut Archaeological Research Fund (AARF) at the University of Arizona. The program provided immediate funding for a number of graduate students working on the archaeology and Quaternary geology of the Desert Southwest. A renewed investigation of the upper San Pedro Basin was among those projects. Vance endured every possible graduate student misstep, some of which are reviewed here, to assemble new information about long-term and hotly debated topics such as mammoth hunting, late Pleistocene paleoecology and extinctions, and even the question ET impacts. These new contributions were made under the shadow of his close friend and colleague, C. Vance Haynes, Jr. The combined efforts of "both Vances" is a case study in the scientific value and intrigue embodied by the Fryxell Award for Interdisciplinary Research.

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Baller, Kendall (School of Human Evolution and Social Change, Arizona State University)**[267]** *Investigating Social Boundaries in Southwestern New Mexico*

Social network analyses provide insight into the strength and weakness of social connections across geographic areas. Discussions in the literature of the Mimbres region in New Mexico have stated that during the Classic period, the Mimbres ceramic tradition is confined to southwestern New Mexico, though this has not been tested with statistical assessments of data. Using ceramic style data from sites within and surrounding the Mimbres region, I investigate the levels of social 'boundedness' in the area through statistical computing methods. Social network analysis can determine whether boundaries were more clinal or rigid, and test whether or not this region is statistically more 'bounded' than others visible in the archaeological record. With access to deep archaeological time scales and the breadth of data from the Mimbres region, I will present my research on the impact of social networks on connections between groups of people living in the past. By furthering our understanding of social networks in the past, we can inform our understanding of how people today interact and exchange ideas across perceived social boundaries.

Bamforth, Douglas and Kristen Carlson (Augustana University)**[21]** *Oneota Expansion and Ethnogenesis on the Eastern Great Plains*

The late 1200s and 1300s saw substantial population shifts in the eastern Plains and Midwest. These occurred in the context of profound sociopolitical and demographic changes, particularly the political decline and depopulation of Cahokia, and regional climatic variation, including significant changes in northern hemisphere temperatures and severe regional droughts. Oneota groups expanded into the east-central Great Plains during this time, at the same time that indigenous Plains farmers abandoned the western parts of their ranges and moved east. Interactions between these groups remain poorly understood and likely varied in time and space. However, a series of sites in northeastern Nebraska show blended patterns of ceramic design suggesting that they may have lived side by side in at least some areas, interacting face-to-face and forming new communities with distinct identities. The assemblage from the Lynch Site (25BD1) includes classic Oneota shell-tempered pottery that is likely imported, classic Oneota and Central Plains Tradition pots made locally, and pots that blend elements of Oneota and CPT styles. We present data on inter-household variation in pottery derived from excavations at Lynch in 1936 and 1959 and consider some of the implications of these data for community formation.

Banghart, Thomas (University of California, Santa Cruz)**[10]** *From Shore to Mountain: Insights into Resource Selection and Processing along the Central California Coast*

Salvage excavations conducted in the 1970s at the Red, White, and Blue Beach site (CA-SCR-35), located in northern Santa Cruz County on the central California coast on Monterey Bay, recovered a large and diverse vertebrate faunal assemblage with a well-defined Middle Period (2800–900 cal BP) component. Few faunal assemblages from this area of the Central Coast have been thoroughly analyzed and little is known about resource selection and processing during this time. I use archaeofaunal data from SCR-35 to explore prey choice, handling practices, and seasonality of occupation, comparing these to recently published data from CA-SCR-9, a generally contemporaneous site in the coastal uplands of the Santa Cruz Mountains. This comparison contributes to understanding of Middle Period economic strategies by providing a synchronic and regionally specific comparison of coastal and inland extractive tactics in this currently understudied part of California.

Banghart, Thomas [195] see Perez, Erina

Banikazemi, Cyrus (UNCC)**[154]** *Metal, Pigment, and Prestige: An Analysis of the Form, Decoration, Status, and Use of Inca Stone Vessels*

The ethnohistoric and archaeological records provide ample evidence of the ideological significance of metals and pigments in the pre-Columbian Andean world. This study explores the use of these materials in the complex decorative techniques utilized by the Inca when finishing stone vessels. This research integrates data generated from ethnohistoric sources, portable X-Ray Fluorescent (pXRF) tests, and reconstructive experimentation in order to provide a better understanding of how metals and pigments were used by the Inca to signify the elevated status of certain stone vessels. This project intends to show that the decorative processes implemented in the construction of stone vessels can illuminate on how these artifacts were used within Inca society.

Banikazemi, Cyrus [211] see Fitzgerald, Curran

Banks, Kimball (Metcalfe Archaeological Consultants Inc. & Combined Prehistoric Expedition Fdtn)**[289]** *Chair*

Banton, Caree [308] see Reilly, Matthew

Baram, Uzi (New College of Florida)**[53]** *Popular Beliefs of Safety in an Age of Rising Sea Levels: Public Archaeology as a Means to Counter Exceptionalism on the Florida Gulf Coast*

Before every hurricane season, the myth and popular belief that Sarasota, a medium-sized city on Florida's Gulf Coast, is safe from hurricane gets repeated in the local newspaper. Like many folktales, the story that pre-Columbian Native American burial mounds or Ringling Brother Circus performers knew of a special quality to the region or their spirits protect it comforts the ever growing population living on the Gulf of Mexico coastline. With the majority of the residents having no long-term connection to the region and the landscape displaying mostly the contemporary, with the historic being mostly the 1920s Boom Times, the past is nearly invisible. One of the tasks for public archaeology is exposing the hidden histories of the region, a rich but racially complex heritage that can counter the myth of exceptionalism. Over the past several years, the New College Public Archaeology Lab has hosted programs for community members and school children that teach about the archaeology and environment for the region's waters, specifically Sarasota Bay and the Manatee River. The activities instruct on the long history of people in the region, offering scientific approaches to addressing understandings of the past and offering cultural relativism for pre-industrial technologies.

Barba, Luis (Universidad Nacional Autonoma de Mexico), Jorge Blancas (Universidad Nacional Autonoma de Mexico) and Agustín Ortiz (Universidad Nacional Autonoma de Mexico)**[293]** *Geophysical Prospection at Plaza of the Columns Complex, Teotihuacan*

Geophysical techniques used in Plaza de las Columnas Complex, Teotihuacan has been successful to locate the buried remains of foundations, walls and other architectural features. As usual, magnetic gradient allowed to recognize linear patterns that suggests the wall remains usually made with volcanic stones with mud mortar. Electrical resistance was successful to recognize the presence of floors and verify the previously detected walls. Finally georadar survey verify the location and depth of buried architectural remains. This combination of techniques provided detailed information from most of the area requested by the project and allowed to locate the excavations to verify the presence of domestic units that are surrounding the main structures, in addition to detect some remains located in main plazas and the big wall that marked the western limit of this large compound.

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Barba, Luis [89] see Lozano Bravo, Hilda

Barba Pingarrón, Luis [177] see Seligson, Ken

Barbari, Maira [2] see Silva, Rosicler

Barber, Sarah [9] see Wedemeyer, Rachael

Barber, Sarah (University of Central Florida)
[192] *Discussant*

Barbir, Antonela [304] see Karavanic, Ivor

Barbour, Terry

[35] *Anchoring in the Gulf: Trans-species Dwelling and Building in Gulf Coast Florida*

Drawing inspiration from the work of Tim Ingold, I seek to find the middle ground of phenomenology, ecology, and materiality in describing how humans dwell and make their worlds among the various other communities around them. In the Lower Suwannee River Valley, Florida, human and oyster communities have interacted and intersected with another for millennia. Like people, oysters dwell and build creating their Umwelt, a concept introduced by Von Uexküll. This resulted in communities numbering in the millions. When the Umwelten of oysters and people are juxtaposed, it is argued that oysters 'anchored' people differentially throughout the history of the region. These oyster communities are argued to represent Heideggerian Buildings, as they are locations which make sites for several coastal Umwelten, people included. Prior to 1500 BC, human communities relocated their dead to keep pace with the rising sea, emplacing oyster shell midden during the process. After an occupational hiatus, changes in human building and dwelling after 750 BC were a direct result of inhabiting an area already full of history, including past interactions with oyster beds. Florida Gulf Coast peoples in the Lower Suwannee in many ways defined themselves through relationships with the oyster communities with which they interacted.

Bardolph, Dana (Cornell University), Brian Billman (University of North Carolina, Chapel Hill) and Jesús Briceño (Ministerio de Cultura, Peru)

[297] *Hidden Labor: Exploring Food, Gender, and Ritual in the Prehispanic Moche Valley of North Coastal Peru*

Archaeologists have successfully used spatial analyses of different contexts (elite/non-elite, ritual/domestic, public/private, etc.) to examine the intersection of food-related activities with status, political economy, gender, ritual, and the public/private division. In this paper, I consider the intersections of food processing, ritual, and gendered labor through an examination of paleoethnobotanical data from Cerro León, a Gallinazo/Early Moche phase (A.D. 1–300) highland colony in the Moche Valley of north coastal Peru. A variety of ancestor rituals, work parties, and other large-scale commensal events occurred in large public spaces in high status compounds at Cerro León. But where did food preparation occur for these events, and who was likely responsible for such preparation? Employing intrasite spatial analysis, I explore the movements through various spaces, public and private, that provided opportunities for social interaction or restrictions on visibility and community integration. Drawing on archaeobotanical and ethnohistorical evidence, I argue that household members (likely women) primarily prepared food in private behind-the-scenes contexts for supra-household ritual events and public displays. These women may have prepared for public events totally apart from, and without being included, in such events. This consideration of 'hidden' labor sheds light on a frequently overlooked aspect of ritual and food production.

Barg, Diana (Bureau of Land Management, Utah) and Nathan Thomas (Bureau of Land Management, Utah)

[261] *Education and Enforcement: How the Bureau of Land Management Is Confronting Looting on Public Lands in Utah*

Looting of archaeological resources on public lands has been an issue throughout the United States for over a century, and Bureau of Land Management (BLM)-administered lands are no exception. Looting can take many forms, ranging from a visitor looking for a souvenir to intense, large-scale, and intentional desecration of sites for personal profit. Looting issues can be exacerbated by the limited on-the-ground resources of federal agencies that manage millions of acres. The proactive actions the BLM is taking against looting has resulted in increased Archaeological Resources Protection Act investigations, the recovery of looted artifacts, and educational campaigns to curb unintentional, destructive behaviors. The BLM-Utah's dual approach of education and enforcement illustrates the active role the BLM is taking to reduce looting. The BLM-Utah manages large collections of archaeological artifacts recovered from law enforcement investigations and prosecutions, is currently determining best practices for the long-term curation of recovered artifacts, and is developing anti-looting centered interpretation of the collections. Site stewardship programs, Project Archaeology curriculum, and the Respect and Protect education campaign are major initiatives the BLM-Utah and its partners are using to educate the public about responsible public land use and citizen stewardship of archaeological resources.

Barker, Graeme [137] see Hunt, Chris

Barker, Claire (Arizona State Museum), Samantha Fladd (University of Arizona) and Kelley Hays-Gilpin (Northern Arizona University)

[218] *Macaws on Pots: Images, Symbolism, and Deposition at Homol'ovi*

Widespread archaeological evidence—including egg shells and skeletal remains recovered from archaeological sites as well as imagery on pottery, kiva murals, and rock art—suggests that macaws, their feathers, and their imagery played important roles in ancient Puebloan society. Ethnographic accounts also indicate the importance of macaws to ancient Puebloan peoples and modern groups. Macaws have been interpreted as indicators of exchange, aspects of intricate ritual systems, and indexes of social complexity. This research attempts to further our understanding of the roles macaw imagery have played in Puebloan culture through an analysis of images on pottery and the depositional contexts of the vessels or vessel fragments bearing these representations at the Homol'ovi Settlement Cluster, a 13th-14th century ancestral Hopi group of villages located in northeastern Arizona. Is macaw imagery tied to certain wares, types, or vessel forms? How are these birds depicted on ceramics? Are items adorned with macaw imagery and macaw skeletal remains deposited in similar contexts? Considering the contexts in which objects decorated with macaw imagery were deposited in reference to macaw and other bird burial practices may provide a more refined understanding of the functions these artifacts served and the symbolism they evoked in prehistoric Puebloan society.

Barker, Alex (University of Missouri)

[322] *Discussant*

Barkett, Theresa (California State University, Los Angeles), Andrew Garrison (Brian F. Smith and Associates), Claudia Camacho-Trejo (California State University, Los Angeles) and David Sosa (California State University, Los Angeles)

[223] *Revisiting the Function of Humboldt Points: Reflections from the Late Prehistoric Hackney Site in Mariposa County, California*

CA-MRP-283, the Hackney Site, is a late prehistoric/protohistoric site in Mariposa County, California. Excavated by California State University, Los Angeles in 1972, the flaked-stone assemblage includes debitage, projectile points, and flake tools. A reanalysis of the debitage shows that late stage

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biface production, expedient flake-tool production, and the production, repair, and replacement of projectile points were all common activities at the Hackney site. A recent analysis of the projectile points that included a characterization of macro-damage, also showed distinctive use-breakage patterns that suggest it may be time to reexamine the hypotheses surrounding the function(s) of Humboldt/Sierra concave-base series points. Such points are hypothesized to have been used as knives, dart points, or even dispatching spears. The Humboldt points present in this assemblage are all broken with abundant evidence of impact damage. Moreover, an examination of reports on assemblages from other contemporaneous sites in the Sierra Nevada region and elsewhere suggests this is a widespread pattern. To examine the potential cause(s) of these features, we conducted experiments testing macro-damage created in use as a knife, dispatching spear, and atlatl propelled spear. We present here the results of the projectile point assemblage analysis and some preliminary findings from the use experiment.

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

[91] *The Social History of Mogollon Village: A Bayesian Approach*

Emil Haury's excavation of Mogollon Village in 1933 helped to provide the first overview of pithouse occupation for the Upper Gila and Mimbres Valley areas as well as establishing the Mogollon culture concept. Tree-ring data from Haury's excavation suggested that the site was occupied from at least A.D. 730 to 900; however, the stratigraphy of the site suggested that the site was occupied prior to A.D. 700. Further excavation work at the site conducted in the late 1980s and early 1990s suggested that the site also had an Early Pithouse (~A.D. 200 to 550) occupation. Thus, Mogollon Village had a long-term history of pithouse occupation. For this poster, Bayesian chronological modeling of existing radiocarbon dates and new AMS dates is used to provide a structural narrative of the occupation of the circular pithouse structures at Mogollon Village. This refined chronology will then be used to examine pottery production and obsidian procurement at the site. Future research to further refine the chronology of the site will also be discussed.

Barnard, Hans [210] see Fenn, Thomas

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

[335] *Analysis of the Ancient Built Environment of the Millo Complex, Vitor Valley, Peru*

The Vitor Valley is an alluvial oasis linking the Arequipa highlands to the Pacific coast of southern Peru. The northern limit of the valley hosts a dense archaeological landscape of interspersed fieldstone structures and cemeteries known as the Millo Complex. This cluster comprises three principal segments referred to as Millo 2, Millo 3, and Millo 4; each of which preserves extensive architecture. Surface ceramics from across the Millo Complex and radiocarbon analysis of charcoal samples recovered from excavations at Millo 2 place the complex within the Middle Horizon (600–1100 CE), a period of profound social change and reconfiguration of geopolitical relationships across the south-central Andes. The exact role that the Millo Complex played in this period of regional transition remains unclear. While sizable Ramada cemeteries adjacent to these sites point to local origins and activity, the intrusion of an iconic D-shaped structure at Millo 3 may indicate the introduction of non-local traditions associated with the Wari state. We suggest that these segments operated as contemporaneous and interdependent components of the larger settlement.

Barnes, Jodi [168] see Beahm, Emily

Barnes, Monica (Andean Past)

[333] *The Legacy of Andean Archaeologists from the American Museum of Natural History*

This paper will discuss the chain of Andeanists that began with Adolphe Bandelier in the late 19th century and continued into the 20th century with Charles W. Mead, Ronald Olson, Wendell C. Bennett, Junius B. Bird, Harry and Marian Tschopik, James A. Ford, John Hyslop, and E. Craig Morris and continues to the present with various fellows and research associates. Although not formally affiliated with the AMNH, John V. Murra is a link in this chain because of his personal and theoretical influence on Morris and Hyslop.

[207] *Discussant*

[333] *Chair*

Barnes, James (Bureau of Land Management), Karen K. Swope (Statistical Research, Inc.), Carrie J. Gregory (Statistical Research, Inc.) and Tiffany Arend (Bureau of Land Management)

[261] *Hard Questions for Hardrock Places: Integrating Academic-Based Research Questions into the Management of Hardrock Mining Sites on Public Lands in the Southern California Deserts*

Land-managing agencies have to make tough decisions about what archaeological sites are worth conserving—decisions that are getting tougher as the capacity of agencies continues to be stretched. Academics may disagree with these decisions, yet their approaches to research have long been crucial to defining what is significant. The Bureau of Land Management California (with Statistical Research, Inc.) has recently completed a comprehensive management program for hardrock mining sites on 10+ million acres of public lands in the southern California deserts. The program presents several original and innovative research questions (stemming from theoretical trends in academia) for evaluating National Register of Historic Places eligibility of hardrock mining sites that will advance management, as well as scholarly research, in the region. This presentation explores the challenges and benefits of integrating academic-based approaches into landscape-scale management of historic-era industrial archaeological sites on federal lands.

Barnes, Kelli (BLM-ID-SO)

[261] *Recognizing Redundant Data: Preventing Perseveration and Saving the Significant*

What is so fascinating about heritage resources? What is it that sparks the imagination and instills a sense of place and wonder? What great lessons can we take away from the past? The most important roles of a federal archaeologist are to try to encourage public interest in questions like those, while preserving select sites with the greatest potential to provide the answers. However, compliance work for federal undertakings often focuses our attention and limited resources on the least significant and most abundant resources such as lithic and historic debris scatters. We must avoid habitually collecting redundant data for upholding tested theories so that new questions can be posed and answered using more modern techniques. Applying the National Register of Historic Places eligibility criteria in standardized ways and other increased efficiencies can free up time to spend on outreach, scientific inquiry, and the protection of sites with greater heritage and data values. This presentation will demonstrate the need and means for a careful and scientific approach to making site eligibility determinations and management recommendations in order to facilitate a focus on the most culturally valuable resources.

Barnett, Kristen (Bates College)

[220] *Ellmig Qukaq. She is the Center: Indigenous Archaeology of Temyiq Tuyuryaq*

Ashmore and others have taken the time to observe and discuss the inherently gendered 'nature' of the landscape. As an indigenous scholar this discussion directs me toward concepts of "nature" and specifically, our mother earth, our peoples, and our celestial beings. Mother earth is impregnated with our past, cradling our lives and our ancestors in her womb, from which they once came, and returning (for matters within our discipline) to us in "archaeological context", if you will. I argue that it is irrelevant as to whether or not your ideology fits within this indigenous belief

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system, archaeologists engaging in pre-colonial, indigenous 'sites' of study are entrenched in a gendered cultural landscape. In my research I explore Temyiq Tuyuryaq, named for the three women whose lives were taken at the mouth of the bay. Overturning concepts of the "colonial ghost" (Hokowhitu 2009) I approach the cultural landscape through a mode of continuity experienced by the Yup'ik community residing in Tuyuryaq, and consider the gendered experience of place throughout the last 1200 years in Bristol Bay Alaska.

[338] *Discussant*

[338] *Chair*

Barnett, Ashley [268] see Dempsey, Erin

Baron, Joanne (University of Pennsylvania)

[170] *Making Change: Currency Use and Social Transformation among the Classic Maya*

At the time of Spanish contact, the Mesoamerican commercial economy was highly elaborated, with an interconnected system of marketplaces, a large variety of goods bought and sold as commodities, and the widespread use of currency in the form of cacao and woven textiles. While much of what we know of this economic system is provided by written records, the presence of large-scale marketplaces and currency can be traced into earlier periods using archaeological evidence. This evidence suggests that, in the Maya lowlands, both of these features began in the 7th century, as the rival kingdoms of Tikal and Calakmul attempted to consolidate and centralize their regional economies. These economic strategies increased the demand for currency commodities, reconfiguring economic relationships far beyond these two kingdoms. This paper will address the archaeological evidence for rapid changes along the San Pedro River in Northwestern Guatemala, an important trade route for cacao importation. Focusing on the site of La Florida, it will discuss the rapid rise of this kingdom, its establishment of economic and political relationships with distant partners, and its strategic control of the San Pedro trade route.

[170] *Chair*

Baron, Joanne [337] see Barrientos, Tomas

Barrackman, David [183] see Dice, Michael

Barragan, Jose

[132] *Fortification on the Margins of the Bolivian Eastern Highlands*

Frontiers are usually spaces of interaction between multiple groups of people navigating through established cultural and political lifeways. The zone of Tumupasa functions as a peripheral site on the margin between the Yungas and the Amazon. This region will form the center of my study area to identify historical and archaeological lines of interaction between highland and lowland groups. I argue that the region of Tumupasa, Bolivia is situated on a natural geographic transit point between the Yungas and the Amazon Amazonian flood plains. This research will attempt to contextualize the region of Ixiamas-Apolo within a frontier centered framework by understanding the spatial and cultural characteristics of regional archaeological sites. The goal of this research is to explore the entangled networks of interaction between highland and lowland groups through taking a preliminary look at local site characteristics and their spatial relationship with the fortification of Ixiamas, Bolivia. I hypothesize the region between Ixiamas and Apolo was a Pre-Hispanic network of Amazon-Andean movement that was utilized prehistorically through the present (Saignes 1985, Tylanueva 2015). Specifically, I argue that the area of Tumupasa was a strategic crossroad of economic and cultural exchange between lowland and highland groups.

Barrera Rodríguez, Raúl [31] see Medina Martínez, Lorena

Barrett, John

[318] *Discussant*

Barretto-Tesoro, Grace (University of the Philippines-Archaeological Studies Program)

[275] *Placemaking through Objects: The Global World in 19th Century Towns in the Philippines*

This paper will explore the idea of placemaking in Philippine towns established in the latter part of 19th century AD under the Spanish colonial period. The Spanish regime through the Laws of the Indies significantly altered the indigenous concepts of territory and space. I propose that the Europeanised local elites straddled between the European and indigenous ideas of boundaries and space. Following the colonial religious and administrative boundaries and the customary notions of interactions, I hypothesize that the rise of the middle class, referred to as ilustrados, marked their new place in the landscape through the acquisition of foreign items. These foreign items, commonly seen as status symbols, have a wider impact in the notion of placemaking. I will integrate archaeological model of interactions, political economy model, and placemaking in urban planning to interpret the presence of foreign objects in areas considered to be peripheries.

Barrientos, Gustavo [155] see Belardi, Juan

Barrientos, Tomas (Universidad del Valle de Guatemala)

[337] *Charismatic and Religious Aspects of Maya Rulership: An Interpretation of the Coronitas Temple Complex of La Corona*

The Coronitas Group at La Corona presents a unique architectural setting, consisting of five pyramidal temples aligned in a north-south row and several attached structures. Excavations in this group have been carried out since the beginning of the project, providing important data concerning the function of these temples throughout the site's occupation. A detailed chronological analysis has shown that this architectural complex was one of the main ceremonial areas of the site, evinced by not only the presence of royal tombs but also the location of important hieroglyphically inscribed monuments. These texts suggest that these temples were related to the patron deities of the site who played an important role in the legitimation practices of the Corona rulers when they became vassals of the Kaanul hegemonic dynasty. This paper will present a synthesis of the archaeological and epigraphic data collected in 10 years of excavations, and the interpretations derived from them.

[337] *Chair*

Barrios, Abby [118] see Roldan, Jonathan

Barrios, Edy (CUDEP-USAC), Cameron L. McNeil (Lehman College and the Graduate Center, CUNY), Mauricio Díaz (USAC), Walter Burgos (The Graduate Center, CUNY) and Antolín Velásquez (USAC)

[142] *The Country and the City: Explorations of the Relationship between Río Amarillo and Copan, in the Copan Valley, Honduras*

Cities and the communities in their hinterlands are inextricably linked, and yet the objectives of their inhabitants can be starkly different. The archaeological sites of Río Amarillo and Quebrada Piedras Negras shared a fertile plain along the Río Amarillo and Río Blanco Rivers. Several scholars have suggested that the arable fields here may have acted as a bread basket for the urban center to their west. Research at Río Amarillo has yielded evidence of strong ties to Copan including architectural forms, and iconography on altars, a structure, and a censer that broadcast the power of

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the city, and in particular, evince respect and veneration for the Copan dynasty founder, K'inich Yax K'uk' Mo'. Patterns of construction, destruction, and collapse in the center of Rio Amarillo suggest however, that the city to its west did not maintain its hold on this community throughout the entirety of the Late Classic period, but that this control faltered when the rulers of the city faltered. This paper will explore the various identities expressed in groups excavated in "the country" and the agency of the inhabitants who buffered their success by maintaining strong ties to both the west and the east.

Barse, William (Smithsonian Institution)

[69] *Ronquin Re-visited Yet Again: New Radiocarbon Dates and Their Implication for Orinoco Ceramic Chronology*

A series of radiocarbon dates obtained recently from carbonized encrustations on ceramics sheds new light on the Barrancas to Ronquin ceramic sequence, a chronology that has been long contested in the Orinoco River Valley by many investigators. These new radiocarbon dates clearly argue that the so-called "long chronology" suggested by Rouse and Roosevelt for the La Gruta to Ronquin sequence developed for the Middle Orinoco River, a chronology that was argued to extend close to 4000 years, is invalid and is in need of revision. The new radiocarbon dates supplement those obtained previously by the author, providing the basis for a more solid chronology, one that falls within the first millennium AD. It is a sequence that links well-dated Ronquin and cognate ceramic assemblages found within wide-spread paleosol horizons that are nothing more than allogenic stratum linked to broader climatic events both within and beyond the Orinoco Valley.

Bartelink, Eric [179] see Hall, Sarah

Bartelink, Eric (California State University, Chico) and Sarah Hall (Arizona State University)

[179] *Region of Origin Predictions of Human Remains from a Late 19th Century Medical Waste Pit: Oxygen and Strontium Isotope Evidence from the Point San Jose Hospital, San Francisco*

In 2010, human remains were discovered in a medical waste pit behind the Civil War-era hospital at Point San Jose, San Francisco by National Park Service archaeologists. The commingled assemblage consisted of thousands of human bones, including cranial and dental remains. Extensive cut marks on these remains indicated they were used for anatomical dissection. Assessment of biological characteristics suggested that some of the individuals targeted for dissection are of non-European ancestry.

In this study, we use stable oxygen and strontium isotopes to predict region of origin of the craniodental remains of eight individuals from the medical waste pit. A molar tooth and skull fragment were sampled from each individual and were prepared for isotope analysis. Stable isotope data from bone suggest that these individuals may have had a common origin (possibly the San Francisco Bay Area). In contrast, data from teeth are more heterogeneous and suggest a variety of different places of childhood origin. Using isoscape prediction maps, we present possible regions of origin for these individuals, including in and outside the continental United States. We hypothesize that the remains in the medical waste pit at Point San Jose represent selective targeting of the dead from minority communities.

Barton, C. Michael (Arizona State University) and Julien Riel-Salvatore (Université de Montréal)

[219] *You're Going to Carry That Weight a Long Time*

Mobility is a phenomenon of importance across all past and present societies. For hunter-gatherers, mobility structures ecological strategies, social organization, and response to environmental change. For prehistoric societies, we cannot observe mobility but it is possible to study it through a proxy record of discarded material items and biological remains that form the archaeological record. Increasingly archaeological practice has shifted from proposing intuitive links between mobility and the archaeological record to developing testable hypotheses evaluated through systematic, controlled experimentation. Computational modeling is becoming an important tool applied to this effort, for testing intuitively proposed relationships and discovering unexpected, counterintuitive ones.

Building on prior modeling experiments on mobility and formation of the lithic archaeological record, we examine the impacts of the geographical extent of hunter-gatherer movement on technological and compositional characteristics of accumulated lithic assemblages. We situate these computational modeling experiments in a digital representation of a humanized landscape in which both stone outcrops and archaeological sites are potentially exploitable and potentially finite resources.

[234] *Discussant*

Barton, Loukas [249] see Franchetti, Fernando

Bartov, Gideon [140] see Zipkin, Andrew

Bartusewich, Rebecca (University of Massachusetts Amherst)

[77] *Pottery Production at Idalion, Cyprus: Investigating First Millennium BCE Politics and Culture through Ceramic Petrography.*

On the island of Cyprus, the first millennium BCE was a period of change in politics and culture brought about by new people, new governance, and new technology. This paper attempts to analyze these changes using one site. Idalion is located in the east-central part of the island. The polity went through many changes from its founding, c. 1200 BCE, through the first millennium BCE and I have begun to investigate some through petrographic analysis of pottery. Pottery production can represent social and political culture, as it is the result of the needs of society and the desires of economic elites. In craft production literature, much ink has been spilled theorizing how politics can effect production. My project attempts to validate some of these theories, as others in the field have done already; specifically one by Costin (1991) who suggests that craft production could be influenced by political power in some form or another. At Idalion, I have sampled pottery from several use-areas of the site and analyzed the sherds through petrography to track production practices through time and space. The results of this analysis show that some changes are related to political shifts and others are not.

Basanti, Dil (Northwestern University)

[32] *From Building to Connecting: Shifting Portraits of Complexity in Ancient Aksumite Monument Construction (50–400 AD)*

This paper looks at how network theory and materiality may challenge progressive evolutionary models of complexity. Archaeologists working on the African continent have long argued against neoevolutionary models of complexity, advocating instead for understandings that promote dynamism and fluidity. However, the spectre of neoevolution still claims the public imagination: bigger still seems to be better even if we agree it really shouldn't be. This paper aids in complicating these views by emphasizing how recent understandings of network theory and materiality shift the portrait of complexity from one of linear progression to one of social disconnection. More specifically, this paper explores how current ideas of materiality inherently flip our value system for how societies may be complex—so that bigger is not necessarily better, but the result of peoples attempts to deal with isolation, alienation, disconnection, and sometimes social instability. A case study on the construction of the Aksumite funerary monuments (50–400 AD) in ancient Ethiopia will be used to illustrate the two approaches.

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Bascopé, Grace Lloyd (Maya Research Program/BRIT)**[173]** *An Ethno-ecological View of the Evolution of “Solares”: A Yucatan Maya Houselot Case Study*

Using a household ecology model, this longitudinal comparison of the flora and fauna of village yards attempts to show how and why solares and their contents have evolved over the last two and one-half decades. Particular emphasis is placed on showing how such changes might be detected in and impact current and future archaeological explorations of Maya farming communities. Changes in water usage, economic activities, family structure and social organization, religious beliefs, evolving house construction methods, the acquisition of material good, and population pressure all go to influence a new matrix in houselot use. Finally, these same elements of change are also reflected in the use of the milpa, traditional cornfield, and this presentation will touch on the evolution of this subsistence pattern, as well.

Basiran, Alper [41] see Yaman, Irfan

Bassett, Madeleine (William & Mary)**[32]** *Religious Conversion and Ritual Practice in the Horn of Africa: A Case Study from Islamic-Period Djibouti (ca. AD 800–1200)*

The Somali Coast has long been a center of global commerce. At the confluence of the Red Sea and the Indian Ocean, port cities like Zeila and Berbera witnessed the arrival of Greek and Roman traders (ca. AD200) and Chinese merchants (ca. AD1300). Contacts with Muslim merchants from the Arabian Peninsula (ca. AD800) were particularly transformative, and by the tenth century, communities across Djibouti and Somaliland were converts. Scholars have hypothesized that pre-Islamic “monument sites” across the region—specifically, ancestor shrines and cairns—remained centers of ritual practice long after communities converted to Islam. This study seeks to test this hypothesis by identifying evidence of changes/continuities in ritual practice at a complex of monument sites along the Wadi Buleh in eastern Djibouti. Results of pilot research (2015, 2016) suggest that several monuments (cairns) remained loci of activity throughout the Islamic Period.

Bates, Brian (Longwood University)**[112]** *Discussant*

Bates, Brian [159] see Farrell, Mary

Battillo, Jenna (Southern Methodist University)**[126]** *Reconstructing Diet from Combined Pollen, Macrofossil, and DNA Analysis of Human Paleofeces*

This work integrates multi-proxy data from 44 human paleofeces in order to study resource use among early farmers in the northern Southwest. Macrofossils and pollen were analyzed for all specimens. Since not all foods leave pollen or macrofossils identifiable after digestion, available resources unlikely to be visually identified were targeted for PCR-analysis in 20 samples using mitochondrial and chloroplast DNA primers. Separate cluster analyses of each of these datasets showed almost no discernable, cross-cutting patterns. Considering these datasets together rather than separately provides a broader view of the diet. However, the fact that they are measured by different metrics and do not necessarily represent the same time period thwarted statistical integration of the results. Pollen and DNA pass through the digestive tract intermittently and over a longer period than macroscopically visible food remains. Furthermore, the pollen or DNA present may be derived from multiple meals. As such, it was determined that the datasets were best examined separately and integrated through qualitative interpretation of the aggregate results rather than direct statistical comparison of separate lines of data from individual samples or groups of samples. While these conclusions may not be universally applicable, these results have implications for future multi-proxy paleofecal studies.

Battle-Baptiste, Whitney**[278]** *Discussant***Bauer, Brian and Matthew Piscitelli (National Geographic Society)****[100]** *Mapping the Cuzco Ceque System*

The Cuzco Ceque System was composed of 328 shrines (huacas) organized along 41 lines (ceques) that radiated out from the city of Cuzco, the Inca capital. Historic research indicates that the ceque system was conceptually linked to the fundamental social divisions of the Cuzco region. The ceque system of Cuzco has been frequently discussed in the literature, and anthropologists and historians have long speculated on the locations of shrines in the system and the projection of the ceque lines. The goal of this study is to develop an empirical understanding of the distribution of the Inca shrines and the direction of the ceque lines across the Cuzco region using field data as well as Google Earth Pro.

[211] *Discussant***Bauer, Alexander (Queens College, CUNY)****[327]** *The Pragmatic Semiotics of Cultural Heritage*

This paper interrogates the pragmatics of heritage in two ways. First, what are the discourses and rhetorics of heritage—how is heritage invoked and talked about, like a sign of history, in making statements about the world? How has that shifted over time, as the term is increasingly invoked to explain and defend a wide range of actions and attitudes, and how do the different discursive communities who speak about heritage engage (or not) with one another? Most importantly, why have these discursive transformations not been accompanied by similar transformations in policy? The answer to that last question requires us to consider a second mode of heritage, namely, what does heritage do, as a sign in history, when it is invoked, encountered, and circulated? What does heritage activate, and what are its “practical effects”? Drawing on several examples including the recent removal of confederate monuments in the US, I argue that while operating in these two modes—as signs of and in history—heritage’s greatest potential for transformational change is when it ceases acting as a rhetorical device and instead becomes itself the center of experiential social action, such as through its encounter, circulation, or being made visible (or invisible).

[196] *Discussant***Bauer, Andrew (Stanford University)****[230]** *Growing Infrastructure, Cultivating Differences: The Temporalities of Agricultural Assemblages and the Social History of the Raichur Doab, Southern India*

This paper examines the history of medieval (circa 500–1600 CE) agricultural infrastructure—assemblages of soils, irrigation wells, and processing facilities—in the semi-arid conditions of the Raichur Doab, Southern India. Despite some investiture from ruling elites and temples, the material evidence for agro-infrastructure development suggests that it was not merely a project of state or institutional design. Rather, its development might more productively be characterized as a process of “growth” in which socio-material systems for facilitating the movement and production of matter and things emerged in relation to a range of differentiated actors and unruly cultivation conditions. The durable associations of soils, cultigens, and water appear to belie the common characterization of the Raichur Doab as a space of inherent “fertility” and calls into question the assumption that the region’s unique multiculturalism during the medieval period was an outcome of competition for its economic resources, as is commonly emphasized.

[230] *Chair*

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Baumann, Timothy (University of Tennessee), Charles Faulkner (University of Tennessee) and Heather Woods (University of Tennessee)

[90] *The Diet and Identity of Enslaved African Americans in the Upper South*

Enslaved African Americans in the Upper South worked and lived in both rural and urban settings as farm laborers, cooks, house servants, miners, and roustabouts. Their quality of life and cultural identity may be best understood by how their food was acquired, the types of plants and animals eaten, and the recipes they created. This paper provides a summary of the enslaved African American diet in the Upper South and compares it with that of their white owners as well as with enslaved populations in the Deep South and Chesapeake Bay region.

Baumanova, Monika (Uppsala University)

[210] *Context-Specific Applications of Space Syntax on African Urban Sites*

Organisation of space in preserved buildings and town layouts in sub-Saharan Africa have increasingly been in the research scope of archaeologists and architectural historians alike. The methods of space syntax and its associated theory have, especially since 2000's, paved its way to African archaeology and used for new interpretations of architecture e.g. of Benin, Dahomey and the Swahili coast.

Traditionally, space syntax is undertaken using access analysis graphs for individual buildings, and axial maps for towns, which allow researchers to comprehend the configuration of space formally represented as connected points and lines in a network. This paper presents a selection of illustrative case studies on how space syntax can work with remote sensing data, GIS databases and other analytical tools, and adapted to address specific research questions and historical cultural contexts in Africa. Street network analyses of West African historic towns and structural examinations of preserved stone buildings on various sites along the Swahili coast are used to show in what ways space syntax graphs can be adjusted to the current research agenda. Investigation of the built environment using complex graphical representations of its spatial partitioning and culturally embedded properties may include sensory perceptions such as vision and kinaesthetics.

Bastian, Kathryn (Skidmore College), Danielle M. Romero (University of Nevada, Las Vegas), Barbara Roth (University of Nevada, Las Vegas) and Darrell Creel (University of Texas, Austin)

[325] *Tracing Lineages and Regional Interaction in the Upper Mimbres Valley: Preliminary Bioarchaeological Indicators at the Elk Ridge Site*

Three seasons of excavation at the Elk Ridge site in the Upper Mimbres Valley suggest close familial social structures within this Classic period community. As a part of this preservation project, excavation of endangered burials has revealed mortuary and biological patterns that renew thinking of community dynamics in the region. Previous research by Harry Shafer has proposed that Mimbres communities organized around the family unit and lineage groups. Data from Elk Ridge thus far support this in the continued use of architectural plots and numerous burials within pueblo rooms. In this paper, mortuary treatments and cranial characteristics (especially occipital flattening) of 20 burials are considered as markers of familial identity. Observations of adult individuals suggest multiple ethnic identities and contact with contemporary Mogollon groups to the north. Preliminary interpretations of Elk Ridge are presented and compared to other examples of regional interaction observed in skeletal remains during a period of reduced extra-local activities.

Bautista, Stefanie (Stanford University)

[335] *Quilcapampa: A Wari Colony on an Interregional Trail on the Coast of Southern Peru*

In the ninth century AD, Wari settlers founded the site of Quilcapampa in the Sihuas Valley of southern Peru. The first definitive Wari settlement in Arequipa, the site was founded astride an inter-valley trade route that had been used for at least a millennium. This paper will discuss both the site's clear link to Wari, as evidenced by its architecture, ceramics, and foodways, as well as the possible links to the Nazca region where Wari control was likely fractured due to conflict and possible drought. Founded some two hundred years after the Wari expanded along the coast of southern Peru during the seventh century AD, Quilcapampa residents arrived at the end of a period of increased interregional interaction, then abandoned the site only a couple of generations later as Sihuas and surrounding valleys were drawn more closely into a regional trade network. More importantly, who were the people of Quilcapampa and what was their relationship with people from Nazca and in the Wari state capital?

[335] *Chair*

Bauvais, Sylvain [137] see Dillmann, Philippe

Baxter, Carey (USACE ERDC-CERL), Michael Hargrave (USACE ERDC-CERL), George Calfas (USACE ERDC-CERL), Samuel Vance (USACE ERDC-CERL) and Andrew Hamblin (USACE ERDC-CERL)

[238] *3-D Scanning, LiDAR, and UASs in Cultural Property Protection*

Archaeologists managing cultural resources on military installations have increasing opportunities to leverage unmanned aircraft systems (UASs), LiDAR, ground-based 3-D scanning, near-surface geophysics, and other remote sensing methods into their Cultural Resource Management (CRM) practices. These techniques are being integrated into CRM work under controlled conditions where adequate time and technical expertise is available. Military archaeologists are also developing Cultural Property Protection (CPP) approaches to assist U.S. forces and partner nations in protecting cultural properties outside the continental U.S. that are threatened by looting, natural disasters, and armed conflict. Such approaches must be cost-effective and scalable to austere circumstances that may include serious shortages in time and trained personnel and harsh, potentially dangerous conditions. Methods such as 3-D scanning, UASs, and LiDAR will play important roles in CPP because they can collect useful, reliable data very quickly. We present a decision matrix intended to help those engaged in CPP make sound decisions about the use of both aforementioned "high tech" methods, as well as traditional archaeological methods including surface collection, soil coring, and photography to collect meaningful data for particular threats, site types, and conditions.

Baxter, Erin (University of Colorado, Boulder)

[190] *Aztec Ruins, Architecture and Augmented Reality*

The mounds immediately south of Aztec West were partially excavated in 1916, 1934 and 1960. These data have not yet been synthesized. Taken together, information from pottery, photographs, sketch maps and grey literature indicate the presence of masonry walls, possible staircases, and depositional patterns that are analogous to the Pueblo Bonito mounds. This poster will show these data in both traditional (2 dimensional) and augmented (3 dimensional) formats. Augmented reality will be used both to bolster Aztec architectural data, and illustrate its potential as a means to enhance poster presentations in many formats with projected data (viewed through smartphones and tablets) for an enriched graphic, video, and data-enhanced experience.

Bayani, Narges (ISAW)

[3] *Borderland Processes and the Question of BMAC in NE Iran*

How frontiers and borders are conceptualized in archaeology is critically influenced by the approaches and perspectives in culture contact research. Absence of written documents from Bronze Age Central Asia severely limits the application of such theories. The nature of the Bronze Age civilization of Bactria-Margiana Archaeological Complex (BMAC) in Central Asia, and its dispersion to neighboring NE Iran has been a long-lasting question in study of Prehistoric Western Asia. This paper aims to examine the BMAC presence in NE Iran, using Tepe Hissar as a case study, to understand how

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BMAC interacted with local cultures in this region. The evidence for existence of BMAC in NE Iran and the nature and extent of BMAC's dispersion out of Central Asia is revisited from the perspective of frontier and borderland studies. The goal of this paper is to identify different types of borderland processes that occurred in NE Iran, where these two cultures came into contact. In order to hypothesize about this interaction sphere, I turn to borderland theories, specifically the "continuum of boundary dynamics" and "borderland matrix" models in order to conceptualize the material culture evidence for BMAC in Iran as markers of various borderland processes.

Bayarsaikhan, Jamsranjav [3] see Parrish, Deborah

Bayman, James [275] see Moragas, Natalia

Bazan Perez, Augusto (Fundacion Augusto N. Wiese)

[249] *Assessing Chronology, Spatial Setting, and Architectural Planning at Pampa de Llamas-Moxeke, Casma Valley*

The archaeological site of Pampa de las Llamas-Moxeke in the Casma Valley, Peru is an architectural complex comprising two opposing large platform mounds united by a sequence of aligned rectangular platforms and structures. The site was studied mainly in the 20th Century by various investigators; the most recent of whom carried out intensive excavations in the 1980s aiming to produce exact dates and explain the function of the settlement. This previous work suggested that the complex dates to the Early Formative Period, implying contemporaneity with local sites including Las Haldas, Sechín Bajo, Cerro Sechín, and Sechín Alto. However, the occupational history of Pampa de las Llamas-Moxeke is considerably more complex than what was originally proposed. New data contribute to explanations of the construction sequence, settlement planning, use of the natural setting, and the reasoning for the selection of the complex's physical placement, particularly in political and economic terms. As such, construction of Pampa de las Llamas-Moxeke began in the end of the Late Archaic and was subject to modifications according to the social transformations occurring with the introduction of ceramics and the Chavín phenomenon. In turn, its ruling class would have dominated the socio-political scene in the middle Casma Valley.

[216] *Discussant*

[216] *Chair*

Beach, Timothy [153] see Wendel, Martha

Beach, Timothy [243] see Kotsoglou, Anastasia

Beahm, Emily (Arkansas Archeological Survey), Jodi Barnes (Arkansas Archeological Survey) and Elizabeth Horton (Arkansas Archeological Survey)

[168] *Gathering, Gardening, and Agriculture: Arkansas Archeological Survey's Plant-Based Public Archeology*

The Arkansas Archeological Survey has been practicing citizen science and developing educational tools for engaging local communities in the study of the past since the 1960s. In this paper, we discuss recent efforts by the Survey to develop educational content specifically aimed at highlighting the history of plant use through time in the southeastern United States. The Survey received grant funds to develop the 5th grade social studies curriculum, Gathering, Gardening, and Agriculture: Plant-based Foodways in the Southeastern United States. We designed the curriculum to improve students' scientific literacy and foster a greater sense of the importance of preservation among both students and teachers. Through this curriculum, teacher workshops, web-based content, and native gardens at several research stations, we have developed a suite of educational approaches to help teach how people in the past used plants, while emphasizing the important contributions that southeastern Indians made to the ways people use plants today. We discuss the success of our approach to public archeology and education, as well as our assessment and evaluation of our educational programming as we considered education and archeology in the 21st century.

Beamer, Dawn [294] see Singer, Zachary

Bean, Danial [101] see Nyers, Alexander

Beatrice, Jared (The College of New Jersey), George Leader (The College of New Jersey; University of Pennsylvania), Kimberlee Moran (Rutgers University-Camden) and Anna Dhody (Mutter Research Institute)

[204] *Bioarchaeological Analysis of Human Skeletal Remains from the Historic First Baptist Church Cemetery, Philadelphia (ca. 1700–1860): Preliminary Results*

The inadvertent discovery of the historic First Baptist Church of Philadelphia cemetery resulted in the recovery of a large sample of human skeletons composed of commingled remains as well as discrete individuals associated with intact coffins. Analysis of the skeletal remains prior to reburial provides insight into demography, behavior, and living conditions among members of this congregation interred circa 1700–1860. While preservation of the remains is variable within the cemetery, preliminary results include a paleodemographic profile consistent with high infant and childhood mortality. Moderate prevalence rates of developmental enamel defects are also indicative of physiological stress experienced during early childhood. In addition to paleodemographic and paleopathological trends, we present the osteobiography of an adult male exhibiting multiple well-healed traumatic injuries and evidence of autopsy—a form of postmortem examination that appears infrequently in public cemeteries dating to this period.

Beaubien, Harriet "Rae" [139] see Harrison, Ainslie

Beaudoin, Ella (Smithsonian Institution National Museum of Natural History), David R. Braun (George Washington University) and Jonathan Reeves (George Washington University)

[41] *Spatial Variation in Tool Use: Acheulean Forager Patterning at Elandsfontein, South Africa*

Despite more than a century of scholarship, our knowledge about the use of stone artifacts remains relatively sparse. Major advances in the analysis of microscopic wear have been the primary focus of much previous research. However, post-depositional processes and the logistics of microscopic analysis limit sample sizes in these studies. New approaches that quantify macroscopic damage patterns on the assemblage scale provide a robust basis for drawing behavioral inferences about hominin tool use. Here we apply these new techniques to a large assemblage of stone artifacts from multiple excavations at Elandsfontein (1 Ma—780Ka) from the Western Cape of South Africa. Measures of damage location, continuity, and extent provide intriguing insights into the variability in tool use patterns. This analysis is combined with experimental studies of tool use and their subsequent damage patterns. Results indicate differences in tool use across an ancient landscape. These differences correlate with complimentary data sets from across Elandsfontein. This further supports this method in the investigation of tool use in Paleolithic contexts. This research was supported by the National Science Foundation Research Experience for Undergraduates (NSF-BCS- 1620907).

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Beaule, Christine**[275]** *Ethnogenesis and Cultural Persistence in the Global Spanish Empire*

Ethnogenesis and cultural persistence are dynamic and variable processes of identity creation, manipulation, and co-constitution, which also include the persistence, reinforcement, and reconstitution of elements of cultural and ethnic identities. Our focus is not simply on indigenous groups or colonists, but rather on the larger context of agents within multi-cultural, pluralistic colonies. The colonies established by the Spanish throughout the Americas, the Caribbean, Pacific, Southeast Asia and Africa, brought together individuals and groups from both near and distant diverse cultures. Together, these colonies were economically, politically, and religiously connected to one another. Spanish colonies were, moreover, a catalysis of cross-cultural exchange, conflict, and persistence as colonists, merchants, and various indigenous individuals and groups moved throughout the empire. It is thus an ideal setting to explore questions of ethnogenesis and the persistence of local and indigenous traditions in old and new contexts. This paper offers a broad, comparative exploration of the archaeology and ethnohistory of ethnogenesis, persistence, and the many permutations of identity throughout the Spanish Empire. It sets up a conceptual framework for the case studies that follow, representing seven world regions.

[275] *Chair*

Bebber, Michelle and Michael Wilson (Kent State University)**[89]** *Why Wasn't the Ceramic Arrowhead Invented?*

In biology the concept of theoretical morphology has been used as a heuristic device for better understanding the evolutionary trajectories of organisms. Theoretical morphology proceeds by creating and examining hypothetical specimens not actually found in nature. So instead of asking "why does feature X exist?", a theoretical morphological approach asks "why doesn't feature Y exist?". Here, we use this approach to address the question of why ceramic technology did not evolve to replace stone technology with respect to hunting weapon tips (spear points, atlatl dart tips, arrowheads). In other words: why didn't the ceramic projectile point emerge? Clay is a readily available, economically efficient, and easily workable raw material. Likewise, objects made out of fired clay are extremely hard, sharp, and generally durable. We hypothesized that there was perhaps a functional constraint such that ceramic hunting weapon tips cannot perform as effectively as stone ones. We conducted an archaeological experiment using stone and ceramic replicas, and assessed point penetrability and durability. The results of this study will have implications for our understanding of prehistoric weaponry evolution.

Bebber, Michelle [44] see Eren, Metin

Becerra, Gibrán (Universidad Veracruzana)**[93]** *Habitar en los bordes, ocupación Clásica en lomeríos y crestas montañosas al oriente de los volcanes de Los Tuxtlas*

Los sitios localizados sobre la planicie costera y en el pie de monte de los volcanes de Santa Marta y San Martín Pajapan, en el sur de Veracruz, se caracterizan por la presencia de arquitectura monumental, grandes áreas domésticas, sitios acondicionados como estaciones portuarias, talleres de artefactos de basalto en formato pequeño y posiblemente áreas de cultivo. En el periodo de mayor ocupación (650–1000 dC.) los terrenos bajos estaban totalmente ocupados, por lo que el asentamiento comenzó a crecer hacia los lomeríos y las crestas de la Sierra de Santa Marta y faldas del Volcán San Martín. Aunque sin arquitectura monumental, la ocupación de lomeríos y crestas montañosas fue una solución en el crecimiento del asentamiento; en la ponencia se exponen las principales evidencias de modificación del terreno de este tipo de sitios, los materiales arqueológicos asociados y se evalúan las posibilidades de aprovechamiento y explotación de recursos locales y su impacto en el desarrollo general de la población de la zona costera de Los Tuxtlas y del Sur de Veracruz.

[93] *Chair*

Becerra Alvarez, Marimar (Universidad Veracruzana)**[93]** *Paisajes aprovechados y causas modificados en el sistema portuario de la costa este de Los Tuxtlas, Veracruz*

En la zona este de Los Tuxtlas se ha identificado un complejo sistema de intercomunicación fluvial y marítima, construido a partir del aprovechamiento y acondicionamiento de corrientes acuáticas. Una gran parte de estas vías de comunicación confluyen en el sistema portuario de la costa este de Los Tuxtlas. La región se caracteriza por estar en un abanico aluvial, por lo que presenta un gran dinamismo fluvial, es decir los causes no son estáticos en el tiempo.

En los estudios arqueológicos debe considerarse estos fenómenos naturales como variables complementarias, pues ayuda a entender como fue la relación de las sociedades con su entorno. Para el caso del sistema portuario de la costa este de Los Tuxtlas, trataremos de entender la relación que tuvo el dinamismo fluvial de la región para la configuración de los sitios, en qué medida estas variables transformaron el paisaje y cuáles fueron los mecanismos que las sociedades adoptaron para apropiarse el entorno.

Becerra-Valdivia, Lorena (ORAU, University of Oxford), Thibaut Devière (ORAU, University of Oxford), Thomas W. Stafford Jr. (Stafford Research, LLC), Michael Waters (Center for the Study of the First Americans, Texas) and Tom Higham (ORAU, University of Oxford)**[184]** *Comparison of Preparative Chemistry Methods for the Radiocarbon Dating of Anzick Site, Montana*

Found in 1968, the archaeological site of Anzick (24PA506), Montana, contains the only known Clovis burial. Here, the partial remains of a male infant (Anzick-1) were found in association with a Clovis assemblage of over 100 lithic and faunal bone artifacts—all red-stained with ochre. The incomplete, unstained cranium of a separate individual (Anzick-2), dating to ~8,600 radiocarbon years before present (BP), was also recovered. Previous chronometric work has shown an age difference between the Clovis assemblage (represented by two antler rod samples), dated to ~11,000 BP by XAD-purified collagen, and the Anzick-1 individual, dated to ~10,700 BP by XAD-purified collagen. The discrepancy between the age of the human remains and the osseous artifacts has led to much speculation. Here, we present the results of a comprehensive radiocarbon dating program that utilized different preparative chemistry methods on osseous material from the site, including a single-amino acid extraction protocol using preparative High Performance Liquid Chromatography (prep-HPLC) optimized at the University of Oxford. This comparative approach has allowed us to obtain robust chronometric data for a key site in First Americans research.

Beck, Chase, Vaughn Bryant (Texas A&M University, Department of Anthropology, P) and Dennis Jenkins (University of Oregon, Department of Anthropology)**[290]** *Pollen, Contamination, and Interpretation at Paisley Caves Archaeological Site*

In studying the early inhabitants of North America, some of the frequently revisited questions involve how they lived, what they ate, and what their world was like. Archaeological Palynology is a well understood method for addressing these questions. Because of the constant pollen rain and the purposeful and incidental ingestion of pollen and spores, well-preserved pollen is repeatedly found in association with human habitation sites and human artifacts. Paisley Caves, Oregon, established itself as one such early human habitation site when human DNA was found in coprolites dating to the oldest associated with humans in America. In addition, the sediments within caves at the site contain an abundance of well-preserved pollen. Knowing more about the environment reflected by the sediments at Paisley Caves can tell us more about the people who lived there, the lives they led, and the obstacles they faced as they ventured into the undiscovered American continent. However, the cave setting as well as the presence of packrat coprolites, thoroughly mixed within the sediments, adds levels of complexity that makes the sediment at Paisley Caves a unique interpretive challenge.

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Beck, Jess (University of Cambridge), Colin Quinn (Hamilton College) and Horia Ciugudean (National Museum of the Union, Alba Iulia)

[29] *From Mounds and Museums: Building a Bioarchaeology of the Early Bronze Age in the Apuseni Region of Transylvania*

The Apuseni Mountains of southwest Transylvania, Romania, are amongst the richest gold and copper procurement zones in the world. Metals from this region helped fuel the rise of inequality across Europe during Late Prehistory, and the area is also home to a rich mortuary record, with archaeological survey identifying over one hundred mounded tomb cemeteries belonging to Bronze Age communities. However, none of these cemeteries have been fully excavated and only a small sample of skeletons has been studied. Here, we describe the results of bioarchaeological analysis of human skeletal remains from a sample of previously unanalyzed Early Bronze Age sites that encompass a significant degree of environmental and cultural variability, including upland cemeteries with stone-covered cairns, as well as lowland cemeteries with earthen cairns. These cemeteries show evidence of diverse mortuary treatments, including primary burials, secondary burials, and commingled interments. Our analyses assess age, sex, health, and funerary treatment, providing preliminary information about how mortuary treatment intersected with aspects of identity and lived experience. This study builds a foundation for future bioarchaeology in the Apuseni region and emphasizes the need to supplement osteological analysis of the scant museum collections with larger-scale excavation of cemeteries.

Beck, Jess [185] see Cobb, Emilie

Beck, Margaret (University of Iowa)

[246] *Discussant*

Becker, Sara (University of California, Riverside)

[220] *Landscape and Labor: Bones and Bodies of the Tiwanaku State*

Modern, archaeological, and bioarchaeological accounts of South American Andean workers show labor divisions by age, then gender, with a focus on duality between the sexes. Within the Tiwanaku state (AD 500–1100) of Bolivia and Peru, labor was also divided across the landscape within its heartland and colonies, and especially within its multiethnic neighborhoods in the heartland city of Tiwanaku (Becker 2017). Pondering these labor communities further with a focus on data from these peoples' skeletal remains, this paper discusses the embodied physical changes noted on these Tiwanaku bones associated with varied task and subsistence-based lifeways. While it may not be possible to link certain jobs with each individual, locating gendered spaces and tasks may be conceivable spatially within the population. Further features may also be identified by focusing on certain parts of the anatomy, like hands, feet, and the spine, which would have been important body regions to show labor distinctions associated known Andean crafts like potting, weaving, and the movement of goods using backpacks across the highly variable elevations of this state. Hence, this research takes a wide-to-narrow scope across the Tiwanaku polity to understand labor, gendered activity spaces, and embodiment on human bone.

Becker, Sara [270] see Herndon, Brianna

Beckett, Jessica [136] see Skeates, Robin

Becks, Fanya (Stanford University)

[58] *What Should We Call the Rocks in Living California Landscapes?*

As archaeologists in Central California shift towards understanding indigenous agencies within the indigenous landscapes of colonial contact (Panich and Schneider 2015) an opportunity has arrived for the field to consider the practical implications of autochthonous Central Californian relationships and ontological perspectives for research praxis. The question posed in this paper, is what are rocks as interlocutors in relationships; how do you think of a rock when it is a part of a place that is recognized to be vibrant, living, and interconnected with living and ancestral Central California peoples. Fire-cracked rocks, rounded river stones, and other rocks that are not obvious flaked or ground stone tools are a prominent component of archaeological sites that are little recorded and often not recovered from the field. While collection strategies are an important pragmatic part of archaeological investigations, the fields privileging of formal tools and chronologically significant artifacts miss potential information about many pieces of places that are not understood. In this paper, I discuss examples within the ethnographic archive that may help us consider the role that rocks have played in the autochthonous landscapes of the past and present, which might otherwise have eluded western eyes.

Beddows, Patricia A., Dominique Rissolo (University of California, San Diego), Emiliano Monroy-Rios (Northwestern University), Dominique Meyer (University of California San Diego) and Beverly Goodman-Tchernov (University of Haifa)

[330] *Coastal Hydrogeological Context of Potable Water Sources of the Vista Alegre Maya Port Site, Yucatan Peninsula, Mexico*

Ongoing investigation at the ancient Maya port site of Vista Alegre has revealed a multi-phased and significant occupation spanning the Preclassic to Postclassic periods. However, the vital source of potable water that would have supported this coastal settlement remains unknown. We present a hydrogeological assessment of the region to understand changing water sources over the last 2 millennia. Potential groundwater foci at the intersections of conjugate fracture sets are presently either mantled in sediments, and/or flooded by saline-hypersaline waters. Nearby surface drainage from rain-fed savannas also has seasonally variable salinity commonly exceeding potable limits. A number of shallow springs discharge a range of reduced salinity and cooler waters. These are locally called Ojos de Aguas, a form of flooded sinkhole. Casting the coastal landscape under the marginally lower sea levels of the late Holocene (-2m), some of the known ojos would have been terrestrial sinkholes/cenotes above sea level. Recent evidence indicates a downward tectonic movement of the Yucatan north coast, which would further leave the ojos unaffected by direct mixing with marine waters. Vista Alegre's inhabitants may have benefited from cenote potable perennial water sources that are now clandestine due to the sea level and tectonic shifts.

Beddows, Patricia A. [330] see Meyer, Dominique

Bedell, John (Louis Berger)

[202] *The Potomac Gorge*

The Potomac Gorge is a canyon through which the river passes through the Falls Zone from Great Falls down to Washington, D.C. Ever since John Smith met Indians fishing below Little Falls in 1608, it has been widely assumed that the Potomac Gorge was a prime Native American fishing spot. The numerous prehistoric archaeological sites along this stretch of the river have often been interpreted as fishing stations. However, re-examination of the archaeological record in the Gorge, carried out as part of multi-year archaeological surveys in Rock Creek Park and the George Washington Memorial Parkway, suggests a more complex picture. Most of the known Archaic and Woodland sites are in places that make them unlikely fishing spots. This discovery directs attention to other ways ancient Native Americans might have used the gorge: as a boundary, as a transportation corridor, and as a possible approach route for dangerous outsiders that had to be carefully watched.

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Bedford, Clare (University of Central Lancashire) and David Robinson (University of Central Lancashire)

[214] *Deconstructing Rock Art—An Experimental Approach to the Application of Portable Analytical Instrumentation to Applied Pigments at Pleito, South-Central California*

The composition of background substrate, overpainted layers and admixtures can influence the data acquired from portable instrumentation at rock art sites. An understanding of the extent and impact of this influence is crucial when comparing in situ rock art pigments with potential source materials. This study uses an experimental process to assess the impact of factors such as a pigment thickness, overpainting, and addition of organic binders on the readings acquired using portable instrumentation including pXRF, Raman and FTIR. Approximately 150 samples collected from potential pigment sources in South Central California, are used to form experimental paints, as well as forming a comparative collection. In addition to these mineral sources various fats, plant gums and resins are tested. The aim is to establish a method to compensate for the background and overpainting effects. This method is considered a means to identify pigments and binders in situ and compare these between panels and with potential source materials. This experimental work forms part of the Gordian Knot Project based at the polychrome rock art site of Pleito and the results are applied to compare pigments at this site between panels and with potential sources.

Bedford, Clare [214] see Kotoula, Eleni

Beecher, Cathy Jo [334] see Pfau, Justin

Beggen, Ian (North Carolina State University)

[240] *Preliminary Investigations into the Site of Chullpa K'asa in Southwestern Bolivia*

The site of Chullpa K'asa, located in the Potosí Department of southwestern Bolivia, covers an area of around 45 hectares and contains the ruins of dozens of Prehispanic buildings. This poster presents the results of preliminary investigations of the site based on pedestrian ground survey and an assessment of artifacts housed at a nearby Indigenous museum. Systematic survey and mapping, which included the recording of surface artifacts at 43 locations across the site, revealed two areas of concentrated architecture, one area of tombs, abundant ceramic sherds, groundstone tools, and evidence of metal production. Based on survey data and the artifacts housed in the museum, the site appears to have been occupied from the Intermediate onward to the Late Horizon Period, roughly coinciding with the end of Tiwanakan influence, subsequent occupation by warring polities in the Late Intermediate Period, and finally the invasion of the Inca as they established the southern extent of their empire. Artifactual and architectural data provide a basis to interpret the function of the site as a frontier of the Incan Empire, develop research questions for future investigations at the site, and contribute to the sparse amount of archaeological information concerning this area of the world.

Begley, Christopher (Transylvania University)

[299] *3D Imaging in Remote Areas, Rainforests, and Other Hostile Environments: Investigating Identity and Interaction in Eastern Honduras*

Ancient eastern Honduran populations utilized foreign symbols in limited elite contexts, such as site planning and architecture, but most elements of material culture reflect clear connections to Lower Central America. Iconography seen in petroglyphs appears significantly different from that seen in other media, and may yield additional information and insights into identity formation and interactions within the region. For many reasons, these petroglyphs have not been extensively studied. While some of the petroglyphs are easily visible, many are highly eroded, hard to access, and difficult to identify, document and interpret. Recent work in high resolution 3D imaging using rugged and portable structured light illumination systems may offer an inexpensive solution to identifying, documenting, and interpreting these important symbols in remote areas or hostile environments.

Begun-Veenstra, Erica (Grand Valley State University)

[205] *The Science of Souvenirs: Past, Present, and Future*

For many people, material objects hold the memory of a time and place. For some families, these objects, collected at meaningful and important times and places, can become heirlooms with an additional, familial significance tying generations to a distant time and place. For others, these objects reflect personal journeys and experiences. By examining two case studies—the Michoacan originating ceramics of the N1W5:19 compound at Teotihuacan and the exchange and collecting of lapel pins at an international children's competition—this paper seeks to address the importance of collecting keepsakes and souvenirs as markers of memory of distant lands, personal connections, and travels.

Behling, Emma (Augustana University) and L. Adrien Hannus (Augustana University)

[223] *Experimental Recreation of Shell Fishing Implements at Mitchell Indian Village in South Dakota*

Over the years of excavation at the Prehistoric Indian Village at Mitchell, several similar shell artifacts were discovered. Excavators came to the hypothesis that the shell items had been fishing lures, and set out to test it. The shell artifacts were replicated and used as lures on several fishing expeditions. These shell items functioned as lures, and we are led to believe that the artifacts found at Mitchell could indeed have been fishing lures.

Behrensmeyer, Anna K. [189] see Hutson, Jarod

Beisaw, April (Vassar College)

[205] *Manifesting the Ghosts of Place through Archaeology and Empathy*

Hauntings rely on an ability to envision someone from the past retaining agency in the present, a ghost. Often barely perceptible, the ghost's actions tend to be routine (walking, sitting, etc.) but their message is profound (I was like you, until something happened). Archaeology relies on an ability to envision the past, present, and future as intruding into each other at a defined place, a site. Often missed by those without proper training, archaeologists recover mundane objects (plates, cups, etc.) and use them to speak about grand social issues (past peoples have left lessons for us). These parallels are not uncanny, they are noteworthy. By investigating how and why a space takes on the aura of a haunted place, archaeology can tap into the enthusiasm for the past that ghost hunters/tourists espouse. After seven years of incorporating ghost stories and hunts into my teaching and research, I've found a formula for manifesting the ghosts of place—summarized as “we remember what we fear and we believe what we can envision.” Any space becomes haunted once good storytelling taps into empathy. The objects made, used, and left behind by those we have lost aid the conjuring.

[60] *Discussant*

Belardi, Juan (Univ Nac de la Patagonia Austral), Flavia Carballo Marina (Universidad Nacional de la Patagonia Austral), Gustavo Barrientos (Universidad Nacional de La Plata—CONICET) and Patricia Campan (Universidad Nacional de la Patagonia Austral)

[155] *Southern Patagonian Hunter-Gatherers: Distributional Archaeology in the North Shore of the Viedma Lake (Santa Cruz, Argentina)*

Results obtained through a distributional archaeology project along the north shore of the Viedma lake basin are introduced. The aim of the research is to gain knowledge about hunter-gatherer landscape use during the Holocene and to incorporate the basin within a broader discussion of the population of the western side of Southern Patagonia. Different altitudinal sectors along an East-West axis -from the steppe to the forest- were surveyed in order to understand seasonal mobility: 1) the coast of the lake (255–300 masl), 2) pampas (300–700 masl)-, large open spaces formed by glacial deposits-, 3) basaltic plateaus basis (750 masl), and 4) the plateaus (950–1000 masl). Lithic artifactual densities are evaluated considering local geomorphology,

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new data on chronology, technology, rock art and guanaco (*Lama guanicoe*) archaeofauna. All these data is framed on a regional hunter-gatherer landscape use model that is compared to the ones built for neighbour lake basins like the Tar-San Martín (to the north) and Argentino (to the south).

Belardi, Juan [155] see Nuevo Delaunay, Amalia

Belcher, Megan [86] see Colclasure, Cayla

Beliaev, Dmitri (Knorozov Mesoamerican Center, Russian State University for the Humanities), Alexandre Tokovinine (Department of Anthropology, The University of Alab) and Milan Kovac (Department of Comparative Religions, Comenius Univ)

[33] *Ballgame, Ritual and Monument Reutilization at the Ancient Maya Site of Uaxactun*

During the 2017 field season of the Uaxactun Archaeological project new monument was excavated at Buena Vista, a minor center at Uaxactun urban periphery. It is a small carved altar or ballcourt marker, which according to its style dates to the Early Classic. High quality of the carving and the hieroglyphic inscription indicates that the altar/marker itself was a part of the monumental corpus of Uaxactun urban core; uncomplete text provides important new information on the dynastic history of the site. During the Late/Terminal Classic it was moved and reutilized by the occupants of Buena Vista as a ballcourt marker. Its importance probably lasted to the Postclassic when it became the object of the veneration and unusual offering was placed associated with the monument.

Bélisle, Véronique (Millsaps College)

[117] *Reassessing Wari Power in the Central Andes: Local Agency, Trade, and Competition in the Cusco Region*

The Wari state of the Central Andes has traditionally been interpreted as an expansive polity that incorporated numerous provinces during the Middle Horizon (A.D. 600–1000). Most research has focused on the large Wari installations built in several regions of Peru, leading many scholars to conclude that Wari administrators established direct imperial control over these areas. More recently, scholars have started to adopt a complementary bottom-up approach to study changes experienced at the regional and household levels by smaller communities living outside the large Wari installations. This new perspective challenges previous interpretations of Wari as a strong, centralized, all-controlling colonial authority. In the Cusco region, survey and excavation data suggest that local populations were little affected by Wari presence. Continuity in settlement patterns and domestic and ritual activities reveal that locals did not adopt Wari practices. Like other early states worldwide, the Wari polity might have built enclaves that helped its settlers tap into the knowledge, authority, and networks of local elites. Obsidian, hallucinogenic snuff, and other exotic goods from Cusco further demonstrate that Wari colonists did not interrupt regional and long-distance exchange networks, but might have intensified prestige-goods competition and altered the balance of power among local societies.

Bélisle, Véronique [217] see Alaica, Aleksa

Belknap, Daniel [84] see Miller, Jacquelynn

Bell, Joshua (National Museum of Natural History, Smithsonian Institution)

[114] *Transforming Ideologies and Hopes of the Past in the Purari Delta of Papua New Guinea*

In the wake of several decades of resource extraction (logging and oil/gas exploration), the past as articulated in particular places, material things, names and narratives has taken on new urgency in the Purari Delta. For over a decade communities have struggled to marshal these assemblages of cultural heritage to demonstrate their traditional ownership to acquire resource royalties. An imperfect and highly political process, claimants must overcome the legacies of out-migration, Christianity, and iconoclasm which have unevenly configured the distribution and knowledge of the past. In the midst of these processes, aspects of this diffuse heritage emerge unexpectedly: a WWII airplane rising up from the delta, stone tools unearthed by bulldozers, or rumours of ancestral beings encountered in the forest. In this paper I examine these periodic returns as a way to think through the region's transforming ideologies, how the past is being marshalled by individuals and their communities to make a more hopeful future, and what role anthropology has in these processes.

[114] Chair

Bell, Elizabeth E. [268] see Newman, Tiffany

Bello, Charles [42] see Dillian, Carolyn

Bellorado, Benjamin (University of Arizona)

[74] *Fancy Threads and Tree-Ring Dates: New Chronometric Controls for the Development of Cotton Weaving Technologies and Ritual Textile Production in the San Juan Basin, A.D. 1150–1300*

The introduction of cotton tapestry weaving traditions transformed Ancestral Pueblo ritual costuming traditions in the San Juan Basin ever after. After its introduction, documenting developments and changes of cotton-weaving technologies and ceremonial garment fashions is difficult because most of the associated materials are perishable. Arid conditions at the numerous cliff dwellings occupied in the Pueblo III period (A.D. 1150–1300) have fostered the preservation of abundant evidence of cotton-textile production in the form of loom anchors and spinning-and-weaving tools, but little synthesis of these data has been attempted in decades. Even less is known about spatiotemporal changes in weaving production technologies and the contexts where weaving took place. Newly developed tree-ring chronologies from rooms yielding weaving-related materials, cross-media stylistic studies of pottery and mural imagery, and archival documentation of weaving assemblages from cliff-dwellings in the region provide new data about the nature of cotton textile production in the region in the twelfth and thirteenth centuries. In this paper, I present the results of recent analyses that shed new light on the origin, development, and distribution of cotton-weaving technologies and ritual-garment production industries in the San Juan Basin.

Bellorado, Benjamin

[96] *Discussant*

Belluzzo, Nick (College of William & Mary)

[20] *"The Other Half of the Sky": Competitive Anarchy in Contact-Era Palau*

This paper explores the way in which contact-era Palauan society negotiated between hierarchy and heterarchy to ensure long-term sociopolitical stability, developing and deploying a theory of competitive anarchy. The evaluation critiques the frequent correlation of complexity with hierarchy and centrality and does so through a geostatistical analysis. This investigation begins with the development of a proposed model of Palauan sociopolitical structure, derived through ethnographic descriptions contextualized with re-readings of contact-era narrative accounts. This proposed model provides a hypothesis which is tested in a geographic information system (GIS) through the geostatistical analysis of regional settlement patterns and the distribution of village sites across the landscape at multiple scales. Through modelling clustering and dispersion of village sites across the landscape,

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the evaluation of central places and authority in Palau suggests the presence of meaningful settlement patterns at both local and regional scales. The results suggest that intentional and complex social structures can allow competition while both limiting social inequality and ensuring group cohesion.

Belmar, Carolina (Depto. Antropología, Universidad de Chile), Omar Reyes (CEHA, Instituto de la Patagonia, UNAG, Punta Arena), Ximena Albornoz (Fondecyt Grant 1170726), Flavia Morello Repetto (CEHA, Instituto de la Patagonia, UNAG, Punta Arena) and Manuel J. San Román (CEHA, Instituto de la Patagonia, UNAG, Punta Arena)

[153] *Diet among Marine Hunter-Gatherer-Fishers of the Northern Patagonian Channels (41°50'- 47° S): Assessing Plant Use and Consumption through Dental Calculus Studies*

In the western Patagonian channels, the archaeofaunistic record, technological and isotopic studies show subsistence strategies based on fishing, hunting and gathering of marine resources. Unfortunately the consumption of plant resources still has not been assessed for this area and the consumption of C3 plants is hard to detect through these type of analysis. Our aim is to evaluate the consumption of wild and domesticated plants and parafunctional use of the teeth for the processing of plant fibers. For this study we examined the microfossil evidence contained in the tooth calculus of 47 individuals from 17 sites from the Chiloé and Chonos archipelagos. In the cases that isotopic information is available, we shall compare and evaluate how the integration of both types of information -isotopic and microfossils- can contribute in the general overview of diet reconstruction. FONDECYT Grant # 1170726.

Beltran, Boris [306] see Hannigan, Elizabeth

Bement, Leland C. [155] see Tharalson, Kirsten

Ben Tahar, Sami [210] see Fenn, Thomas

Benchley, Elizabeth (University of West Florida) and Judith Bense (University of West Florida)

[215] *Lynne Goldstein: A Pioneer in Public Archaeology*

We will celebrate the contributions of Lynne Goldstein to regional and public archaeology both in the Midwest and in Florida. We will begin by reviewing her innovative work with regional archaeology and political outreach in Wisconsin. When the opportunity arose in Florida to create a state-wide public archaeology program, we called on her to assist with forming the plan and with its implementation. The Florida Public Archaeology Network owes much to Dr. Goldstein, who has served on its board since its inception for her expertise, perseverance, commitment to digital and social media, and her insightful and critical thinking.

Benden, Danielle (Driftless Pathways, LLC)

[138] *New Digs for an Old Collection: A Case Study in Rehabilitating Legacy Collections*

Legacy collections—those typically generated decades ago that do not meet current professional curation standards and require a substantial resource investment for long-term preservation—are housed in nearly every archaeological repository across the country. Many are the result of under-funded university field schools or public archaeology projects that didn't account for either the initial curation preparation or the long-term costs and maintenance of collections care. The deeply stratified and federally-owned Tillmont site, located on an island in the Upper Mississippi River, is one such collection that was recently rehabilitated to meet the federal curation regulations (36 CFR Part 79). This paper explores that rehab process, along with the challenges encountered and the solutions for overcoming them. The end result is a collection that is fully digitized, organized, indexed, and ready for a variety of uses, including research and education.

[149] *Discussant*

[138] *Chair*

Bendremer, Jeffrey [222] see Thomas, Jayne-Leigh

Benev, Megan (Emory University), Shelby Putt (Indiana University-Bloomington) and Dietrich Stout (Emory University)

[227] *Pedagogy in the Paleolithic? The Influence of Verbal Teaching on Stone Knapping Skill Acquisition*

Teaching is uniquely developed in humans and was likely critical to the emergence of cumulative culture. However, the importance of various forms of teaching, including the use of language, in transmitting Paleolithic skills like stone knapping is less understood. Here we examine the knapping behaviors of 17 subjects who learned to make Oldowan and Acheulian stone tools from watching video demonstrations either with verbal instruction or without sound. Despite intriguing differences in brain activity (measured with fNIRS) between these groups, the mode of social transmission has yet to reveal significant effects on handaxe morphology, suggesting that verbal teaching may not have been necessary for the social reproduction of early stone toolmaking skill. We coded video-recordings of subject performance using BORIS event-logging software and a knapping ethogram to test for possible behavioral differences between conditions that might explain observed differences in brain activity and indicate influences of teaching on early-stage skill acquisition that are difficult to detect from artifacts. These data allow us to test for differences in the frequency and sequential structure of knapping actions across conditions and individuals, potentially guiding further artifact analyses and providing a more detailed picture of the influence of verbal teaching on knapping skill acquisition.

Benfer, Adam (University of Calgary)

[263] *The Archaeology of Travel in Greater Nicoya*

Sometime before AD 1, a dynamic interaction and exchange network developed among the villages and hamlets of Greater Nicoya. The range and frequency of trade within this region is demonstrated by geochemically sourced ceramic and stone artifacts. The travel routes along which these artifacts were traded remain poorly understood. Geographic information systems (GIS) offer a means to predictively model the optimal terrestrial and aquatic travel routes that interconnected the settlements of Greater Nicoya. Accounting for both pedestrian travel on land and canoe-borne travel in the rivers and lakes, I use a GIS to present a probable simulation of the travel infrastructure that facilitated the regional movement of trade goods. I then test and refine the results of my simulations against the rest of the archaeological record. By interpreting this simulated travel network and the given distribution of traded goods within an intersocietal interaction framework, I discuss the role that intraregional movement and mobility played in the evolution of the societies that once thrived in this section of southern Central America. While some trade goods traveled long distances, most interactions were oriented locally or among neighboring polities.

Benfer, Bob (University of Missouri-Columbia)

[64] *Late Pre-ceramic Peruvian Effigy Mound Imagery*

Here I report the use of multiple imagery for understanding the coastal valley site studied most intensively, El Paraíso. Photographs of carved bone figures, plane table maps, Total Station maps, kite orthophoto maps, aerial photos, Google Earth satellite maps, and planetarium maps provide images that, taken together, permit identification of the effigies.

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Identities of both arms of the El Paraíso complex can be recognized: One is a bird. The other resembles the three mythical figures Bischof named the "Monstruo" in an incised bone.

The long axis of the Bird mound at El Paraíso is oriented from the corridor of the principal temple of the site through the body and eye of the bird. On evenings after Zenith days, both the Bird and Monstruo mounds have an azimuth of 32° towards the rise of the celestial river—the Milky Way—through its southernmost point. Other Late Preceramic effigy mound sites and the Late Horizon Machu Picchu site share this orientation. The figures likely represent Andean dark-cloud constellations in the Milky Way.

Bengtson, Jennifer (Southeast Missouri State University) and Amy Michael (Idaho State University)

[215] *Mortuary Analysis and Bioarchaeology: A Survey of Integrative Approaches*

In her chapter in the 2006 volume "Bioarchaeology: The Contextual Analysis of Human Remains", Lynne Goldstein considered the intersection of mortuary analysis and bioarchaeology through a survey of articles from eight prominent archaeology journals (1995–2000). She concluded that significant work remained to be done to appropriately integrate the two fields. In our paper, we summarize Goldstein's critiques and examine more recent publications in these same journals (2006–2016) to characterize the extent to which the potential for further integration noted in her chapter has been realized. We also discuss what Goldstein characterized as emergent foci of mortuary archaeology—namely gender, the individual, the emotive, and landscape studies—to gauge the extent to which such topics have been considered by bioarchaeologists since 2006. We end with reflections on Dr. Goldstein's influence on our own work, particularly as her guidance has inspired us to highlight mortuary analysis and use holistic approaches in our bioarchaeological research.

Benitez, Alexander (University of Alabama)

[139] *The Central American Ceramics Research Project: A Case Study on How to Make Old Museum Collections Relevant Again*

The Central American Ceramics Research Project, a student driven and collaborative research program carried out between 2009–2013, completed a scholarly survey of more than 13,000 ceramic objects in the collections of the National Museum of the American Indian (NMAI). The project originated as an effort to update old catalog information and bring to light important but largely forgotten collections of ceramics. However, it quickly developed into a major collaborative research effort that brought together university students, archaeologists and museum specialists from the U.S. and Central America, established new partnerships between the Smithsonian Institution and Embassy staff from various Central American countries, and ultimately served as the basis for the NMAI's longest running temporary exhibition, "Ceramica de los Ancestros: Central America's Past Revealed." This paper describes the CACRP's history and scholarly research, and offers it as one student driven case study in how to make old museum collections relevant again.

Bennett, Callie [90] see Schroedl, Gerald

Bennett, Rhianna

[168] *Deviating from the Standard: The Relationship between Archaeology and Public Education*

As a social science, archaeology utilizes disciplines within science, mathematics, and technology to answer questions about human behavior and our shared cultural heritage. With its interdisciplinary nature, archaeologists and educators over the last few decades have sought to promote archaeological lessons in K-12 classrooms. The presentation, "Deviating from the Standard: The Relationship between Archaeology and Public Education" uses the state of Georgia as a case study to examine the past, present, and future potentials and impacts of archaeological education in the classroom. By studying educational theory, current federal and state standards, archaeological outreach practices, and presenting data from questionnaire surveys and interviews of educators and archaeologists, this presentation will demonstrate the important contributions that archaeology can make to Georgia education.

Bense, Judith [215] see Benchley, Elizabeth

Benson, Erin (University of Illinois at Urbana-Champaign)

[266] *Composing the Late Cahokian Countryside: A View from the Rhea Site, St. Clair County, Illinois*

The transition between early (AD 1050–1200) and late Mississippian (AD 1200–1350) in the American Bottom is recognized as a significant moment of socio-political and religious change in the historical trajectory of Cahokia. During this time, relationships between persons, places, and things transformed, resulting in different ways of engaging with both Cahokia and the non-human powers that underwrote it and the broader Mississippian world. With a goal of investigating a Moorehead phase occupation in the uplands, the 2017 University of Illinois field school undertook excavations at the Rhea site, uncovering an important site with an unexpectedly complex transitional Mississippian occupation. Specialized architecture suggests a possible "nodal" site, though that which constitutes such a site clearly was changing. Focusing on the material engagements evident at Rhea, preliminary results from ongoing investigations begin to address these changing relationships between Cahokia and its hinterland inhabitants during this pivotal time. Comparing Rhea to known regional patterns provides a basis for focusing on the practices, materials, and architectures that constitute extra-domestic, special-purpose sites after AD 1200.

Benson, Kristin (Vanderbilt University), Teresa Franco (Vanderbilt University) and Tom Dillehay (Vanderbilt University)

[6] *Comparative Micro-Usewear and Residue Analyses on Late Pleistocene Unifacial Tools from Huaca Prieta, Peru, and Monte Verde, Chile*

This study presents the results of a comparative multi-year analysis of high and low power micro-usewear and residue patterns on 14,000–10,000 cal BP unifacial stone tools from the late Pleistocene archaeological sites of Huaca Prieta on the north coast of Peru and the Monte Verde I and II sites in south-central Chile. The archaeological stones from these sites are also compared with experimental assemblages employing various actions (e.g., scraping, cutting, gouging, perforating) to work several types of materials ranging from hard and soft plants to animal hide and meat to fish and shellfish, among others. The analyzed tools are contextualized within the specific activity areas where they were recovered within sites. The contribution of these results to the broader inter-assemblage interpretation of the sites is discussed.

Bentley, Heath (AmaTerra Environmental), Norbert Stanchly (Texas State University) and James Garber (Texas State University)

[43] *From the Sea to the Smoker: A History of Sea Turtle Exploitation on St. George's Caye, Belize*

Historic literature frequently mentions the exploitation of sea turtles throughout the Caribbean by indigenous populations and early settlers alike. Large and abundant, these animals provided a readily accessible protein source for European and African populations as they traveled. A review of documents held by the Belize Archives and Records Service reveals that sea turtle capture and sale was once a large contributor to Belize's coastal economy. Commonly called "turtlers", 25% of the population was involved in the capture and sale of sea turtles by the late eighteenth century. Offshore reconnaissance on St. George's Caye has led to the recovery of sea turtle remains associated with turtle corrals that were documented on a 1764 map. Per results of faunal analysis from the island, the majority of animal remains recovered belong to at least two different species of sea turtle. Turtle species varied in their preference by people as a food item, the method of capture, and their role in the economy. The distribution of the remains of

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these different turtle species across the island helps to provide insight into the relationship of the many inhabitants of St. George's Caye with the various aspects of turtling.

Beresford-Jones, David [224] see Whitlock, Bethany

Berger, Martin (National Museum of World Cultures, The Netherlands)

[70] *From a Cave near Tehuacán? Reconstructing Object Histories of Looted Postclassic Mesoamerican Turquoise Mosaics*

The mid-20th-century market for pre-Columbian antiquities is notoriously opaque. Riddled as this moment in the market is with stories of looting, forgery and deceit, the period between roughly 1950 and 1990 is also the era in which significant parts of today's best-known museum collections of pre-Columbian art were formed. Because of the practices of art dealers many pieces that once formed part of the same original deposit are now scattered over the globe. Any possible information on the provenience of these clusters of objects can only be found hidden away in the archives of the institutions that hold them. The only way to bring these pieces back together and (partially) recontextualize them is through the study and publication of their object biographies.

In this presentation I attempt to reassemble a corpus of Post-Classic Mesoamerican turquoise pieces, that were probably looted in the late 1950s/early 1960s and appeared on the market between 1950 and 1980. All of these are said to come from caves near Tehuacán, but lack any further information on their exact provenience and provenance. Nonetheless, the pieces can be relatively securely traced to specific localities or regions through a combination of stylistic, archaeological and archival research.

Berger, Uri (Israel Antiquities Authority) and Gonen Sharon (Tell Hai College)

[71] *An Israeli (real COOL) Dolmen*

Excavation in the Shamir Dolmen Field (comprising over 400 dolmens), on the northern Israeli basaltic terrains, was carried out following the discovery of enigmatic rock art engravings on the ceiling of one of the largest dolmens ever recorded in the Levant. Excavation of this dolmen, covered by a basalt capstone weighing some 50 tons, revealed a secondary multi-burial (of both adults and children) rarely described in a dolmen context in Israel. Engraved into the rock ceiling above the multi-burial is a panel of 14 forms composed of a vertical line and downturned arc motif. Building of the Shamir dolmens required a tremendous amount of labour, architectural mastery, and complex socio-economic organization well beyond the capacity of small, rural nomadic groups, thought that have lived on this era. The monumental megalithic burial of the Shamir dolmens indicates a hierarchical, complex, non-urban governmental system. The newly discovered rock art and the burial uncovered beneath it, brings new hope, to the dolmen culture research in Israel and the Levant. The dolmens of Shamir, bring us a new leap on the way knowing one of the most mysterious and underestimated cultures of the biblical landscapes.

[71] *Chair*

Bergh, Sarah (Union Institute & University)

[188] *Changes in Resource Use during the Mississippian Period on St. Catherines Island, Georgia*

After more than forty years of zooarchaeological research on prehispanic collections from coastal Georgia, it is clear that people exploited the same suite of estuarine resources from the Late Archaic through the Mississippian periods, despite changing socio-political conditions. However, changes in resource use over time are evident when fine-grained recovery and multiple analytical techniques are applied to vertebrate and invertebrate collections from the Mississippian period on St. Catherines Island. Specifically, late Mississippian populations used different fishing techniques and exploited a wider range of shellfish habitats. In addition, these analyses suggest differences in length of site occupation and waste disposal practices. This research demonstrates that analyzing multiple datasets recovered with fine mesh can yield new information, and supports the hypothesis that societies with different socio-political realities have different relationships with their environment.

Bergin, Sean (School of Human Evolution and Social Change, ASU) and Grant Snitker (School of Human Evolution and Social Change, ASU)

[221] *Large-Scale Socioecological Transformation: The Effects of Subsistence Change on Holocene Vegetation across Europe*

During the early and middle Holocene, the introduction of agropastoral subsistence to Europe resulted in significant social and economic transformations. For decades, researchers have recognized that early agricultural communities had an ecological impact on the surrounding landscapes. As a whole, paleoecological records indicate increases in charcoal abundance and changes in vegetation communities' distribution or diversity related to Neolithic agricultural land clearing, burning, or pastoral activities. Yet, most research on the paleoenvironmental impact of Neolithic agropastoral systems have been limited to site-based or regional analyses—without a broader discussion of the ecological impact of Neolithic land-use across multiple ecoregions.

This study attempts to better understand the spread of Neolithic subsistence across Europe by contrasting the chronological and spatial patterning of the spread of agriculture with the palynology of Europe during this period. We utilize a database of over 5,000 radiocarbon dates from Neolithic contexts through Europe and a comprehensive pollen dataset adapted from the European Pollen Database. From these data, we construct and statistically compare chronosurfaces of Neolithic occupation and major vegetation transformations to track the pace and intensity of ecological change in Europe due to the initial shift to agropastoral land-use.

[234] *Discussant*

Bergmann, Christine (University of South Florida) and Robert H. Tykot (University of South Florida)

[154] *Assessing Food-Based Trade and Mobility in the Chincha Valley (Peru) Using Portable X-Ray Fluorescence Spectrometry*

Peru is commonly known for having the largest empire in pre-Columbian America, but comparatively little is known about the subsistence practices of the pre-Inca communities that existed in the inland valley of Chincha during the Late Intermediate Period (AD 1000–1476). The Chinchas formed a powerful socio-economic entity within the Chincha Kingdom in part of the southern region of Peru nearest to the Pacific Ocean. Our research tests the hypothesis that individuals relied more heavily on a food-based trade networking system with other coastal rather than highland populations, using a portable X-ray fluorescence spectrometer to measure strontium, barium, calcium, and other elements in twenty-six human bones from four tombs in the Chincha Valley as a case study. Although the use of a non-destructive pXRF has become a very beneficial tool for the analysis of archaeological materials, relatively little has been done on human bone to elucidate subsistence practices, mainly due to limitations of surface analysis on potentially degraded and/or contaminated material. In addition, newly created bone standards are used to calibrate and enhance the validity and reliability of our data.

Berman, Judith [206] see Glass, Aaron

Berman, Mary Jane (Department of Anthropology, Miami University)

[323] *Lucayan Paleoethnobotany: Dynamism and Stability in the Bahama Archipelago*

Since the first overviews of Lucayan paleoethnobotany were published, the means and sites of archaeological recovery have expanded and the body of finds has increased. In this presentation, we summarize these findings, evaluate the current body of knowledge, discuss the contexts in which they were recovered, analyze their recovery methods, and examine their

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economic and social uses. We discuss the evidence for “transported landscapes,” cultivation management systems, wild plant collection strategies, plant food preparation, fuel wood management, perishable technologies, transportation technologies, and the uses of various plants for symbolic and political purposes. Finally, we discuss temporal and inter-island differences in plant use in the face of climatic variability and change during the period of Lucayan occupation.

[237] Moderator

Berman, Mary Jane [123] see Gnivecki, Perry

Bermeo, Nicolas (Université Paris 1 Panthéon-Sorbonne), Michelle Elliott (Université Paris 1—UMR 7041 ArScAn), Nicolas Goepfert (CNRS—UMR 8096 ArchAm) and Belkys Gutiérrez (BGL Arqueología)

[153] *Fuel Use and Management at the Specialized Fishing Site of Bayovar-01 in Northern Coastal Peru (5th–8th Centuries AD), Contributions of Charcoal Analysis*

The Sechura desert located on the extreme northern coast of Peru is one of the most arid places on the planet. Nonetheless, human settlements have been recorded from 5000 BC up to the 15th century. Recent archaeological excavations have been carried out at the site of Bayovar-01 (occupied from the 5th to 8th centuries AD). The new data provide insight into the activities and adaptations of the desert’s ancient inhabitants. The presence of two small structures, a large activity area containing a significant amount of fish remains, and traces of hearths, indicate that Bayovar-01 was an opportunistic settlement, benefitting from favorable environmental conditions: the presence of an ancient lagoon; and served as a specialized site for fishing and the preparation of fish.

The analysis of charcoal remains from three different features corresponding to large hearth remains sheds light on practices of firewood gathering and usage. Taxonomic and morphological analyses reveal strong preferences for certain taxa, possible gathering strategies combining dead wood collection and tree felling, the usage of several different tree parts, and consistent combustion conditions across the three features. Despite selection biases, taxa composition may offer yet another indication of the existence different environmental conditions in the desert.

Berna, Francesco [41] see Hlubik, Sarah

Bernal, Itzayana [293] see Soler-Arechalde, Ana

Bernardini, Wesley [218] see Duff, Andrew

Berquist, Stephen (University of Toronto) and Thomas Hardy (University of Pennsylvania)

[295] *Deep Time and Human Action: An Introduction*

The end of history has ended. Our social conditions, and indeed many of our greatest social ills, are now understood to have been generations in the making, the result of accumulations and sedimentations of quotidian human action. This introduction posits that such accumulations and sedimentations are not mere metaphor, and that the material world is the ongoing expression of the force of history. Following key post-structuralist insights, we argue that the contents of these histories are not internal to the human mind, nor to abstract ideological structures, but are produced through embodied practices that mobilize material objects and leave material traces, whether those traces be ceramic sherds, architectural remains, or bureaucratic documents. As such, archaeology is poised to not only engage with critical theoretical discussions in the social sciences but also to impact to our understanding of the “long now” of the present. Recent archaeological and anthropological publications have indeed proposed frameworks for conducting archaeological interpretation and analysis of the longue durée. This paper will review these important contributions, putting them in the context of the broader historical and archaeological turns in the social sciences, before opening the session to our contributors.

[295] Chair

Berrone, Morgane

[324] *Las practicas funerarias del Formativo en la costa ecuatoriana: resultado de*

El presente estudio se organiza en torno a una doble problemática relacionado al Formativo de la costa ecuatoriana (4400—300 BC): el examen de los gestos funerarios y su comparación en una perspectiva diacrónica e intercultural. Con un examen teórico y estadístico se puede identificar normas funerarias propias a cada cultura. La comparación intercultural permite de subrayar similitudes y diferencias entre las diferentes culturas del Formativo.

Procede de los diferentes trabajos arqueológicos llevados sobre el sujeto y de ese análisis que las prácticas funerarias están caracterizadas por una gran variabilidad en cada cultura formativa y entre ellas. Detrás de esas costumbres se esboza un fondo espiritual y cultural relativamente homogéneo, subrayado sobre el plano arqueológico por construcción de tolas, generalización de inhumación, presencia de elementos simbólicos similares en las tumbas. Ese vestigio son indicios de forma de organización complejas en aquellas los líderes podrían utilizar practicas funerarias para legitimar un orden social y cosmológico por un culto de ancestros por ejemplo.

Berryman, Carrie Anne [87] see Blom, Deborah

Berryman, Judy and William Walker (New Mexico State University)

[122] *Ashes, Arrows, and Sorcerers*

Magic and witchcraft, like many classic topics in the anthropology of religion, involve everyday things such as dogs, plant pollen, ashes, and arrow points. As such the archaeological record offers a rich source of ancient religious practices if we can link formation of its deposits to past ritual activities. For example, strata exhibiting ash and projectile points deposited on floors and in the fill of abandoned houses may derive from protective magic. Rather than haphazardly tossed hearth detritus and/or lost arrow points, these common deposits may reveal uncommon evidence of ritual reactions to malevolent power. In the ethnographic record of the American Southwest, ash and projectile points offer protection against death and sickness caused by witchcraft and sorcery. Our case study at Cottonwood Spring Pueblo, a late prehistoric village (A.D. 1300–1450) in southern New Mexico, demonstrates that ash and arrow points prophylactically protected these places and their former occupants from harm.

Berryman, Stanley (NMSU)

[258] *Joe Ball, Friend and Mentor*

As one of the fortunate students who was at San Diego State University in 1975, I was present for the announcement that Dr. Joe Ball had been hired as a professor of Anthropology in the Department of Anthropology. As a contemporary of Joe, I had the opportunity to see his early contributions to the growth of the Department in the 1970’s and his willingness to give his time and energy to help his students be successful regardless of their focus in archaeology. It did not matter if the student’s interest was in Mayan archaeology or in San Diego County archaeology—academic or CRM they received the same time, effort and concern. Joe sponsored a field school at the La Fleur site in eastern San Diego County to help train students, most of whom would remain in the region. I had the good fortune to be involved in those early years of his tenure at San Diego State University and can directly place much my success in archaeology with having been a student and friend of Joe.

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Bettcher, Katrina and Lidio Valdez (MacEwan University)**[333]** *The Archaeology of the Acari Valley and the Legacy of Francis Allen "Fritz" Riddell*

In 1954, newlywed archaeologists Francis Allen "Fritz" Riddell and Dorothy Menzel arrived in the Acari Valley on the south coast of Peru with the purpose of investigating the site of Tambo Viejo as part of the Inca Royal Highway Project directed by Victor von Hagen. Various sites in the region were recorded and investigated. After retirement in the early 1980s, Fritz was drawn back to Peruvian archaeology. With the California Institute of Peruvian Studies, projects involving Peruvian and foreign archaeologists, as well as non-professional participants from Acari and abroad, revisited sites and investigated new findings. Fritz was concerned about the destruction of sites that had been recorded in the 1950s so he worked with local officials and citizens to encourage preservation. Rescue excavations were carried out at Tambo Viejo. Materials from looted sites were recovered, catalogued and stored. Though he passed away in 2002, Francis A. Riddell's legacy endures in the Acari museum that has been named after him and in continuing work at the site of Tambo Viejo.

Betti, Colleen (The University of North Carolina, Chapel Hill)**[67]** *Porcelain Dolls and Marble Balls: The Role of Toys and Play in the Gendered Socialization of Enslaved Children*

Children comprised a large portion of the enslaved population on plantations in the American South, but their lives are often overlooked or ignored in archaeological studies of plantation life and discussions of changes in how children were viewed in American society. Over the course of the 18th and 19th centuries, there was a shift in how children and play were viewed, from miniature adults for whom play was utilitarian, to a separate life-stage where play was children's primary purpose and necessary for proper socialization. This paper examines the inclusion of enslaved children within larger shifts in conceptions of childhood in 18th and 19th century America through manufactured toys provided to enslaved children. Toys recovered from fifty-two slavery related archaeological sites in Maryland, Virginia, North Carolina, South Carolina, and Tennessee, cataloged into the Digital Archaeological Archive of Comparative Slavery (DAACS), show that toys given to enslaved children by white slave owners, and potentially enslaved parents, provided an important source of gendered socialization and are evidence of the inclusion of enslaved children within larger societal shifts in the meaning of childhood

Betts, Matthew (Canadian Museum of History) and Gabriel Hrynick (University of New Brunswick)**[84]** *Introducing COASTAL in Nova Scotia: Community Observation, Assessment, and Salvage of Threatened Archaeological Legacy*

While the technological and methodological challenges facing archaeologists seeking to address the coastal erosion issue are noteworthy, the responsibility to formulate ethical, engaged, and collaborative research methodologies is equally pressing. The impact of coastal erosion and sea level rise on archaeological sites creates significant challenges for Indigenous peoples engaged in reclaiming their own histories and rights. Archaeologists studying threatened sites must therefore also be deeply engaged with Indigenous partners, whose history is literally being swept out to sea. Our paper outlines the goals and aims of the COASTAL archaeology project, which seeks to develop a shared-authority partnership with Indigenous collaborators. We also outline methodological challenges and opportunities of working on Nova Scotia's coastlines, and highlight the need for tailored strategies to address the erosion issue. Consultation with local informants and collaborators, as well as public archaeology events, are critical for locating sites and saving precious survey resources. We also describe the advantages of using manual subsurface probes to delineate site deposits rapidly and accurately.

Bevan, Andrew [29] see Schauer, Peter

Bey, Bridget and Véronique Bélisle (Millsaps College)**[270]** *A Look at Local Populations during Wari Expansion: Bioarchaeology and Funerary Contexts at Ak'awillay, Cusco, Peru*

Although the climate and rich cultural history of Peru frequently offers a perfect setting for bioarchaeological analysis, the pre-Inca peoples of the central Andean highlands often lack full representation within that analysis. Yet, excavations at Ak'awillay, a village in the Cusco region, between 2006 and 2016, revealed 79 bodies. Most of the remains recovered from the site date to the Middle Horizon (AD 600–1000); however, previous analysis of the architecture and artifacts at the site suggest that this population did not emulate Wari lifestyle. This paper provides a profile of a substantial part of the local population of Ak'awillay, shedding light on living and health conditions in Cusco during the Middle Horizon. This profile includes both the demographic make-up and the skeletal pathology of this population, as well as an evaluation of grave goods and cultural modifications done to the bodies before and after death. Preliminary analysis indicates that the people of Ak'awillay maintained unique cultural practices but led a rigorous lifestyle. Since this population was not heavily touched by either violence or sacrifice, our analysis documents a large sample of individuals who died of natural causes and provides a rich comparative dataset for Middle Horizon Peru.

Bey III, George J. [162] see Kohut, Betsy

Beyin, Amanuel [103] see Lanza, Christopher

Bezerra, Marcia (PPGA/UFGA)**[63]** *Is There a Public Archaeology?: An Approach from Brazil*

This presentation aims to discuss Public Archaeology (PA) from a Brazilian approach. Based on a study that includes a bibliographical survey, and the analysis of the papers presented at scientific meetings in Brazil, I examined: a) the role of PA in the contemporary agenda of the archaeology in Brazil; b) the connections between PA, Heritage Education (HE), and the development projects, and c) its relationship with the decolonizing perspective of the discipline in Latin America. In addition, I also recognize gender issues in the domains of PA in the country, which is mostly linked to women, either as authors of academic literature or as coordinators of events, actions, and projects of PA (or HE). Finally, I critically analyze my own work within Public Archaeology in Amazon. Such questions have made me reflect about the concepts and goals that legitimate the category "Public Archaeology".

Bicho, Nuno (Universidade do Algarve), Célia Gonçalves (ICArEHB—Universidade do Algarve) and João Cascalheira (ICArEHB—Universidade do Algarve)**[124]** *GIS Tools for Intra-spatial Analyses: The Portuguese Mesolithic Cabeço da Amoreira Case Study*

The case of the Portuguese Muge shellmounds (Tagus valley, central Portugal), and specifically the case of the Cabeço da Amoreira site, is one of the most interesting regions to study the last hunter-gatherers in Western Europe. However, these sites, are very large with long and complicated sequences and, until recently, had very little excavation control and thus data were not appropriate for spatial analyses. During the last decade, our team used new and precise excavation techniques resulting in high resolution provenience data for all types of artefact classes. This paper focus on the Cabeço da Amoreira data, representing at least 7 time horizons, based on GIS analyses of intra-spatial distribution of different categories of artifacts. The use of the ArcGIS software was essential for the analysis of quantitative and qualitative data, allowing the establishment of intrasite spatial relationships through the use of statistical procedures such as the Average Nearest Neighbor and the Kernel Density Estimation. Distributions and correlations of artifacts allowed the identification of different functional areas, the use and organization of space, and the interpretation of relevant site formation processes.

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Bicho, Nuno [221] see Gomes, Ana

Bickenheuser, Cathy [106] see Clark, Jorie

Biehl, Peter (SUNY Buffalo)

[247] *Chair*

Biers, Trisha and Marta Mirazón Lahr (Centre for Human Evolutionary Studies, University)

[143] *Innovation and Curation: Conservation and Access of University-Held Collections for Research*

The Duckworth Collection is one of the world's largest repositories of human remains, numbering approximately 18,000 individuals. These range from blood samples, to hair bundles, single bones, complete skeletons, mummies, and decorated skulls, and are widely used for scientific research. Throughout the 19th and 20th centuries, anthropological and biological research gave us a greater understanding of human diversity, much of it based on anatomical evidence. Cambridge was at the forefront of this endeavour, and the result was the Duckworth Collection and Laboratory. Following best practice guidelines in the document Guidance for the Care of Human Remains in Museums by the Department of Culture, Media and Sport (DCMS) in October 2005, the Duckworth Laboratory created its own Policy for the Curation and Conservation of Human Remains. However, the past few years has seen a surge in biomolecular analysis of archaeological remains including human bone, teeth, tissue, hair, and dental plaque; innovative projects that require destructive analysis. A new position of Collections Manager for the Duckworth was created to facilitate this research whilst maintaining the integrity of the Collections. This presentation highlights the recent challenges in balancing both academic demand for sampling and the curation of human remains in the UK.

Biffano Marcial, Gloria [260] see Brizuela Casimir, Alvaro

Bigelow, Gerald F. (Department of History, Bates College), Michael E. Jones (Department of History, Bates College) and Casey Oehler (Department of Archaeology, Durham University)

[167] *Coastal Geocatastrophes as Agents of Change on Multiple Time Scales: A Case Study from the Shetland Islands, UK*

The coasts of northernmost Britain and neighboring North Sea countries offer numerous examples of sand environments that have been both settled and completely abandoned by humans at various times. These areas' rich archaeological records reveal many examples of once-thriving human settlements that were challenged and eventually terminated by burial in aeolian sand over periods ranging from days to decades. The origins and socio-ecological dynamics of these geocatastrophes may reflect important patterns of human adaptation or mismanagement conditioned by large, inter-regional forces such as climate change and international politics, down to local phenomena that operated at the community or even individual landholder level. This paper reports on interim findings of research by the Shetland Islands Climate and Settlement Project on a prosperous farming community that was permanently destroyed by drifting sand in the late 17th century CE, a period of dramatic climatic and political changes that also offers a broad range of documentary, archaeological and environmental evidence for high resolution dating and interpretation.

Bigelow, Nancy [182] see Reuther, Joshua

Biggie, Michael (Los Angeles Maritime Institute), John Walden (University of Pittsburgh), Jaime Awe (Northern Arizona University), Rafael Guerra (University of New Mexico) and Julie Hoggarth (Baylor University)

[33] *The Shell Game: Maya Cosmology as Reflected in Recent Discoveries at Tutu Uitz Na*

The plaza held special significance to the ancient Maya, and across ancient Mesoamerica. In a reflection of Maya cosmological beliefs, the plaza was seen as a representation of, and a portal to the primordial sea, the watery underworld from which all things originate. This connection is evident in various ways throughout the region, from special dedicatory deposits to decorative architecture and iconography. This presentation explores that cosmological salience through the recent excavations at Tutu Uitz Na, a large intermediate elite residential and ceremonial group situated in the Belize Valley, in the hinterland of the Late-Terminal Classic (AD 700–900) polity of Lower Dover. Tutu Uitz Na rose earlier, during the Middle Preclassic (1000–400 BC). The initial founding of the group saw the placement of a consecratory ritual deposit of artifacts associated with the watery underworld: figurines, marine shell, and an estimated 26 million river snails, all laid beneath the plaza. Excavations at a nearby commoner patio group have revealed a similar Middle Preclassic deposit beneath the patio. This paper explores the importance of this deposit and seeks to situate it within other case studies from Mesoamerica, to establish a distinct pattern of intent on the part of the ancient Maya.

Biggie, Michael [82] see Walden, John

Blittner, Katie (MacEwan University)

[317] *Discussant*

Bikoulis, Peter [303] see Murphy, Shaun

Bilgen, Zeynep [146] see Cercone, Ashley

Billadello, Janine (CUNY Graduate Center) and Anarrubenia Capellin Ortega (CUNY Graduate Center)

[86] *Testing Methods of Microbotanical Analysis on Samples from the Copan Valley, Honduras*

The Copan Valley in western Honduras has been the subject of a number of studies concerning human-environmental interaction, with particular emphasis on questions of ancient sustainable practices and whether or not land-use mismanagement contributed to the end of the Maya dynasty at Copan. The current PARAC project seeks to identify the range of foods consumed by the inhabitants of the Copan Valley during the Late Classic to Postclassic period. This paper will describe analyses conducted on artifacts recovered from residential contexts at the Late Classic site of Río Amarillo. The extraction of residues, as well as microbotanical analysis of ceramics and groundstones was used to test for the presence of comestibles processed using these implements. The results of this work are compared with the analysis of macrobotanical samples from local middens, thus providing a multivariate perspective on ancient foodways in this region.

Billeck, William

[337a] *Repatriation at the National Museum of Natural History, Smithsonian Institution*

Repatriation at the National Museum of Natural History is conducted under the National Museum of the American Indian (NMAI) Act of 1989, as amended in 1996, and involves the return of affiliated human remains, funerary objects, sacred objects and objects of cultural patrimony. In the 28 years since the passage of the NMAI Act, the museum has affiliated over 6,000 individuals and thousands of objects and completed over 120 repatriations to Native Alaskan, Native Hawaiian and Native American tribes. Repatriation has led to increased interactions with the Native American community and has changed the way that the museum works with community members and collections. Over time, the Repatriation Office has become

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a primary contact point for Native Americans interested in the museum's collections and records. This paper and the following session will discuss the changes and developments in repatriation at the museum over the past two-and-a-half decades.

[280] *Discussant*

[337a] *Chair*

Billman, Brian (UNC & MOCHE, Inc.), Patrick Mullins (University of Pittsburgh) and Jesús Briceño

[165] *Rooms, Houses, and Neighborhoods: Drone-Mapping and GIS Analyses of the Household Architecture at Cerro la Virgen, Moche Valley, Peru (AD 1100–1470)*

Here we explore the spatial patterning of the Small Irregular Agglutinated Residences (SIAR) at the Chimú town of Cerro la Virgen (1100–1470 AD) in the Moche Valley, Peru. Few examples of “Andean Households” are as enigmatic and iconic as SIAR, which were closely associated with the florescence of the Chimú Empire. Large barrios consisting of SIAR architecture are found at the Chan Chan (the Chimu capital) and at all Chimu provincial centers throughout the empire. Cerro la Virgen once lay in the rural hinterland of Chan Chan at the distal end of a vast system of state fields, which are believed to have supported royal activities at Chan Chan. At the site, well-preserved residential architecture covers 14 ha. We created a 3-D rendering of all the SAIR architecture at the site by processing aerial drone photography. Recent SAIR excavations at the site were used to identify room types, which were then employed in a quantitative analysis of household and community spatial patterning. As a result, we were able to identify household units, household clusters, and neighborhoods. Based on this study, we propose new quantitative methods for analyzing households, communities, and neighborhoods in the Andes and other regions.

Billman, Brian [165] see Hudson, Jean

Billstrand, Nicholas [129] see Freiwald, Carolyn

Binimelis, Alonso (Student)

[65] *Sistemas de arquitectura local e incaica durante el Periodo Tardío en las tierras altas de Arica y valle de Lluta, Chile*

Durante el Periodo Intermedio Tardío en las tierras altas de Arica, las influencias altiplánicas se encontraban en la sierra y valles altos, caracterizados por arquitectura funeraria (chulpas) y la cerámica, representando relaciones de poder y estatus social dentro de las comunidades locales. Durante el Periodo Tardío, con la introducción de elementos incaicos al altiplano boliviano, el área dominada por los pueblos altiplánicos fue influenciada por la cosmovisión y tecnología incaica, lugares como Tambo Incahullo (Sierra de Arica), Molle Pampa (Valle de Lluta) y Tambo Sabaya (Altiplano Boliviano) son sitios con una composición arquitectónica similar, pero con diferentes emplazamientos y materiales de construcción, destacando elementos como Chulpas, Plazas y un recinto circular aislado. Este estudio identifica elementos locales y de influencia incaica a través de la descomposición del sistema arquitectónico utilizando fotogrametría y mapeando estos sitios presentes en distintos pisos ecológicos y cambios desde el periodo Intermedio Tardío hasta el Periodo Tardío Inca para enfocarse en el sitio Molle Pampa (Valle de Lluta) y la identificación de Chulpas y elementos característicos de las influencias altiplánicas-incaicas adaptados a los sistemas arquitectónicos locales de este valle costero, entendiéndose como dinámicas sociales que pueden estudiarse a través de la arquitectura.

Binning, Jeanne (California Department of Transportation)

[140] *Prehistoric Tool Stone Acquisition and Use in the Central Mojave Desert*

Diverse rocks of the Precambrian to the Late Cenozoic are exposed across the greater Mojave Desert Region. In the central Mojave, locations with concentrations of knappable materials are prevalent. Most of these sources are deflated alluvial fan deposits; less than five percent are outcrops. Over the last 13,000 years people have been using the area, percussion biface reduction dominated at both the material extraction sites and habitation and special activity sites. Igneous materials were preferred by people using the area during the early Holocene and chert was preferred during the middle and late Holocene. The size of bifacial cores remains consistent throughout most of the Holocene; however, about 1500 years ago, there is a significant reduction in the size of these cores. Finally, there is evidence that much of the stone, after being tested, was found to be undesirable and left at the extraction sites. Explanations for these patterns are presented.

Birch, Jennifer (University of Georgia)

[119] *Migration, Dispersion, or Purposeful Relocation?: Flexibility as an Adaptive Settlement Strategy in Northern Iroquoia, ca. A.D. 1300–1650*

Flexibility is a defining characteristic of the Iroquoian settlement landscape. Population movement, amalgamation, coalescence, dispersal, resettlement, incorporation, and abandonment occurred at the local and regional scales throughout Iroquoian history. Even those groups that persisted within more or less the same territories from A.D. 1300 through the contact era had complex and dynamic settlement histories. This paper considers patterns of settlement relocation in Northern Iroquoia with an eye to clarifying how these processes relate to or differ from contemporaneous cultural transformations in the Midwest and Southeast. In particular, I consider how periods of collapse or instability in other parts of eastern North America coincided with periods of increased stability and complexity in Iroquoia. Data from recent Pan-Iroquoian social network analyses are employed as a means of characterizing the relationships between sending, host, and migrant communities. I posit that the flexibility inherent in Iroquoian settlement patterns and socio-political organizations conferred a degree of resilience on these populations that persisted into the historic era.

Birch, Jennifer [190] see Conger, Megan

Bird, Darcy (Utah State University) and Jacob Freeman (Utah State University)

[105] *Rates of Change in Radiocarbon Date Frequencies and Population Collapse*

Recent analyses of large samples of radiocarbon dates shows a change in radiocarbon date frequencies between 3000 BP and 800 BP. There is either an exponential or super-exponential increase in radiocarbon date frequencies followed by a sudden decline. The goal of this poster is to test a population ecology model as to whether or not the degree of population overshoot can predict the degree of population collapse. We want to analyze if the rate of increase in radiocarbon date frequencies over time can predict the rate of the subsequent decline. We compare a global sample of radiocarbon curves, controlling for latitude, elevation, and distance to the coastline.

Bird, Douglas (Penn State University) and Rebecca Bliege Bird (Penn State University)

[114] *The Emergence of Dreaming Landscapes: Indigenous Disturbance and Representation of Ecological Homelands in Australia's Western Desert*

Martu are Traditional Owners of expansive estates in Australia's Western Desert. They maintain distinct networks of social interaction, mobility, and economic organization through which emerge novel ecosystemic relationships. Such networks in the Western Desert involve trophic interactions between people and many other species, and are sustained in patterns of consumption and renewal, especially anthropogenic disturbance via landscape burning for the purposes of hunting and sharing small game. Martu homelands are constructed in the weave of these interactions, and are represented in patterns that have clear archaeological signatures. Here we illustrate ways that Martu hold and represent their ecosystems and archaeological landscapes, especially in values of disturbance and consumption. We attempt to show how some notions of “conservation” (defined in

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terms of archaeological heritage or otherwise) can work at cross-purposes with values of disturbance maintained by many remote-living Martu. We then discuss broader implications of Indigenous ecological representation for the ways in which our discipline typically investigates diachronic changes human-environmental interaction.

Bird, Douglas [92] see Zeanah, David

Birge, Adam (University of Texas at San Antonio)

[100] *Movement, Inka Ceques and the Sajama Lines of Bolivia*

When the Inkas encountered them, the Carangas ethnic group in western Bolivia were highly mobile through lifestyles that relied on camelid pastoralism, caravanning, and ritual movement. Examples of Inka sites are known in the region, but it is not fully understood how they impacted movement through the Sajama lines—a network of ritual pathways that stretches over 16,000 kilometers. This poster compares new data from 2017 to previous work in the Sajama region to examine how movement along the Sajama lines changed over time, from prior to the Inka till recent memory. Through GIS, both archaeological and modern sites are compared to examine proximity to ritual pathways as well as logics of movement through termination points and directionality of geoglyphs. The goal of this research is to provide a comparison between the ceques of Cusco and the Sajama lines to examine how the Sajama lines may have been adapted to Inka understandings of ritual movement.

Birkmann, Joseph (University of New Mexico) and Bruce Huckell (University of New Mexico)

[186] *AZ BB:13:70 A Buried Middle Archaic Occupation in the Tucson Basin, Southeastern Arizona*

Although long known from surface sites, the Middle Archaic record in the Tucson Basin includes very few in buried alluvial contexts. AZ BB:13:70 is a Middle Archaic occupation site located along Brickyard Arroyo, a deeply incised tributary arroyo of the Santa Cruz River. First discovered in 1975, the site was revisited throughout the early 1980's and investigated formally in the summer of 1984 after monsoon rains created an extensive exposure of features and artifacts along the arroyo. The site yielded an assemblage of over 150 flaked and ground stone artifacts, several roasting pits, and the poorly preserved remains of a juvenile bison. We present a description of the site and its stratigraphic context, along with an analysis of the flaked stone and ground stone artifacts recovered. We conclude with a discussion of the importance of the site for current understanding of local and regional Middle Archaic subsistence and settlement.

Birkner, Erica [85] see Libbon, Jonathan

Birkner, Erica [303] see Reed, Karen

Birmingham, Katherine and Christine Ames (Urban Archeology Corps)

[202] *D.C. Urban Archeology Corps: The Surveying is in the Details*

In the summer of 2017, the D.C. Urban Archeology Corps (UAC), jointly managed by the National Park Service, National Capital Parks-East, and Groundwork DC, conducted a Phase I shovel test pit survey at the Frederick Douglass National Historic Site, where Douglass lived between 1877 and 1895. The UAC is a summer program where urban youth learn about the field of archeology and how it applies to local communities and parks. Participants research the archeological significance of local parks, conduct excavations, identify and process artifacts, and create a culminating project to present to the community. The purpose of the survey was to fulfill the requirements of Section 110 of the NHPA. Simultaneously, the program goal was to train UAC participants in the process of conducting a Phase I survey from beginning to end. This paper will focus on the fieldwork findings, but also discuss the utility in teaching the archeological process in the context of a NPS site. The successful completion of the survey and the knowledge and skill sets UAC participants learned and developed along the way were products of this strong program structure.

[202] *Chair*

Birnbaum, Michelle (University of Wisconsin—Milwaukee)

[69] *Prehistoric Ceramic Production Variation during the Early and Middle Woodland at the Richter Site, Door County, Wisconsin*

The Richter site (47DR80) located on Washington Island, Door County Wisconsin was excavated by the University of Wisconsin field school during 1968 and 1973. Large quantities of ceramic materials were recovered. This site was identified as belonging to the Middle Woodland North Bay culture as defined by Mason. Among the body sherds were those with smooth or cordmarked exterior surfaces. Smooth surfaced sherds exhibited breaks along coil lines, indicative of coil construction technique. Meanwhile, coil breaks were not recorded on cordmarked sherds indicating a manufacturing technique based on fusing slabs of clay utilizing a cord wrapped paddle and anvil. The Richter site data indicate that surface finish results from variable manufacturing techniques, and may not be strictly decorative in nature. Furthermore, there is evidence of temporal differences in the two construction methods at Richter. Cord marked slab vessels appear to be associated with Early Woodland period site occupation, while smoothed coiled vessels, which are very similar to those found at Laurel sites, are associated with Middle Woodland occupation at the site.

Bîrzescu, Iulian [130] see Rabinowitz, Adam

Bischoff, Robert (Brigham Young University)

[287] *An Examination of the Role of San Juan Red Ware Vessels in Social Interaction*

This paper evaluates the role that San Juan Red Ware played in social interaction. San Juan Red Ware was widely distributed throughout the Four Corners region between ca. A.D. 750 and 1100. Prior research has identified this ware as a marker of identity and established an association with communal feasting. A study of the distribution of this ware indicates that it was traded through specific social networks, which changed through time. While ceramics may profitably be used as stand-ins for actors in social networks, my focus is to investigate the roles that the ceramics themselves played in social interactions by evaluating how the material characteristics of these vessels helped to transmit and reinforce ideas of identity and community.

Bishop, Katelyn (University of California, Los Angeles)

[171] *Bird Behavior and Biology: A Consideration of the Agentive Role of Birds in Chaco Canyon, New Mexico*

As one of the only classes in the animal kingdom capable of flight, birds are privy to a realm of movement that humans can only partially control. Birds possess specific traits and engage in a variety of behaviors that directly affect the mechanics of capture and use, such as gregariousness and flock size, preferences in nesting and feeding locations, wing strength and readiness to flush, and aggressiveness and territoriality. Human-bird relationships also move beyond the semantics of capture to cases in which birds are kept in captivity as sources of feathers and/or awaiting sacrifice, as pets, and as domestic birds. Chaco Canyon, New Mexico was the center of a large regional system in the Pueblo II period (AD 850–1150). The avifaunal assemblages from one great house, Pueblo Bonito, and two small sites, BC 57 and BC 58, will be examined and compared. I will consider the qualities and behaviors of the avifaunal taxa in these assemblages that would have influenced human-bird interactions. I will then discuss the implications of

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these behaviors and the unique ways that birds may have exerted agentive force and control over the experiences of bird capture, captivity, management, and use.

Bishop, Ronald L. (Smithsonian Institution)
[246] *Discussant*

Bishop, Ronald L. [258] see Reents-Budet, Dorie

Bissett, Thaddeus (Northern Kentucky University), Martin Walker (University of Tennessee), Sean Taylor (South Carolina Department of Natural Resources) and Michael Russo (Southeast Archaeological Center)

[34] *The Utility of Public LiDAR Data for Detecting and Documenting Low-Relief Archaeological Sites: A Case Study from the Pockoy Island Shell Rings, Charleston County, South Carolina*

This paper evaluates the utility of high-resolution LiDAR-derived elevation data for remotely surveying difficult-to-access coastal areas to identify possible archaeological sites, which can then be targeted for further investigation. To determine the effective limits of the elevation data to visualize low-relief structures, locations of previously-recorded Archaic and Woodland-period shell rings along the lower Atlantic coast were examined. Thirty-four rings were identified, including two previously undetectable at ground level without the use of shallow geophysics. To determine if undocumented rings could also be located using this method, the survey was then extended to an area along the South Carolina coast where shell rings were not previously documented, but which is situated a few kilometers from several known rings. In multiple LiDAR datasets, two faint ring-shaped anomalies were identified within the survey area. Fieldwork in May and July of 2017 confirmed that both anomalies represented low-relief Late Archaic shell rings. We conclude with preliminary data from the July fieldwork on the two rings, and contrast site maps produced using the LiDAR-derived data with those from ground-based topographical mapping, subsurface probing, and shovel testing. With moderate processing to filter “noise” in the dataset, high-resolution LiDAR-based maps rival those produced using ground-based methods.

Bissett, Thaddeus [135] see Anderson, David

Bisson, Michael (McGill University)

[219] *Uses and Limitations of the “Sangoan” for Understanding Hominin Mobility and Dispersals: An Example from Northeastern Zambia*

The Sangoan, a late Middle Pleistocene technological tradition widely distributed in Sub-Saharan Africa, follows the Acheulean and is considered by some to represent the earliest manifestation of the Middle Stone Age. It may coincide with the evolution of *Homo sapiens* and the initial appearance of evidence for complex cognition. Unfortunately, this archaeological construct has fallen in and out of favor and remains poorly defined. It has uncertain dates and environmental associations, and ambiguous hominin fossil associations. Using a new Zambian site as an example, the utility of the Sangoan construct to assess hominin mobility and dispersals is discussed.

Bittner, Jessica (College of William & Mary)

[255] *Paying Homage to the Past: Identity, Memory and Place in the American South*

Recent archaeological approaches to identity emphasize landscapes as dynamic arenas in which identities are communicated, generated, and negotiated. Focusing on several Cherokee heritage sites in Georgia and North Carolina, this paper examines the role of historical memory within place-based identity construction. Spatial expressions of identity within the landscape at each of these sites are examined throughout multiple periods of occupation. I trace distinctions in the ways in which Cherokees and local white communities engage with these past landscapes, and illuminate a persistent conflict between Cherokee peoples and white preservation groups over place, heritage, and identity. Paradoxically, for Native and non-Native visitors, these places evoke parallel visions of emplaced heritage. Cherokee heritage sites serve as emblems of the Cherokee Nation’s ancestral claims to their homelands in the American South, and of Anglo-America’s own deep connections to place in Georgia.

Biwer, Matthew (University of California, Santa Barbara)

[211] *Drinking Together: The Role of Foodways in the Wari and Huaracane Colonial Encounter in the Moquegua Valley, Peru*

Food is a unique form of material culture, representing a multiplicity of ethnic, gender, racial, political, and economic identities, that is consumed and reaffirmed through daily practice. In this way, food remains provide a nuanced perspective on a variety of archaeological issues. This paper focuses on Wari imperial expansion and how foodways enabled both Wari colonists and local peoples to negotiate the colonial experience during the Middle Horizon (AD 600–1000), Peru. Using paleoethnobotanical data, I present data from the Wari site of Cerro Baúl and the Huaracane site of Yahuary Alta in the Moquegua Valley, Peru. I investigate not only how Wari incursion impacted Huaracane foodways, but also how local environmental and social conditions shaped Wari food practices. A consideration of food remains will not only distinguish what can be considered uniquely Wari or Huaracane cuisine, but also how foodways may have developed on either side of the colonial encounter. More specifically, this study begins to characterize: 1) the alcoholic beverage chicha de molle as a medium of Wari culture that could be consumed by local communities; and 2) how the selective adoption and internalization of Wari chicha de molle by Huaracane communities may have shaped the colonial encounter.

Bizot, Bruno [88] see Ardagna, Yann

Bjorkman, Matt [334] see Whitehead, Mike

Blaber, Thomas

[266] *Pipe Assemblages of St. Catherines Island, GA*

Excavations over the last four decades on St. Catherines Island, GA have recovered over 200 pipe fragments and a dozen nearly complete pipes. These pipes are both historic and native made which cover a wide range of sites through occupational periods on the island. In this paper, I will present the results of recent and previous analyses and consolidate this information to explore the island-wide distribution and temporal trends of pipes on St. Catherines Island. In addition I will examine several of the nearly-complete pipes and discuss the iconography and symbolism presented.

Black, Michael [172] see Hoffman, Christopher

Black, Stephen L. (Texas State University, San Marcos) and Charles Koenig (Texas State University, Shumla Archaeological Rese)

[8] *Sand, Chute, Carts, and Waddles: Eagle Cave and Bonfire Shelter Restoration Project*

Eagle Nest Canyon, a box canyon draining into the Rio Grande in the Lower Pecos Canyonlands of southwest Texas, houses Bonfire Shelter, the oldest and southernmost bison jump site in North America. Bonfire was excavated in 1963–64 and again in 1983–1984, leaving open a 3m-deep excavation block. Nearby Eagle Cave was excavated in the 1930s and again in 1963, leaving the central trench unfilled. In 2015–2016, the Ancient Southwest Texas Project of Texas State University re-excavated the 4-meter deep trench bisecting this massive rockshelter to document and sample complex stratigraphy spanning 10,000+ years. In 2017, the ASWT project “restored” Eagle and Bonfire. At Eagle Cave the challenge was refilling the

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wide, 4-meter-deep trench bisecting the shelter. Most original backdirt had washed down the canyon decades earlier, so we added 20 dump truck loads of Rio Grande alluvium via a complex chute and cart system. At Bonfire Shelter the still-open excavation block was badly impacted by exposure and water erosion, as was the talus cone where bison fell. We stabilized the talus cone and installed erosion control features across much of the site to protect the extant deposits and allow time for new investigations before Bonfire is completely backfilled.

Black, Valda (Washington State University), Ricky Nelson (Mesa Community College), Ivanna Robledo (University of California- Santa Barbara) and Danielle Kurin (University of California- Santa Barbara)

[270] *Non-metric Traits and the Influence of Cranial Modifications: A Case Study from the South-Central Andes*

Non-metric cranial traits and craniometric scoring are often used as a quicker and cheaper alternative to genetic markers when analyzing biological distance within and between populations. However, in populations with intentional artificial cranial modifications, the only option is scoring non-metric cranial traits since the craniometrics are too heavily affected by the modifications. Studies have shown that although non-metrics are the best alternative, some traits cause a bias that can differ based on the broad modification categories of annular and tabular. This study aims to add to these data by assessing the influence of the sub-categories of oblique and erect within the annular modification category and the degree of modification. The sample population consists of individuals from the Chanka cultural group located in the South-Central Andes of Peru during the Late Intermediate Period (AD 1000–1400). A total of 33 non-metric traits were scored on 102 individuals, 88 of which have modified crania. Analyzing the influence of sub-categories and degree of modification can point to a finer scale analysis of how and why certain traits are influenced by cranial modifications. These data can then be used in future studies to avoid collecting biased traits when assessing biological distance.

Blackman, Benjamin K. [137] see Wales, Nathan

Blackmore, Chelsea (University of California, Santa Cruz)

[110] *Racial Justice Matters: White Privilege and the Spectre of Scientific Objectivity*

We volunteer and engage with the public because we believe that history matters; that visibility of the everyday, of peoples and pasts marginalized and made invisible should be central to what we do. We can use our work, pre- and post-contact, as a means for public engagement and to dismantle political discussions rooted in ahistorical notions of human behavior and morality. But in serving the public interest, how do we also serve our membership, both in protecting their rights as human beings and as professionals? What responsibilities do we and the SAA have to our colleagues, students, mentors, and friends? In particular, how do our actions continue to marginalize people of color within our membership as well as minimize the importance of racial justice actions? This paper examines how white privilege and calls for scientific “objectivity” ignore the structural violence that continues to impact our practice as well as our participation in current political and social activism.

[191] *Moderator*

Blackwood, Emily and Kate Pontbriand

[84] *Seasonal Analysis of Four Coastal Archaeological Sites in Eastern Maine Using Mollusks*

Analysis of archaeological clam shells can provide important indicators of the seasonality of an archaeological site. To address the question of seasonality at four Woodland period archaeological sites along the coast of Maine, we have collected monthly modern samples of the soft-shelled clam *Mya arenaria* from nearby clam flats to establish a baseline to which excavated samples can be compared. The analyses of modern shells will show how seasons are recorded in the target species in Maine; analyses of the archaeological shells will provide a proxy for season of occupation at these archaeological sites. Two methods will be used with these shells. One method will utilize acetate peels to determine seasonal growth increments of modern and archaeological shell samples. The other will determine isotopic ratios of O16 and O18 to track temperature fluctuations at the collection sites. These data are integral to our understanding of the context of Native peoples' subsistence and behavior patterns and will allow us to test theories regarding coast to inland seasonal movement along the coast of Maine.

Blair, Elliot (University of Alabama)

[275] *The Individual and the Group at 17th Century Mission Santa Catalina de Guale*

The individual as an entity in the past and an object of anthropological and archaeological study has often been debated. In this paper I consider the presence and role of the individual as an actor within colonial contexts. Using the methods of social network analysis, I explore the relationship between groups, individuals, and objects at 17th century Mission Santa Catalina de Guale, a Franciscan mission located on St. Catherines Island, GA. I argue that the methods of social network analysis can be used to identify and explore the roles that individual mission neophytes played in colonial interactions. Using these methods I examine how objects and individuals were involved in the material manifestation of social identities as pluralistic native communities aggregated in the Spanish missions of La Florida. Further, I consider the role of the individual in relation to broader frameworks of colonial interaction, examining how individuals engaged in sociopolitical negotiations and interactions within the processes of ethnogenesis and colonial identity formation.

Blair, Elliot [154] see Wright, Kevin

Blair, James (Mellon/ACLS Public Fellow and International Campaign Advocate, NRDC)

[195] *Splintered Hinterlands: Public Anthropology, Environmental Advocacy and Indigenous Sovereignty in Resource Frontiers of the Americas*

This paper analyzes the role of public anthropology in socio-ecological justice movements by examining conflicts over natural resources and indigenous sovereignty through policy-oriented research. It considers the Natural Resources Defense Council's (NRDC) international projects to protect “special areas” and wildlife in the Western hemisphere, specifically rivers in Chilean Patagonia, and the boreal forest in Canada. Despite geographical, historical and cultural differences, these two priority campaigns involve a shared focus on developing communications strategies, as well as financial and corporate advocacy methods, in order to advance stronger environmental protections in alliance with social movements. Working with Mapuche indigenous leaders, international scientists and local environmental activists in the Aysén region of Chile, the NRDC has raised awareness to persuade public officials and investors to seek more sustainable energy alternatives to proposed hydro-electric dam development projects. In Quebec and Ontario, Canada, the environmental group has collaborated with members of the Waswanipi Cree First Nation and paper product consumers to halt forest degradation, which threatens woodland caribou habitats and exacerbates climate change. Taking an engaged anthropological approach to these projects, this transnational study sheds light on how different public advocacy strategies condition or limit possibilities for environmental justice and indigenous sovereignty across the Americas.

Blakeslee, Donald (Wichita State University)

[36] *Uncovering Etzanoa: A Megasite on the Southern Plains*

In 1601 CE, Juan de Oñate visited a large community in southern Kansas that natives described as taking two or three days to walk through. The location of the remains of the town was first clearly demonstrated in 2015. Since then, surface survey and work with collectors continues to document the scale of the community. Excavation in 2017 by Wichita State University and the University of Colorado in what was thought to be a midden mound

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instead encountered a dense concentration of features that reflects the presence of one of the house clusters described by the Spanish visitors. A Spanish horseshoe nail from one of the pits is the third Oñate era artifact to have been found at the site.

Blakey, Michael (College of William and Mary)

[166] *The WAC Origins of the New York African Burial Ground Project*

This paper concerns the development of an interdisciplinary Project which studied 419 human remains at the 18th century cemetery for Africans enslaved in New York. The first World Archaeological Congress (1986) and Inter-Congress (1989) facilitated conversations among archaeologists and Indigenous peoples that would inspire change in archaeological practice. The African Burial Ground Project carried forward specific ideas of that encounter, joined with the activist scholarship and interdisciplinary habits of anthropologists from the African diaspora. The African Burial Ground Project (1992–2009) followed the first ethical bioarchaeology in the United States (enforced by NAGPRA in 1990) but concerned populations worthy of ethical treatment which were left uncovered by the law. By force of public pressure and scholarly cooperation, it became the first large and most visible example of publicly engaged archaeology. The results were affection between its scientists and “descendant community,” an international conversation about slavery, national linguistic transformation, sophisticated bioarchaeological reports, new methods, and a National Monument.

Blancas, Jorge (IIA, UNAM), Lisa Overholzer (Department of Anthropology, McGill University), Luis Barba (Instituto de Investigaciones Antropológicas, UNAM), Agustín Ortiz (Instituto de Investigaciones Antropológicas, UNAM) and Eos Lopez (Instituto de Investigaciones Antropológicas, UNAM)

[248] *Archaeological Prospection at Cerro Coyotepetl, Tepeticpac, Tlaxcallan: Preliminary Results from the 2017 Field Season of the Proyecto de Arqueología Cotidiana de Tepeticpac*

In this paper we present the preliminary results of our field season this past summer in the Cerro Coyotepetl neighborhood of Tepeticpac, a señorío of Tlaxcallan. Archaeological prospection methods and remote sensing included magnetometry, electrical resistivity and photogrammetry by drone. Though our work is ongoing, and another geophysical survey season is planned, results were confirmed by excavations on one domestic terrace. These excavations revealed the remains of four rooms whose occupation spans the late pre-Hispanic and early Colonial periods. We reflect on the success and limitations of our methods in identifying the modification of the tepetate bedrock creating a habitable space, and in our ability to detect walls, hearths, and other domestic features.

Blancas, Jorge [293] see Barba, Luis

Blank, John, Matt Chmura and Sarah Gilleland

[13] *Style vs. Function in Polynesian Fish Hook Shank Variation*

Polynesian i'a makau, or fishhooks, may stand in for ceramics for the purpose of generating culture-historical units, facilitating relative dating of the three Hawaiian assemblages under scrutiny (Allen 1996). Artifact assemblages at Waiahukini, Makalei, and Pu'u Ali'i contained over 1000 intact or partial fishhooks and fragments of shaped pig bone representing unfinished manufacture. Allen's (2015) conceptual style-function model of hook attributes necessitates a focus on stylistic shank variation, which reflects manufacture choices rather than fishing efficiency of the object. To test whether these attributes are actually stylistic choices, we propose a tensile strength test of experimental artifacts. To negate biases conferred by heterogeneity in the material or in manufacturing skill, we generate three-dimensional recreations of shank variation observed in the site assemblages. These models are subjected to conditions they would experience during use, given the physical properties of modern pig bone. If differential performance of shank “style” is quantifiable, then aspects of shank variation must be considered functional attributes.

Blankenship-Sefczek, Erin (Ohio State University) and Joseph Ball (San Diego State University)

[258] *Dentition, Kinship, and Status in the Mopan-Macal Triangle: Small-Sample Insights into Classic Maya Social Organization in Central Western Belize*

Classic Maya social status is more complex than an elite versus non-elite dichotomy. Research suggests that a “middle” status group exists. However, the social segment from which they arise is unknown. This study focuses on individuals from the urban center of Buenavista del Cayo who are below the ruling elites in the “middle” rungs of social status, and those from the neighboring farming community of Guerra who are recognized as nonelites. Previous research suggested that no biological affinity existed between the ruling elite and the “middle” status groups. Thus, we hypothesized that there would be a biological connection between the “middle” status group and the nonelites at these sites. Our study used a bio-cultural approach to interpret social connections by comparing dental characteristics (crown size and trait expression) and archaeological evidence to assess whether there was biological affinity between these two social groups. Our results indicate that there was shared affinity, suggesting that middle status individuals maintained biological and cultural ties with the nonelite group. Thus, the evidence in this study suggests that kinship, or biological affinity, was the basis for the social structure, organization, and membership patterns of these Maya communities during the Classic period.

Blanton, Richard [31] see Marino, Marc

Blewitt, Rosemarie, Susan Myers (North Carolina Office of State Archaeology), Mary Fitts (North Carolina Office of State Archaeology), Lindsay Ferrante (North Carolina Office of State Archaeology) and Sam Franklin (North Carolina Office of State Archaeology)

[231] *Managing Digital Data at the North Carolina Office of State Archaeology: Challenges and Directions*

The North Carolina Office of State Archaeology (OSA) was created by the North Carolina General Assembly in 1973 to coordinate and implement a statewide archaeological preservation program. Central to this program is the OSA's management of records, including those documenting the more than 50,000 archaeological sites located in the state's 100 counties, and a library of nearly 8,000 associated reports. The OSA Research Center curates tens of thousands of artifacts and their associated records from across North Carolina.

While there are computer databases for the site forms, bibliographic entries, maps, and artifacts, there is variability in the extent to which all records have been added to these databases. Arduous and labor intensive, the process of digitizing our records has evolved with the available technology and been limited by staffing. Our goal is to have this data in GIS and electronic databases accessible to researchers and easy to query. We will discuss our efforts to reach this goal and the potential benefits of digitizing our records.

Bliege Bird, Rebecca [92] see Zeanah, David

Blinman, Eric (NM Archaeology), Marvin Rowe (NM Archaeology) and J. Royce Cox (NM Archaeology)

[74] *Plasma Micro-sampling in Radiocarbon Dating: Approaching a Non-destructive Model*

The development of low-energy plasma oxidation as a sampling technique has created new opportunities for applying radiocarbon dating. Plasma oxidation can be carried out at energies below the threshold of carbonate and oxalate dissociation, dramatically reducing the need for pretreatment and subsequent loss of sample volume. Radiocarbon sample size can be reduced toward the minimum of the 40–100 millionths of a gram of carbon that is actually needed for standard AMS dating. This allows the dating of remarkably small samples, and it results in the imperceptible removal of carbon from more traditionally-sized samples, such as a charred maize kernel (the botanist will never know a dating sample has been removed). A surface-

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active technique, plasma oxidation preferentially samples carbon molecules from object exteriors, allowing repeated stratigraphic sampling through accumulations such as soot on fragments of cave or rockshelter ceilings and the interpretation of sequential dates. Masking techniques can focus sampling on only portions of artifacts, and other innovative applications include the dating of organic pottery pigments, residues on artifacts, and organic binders in mineral pigments. Low temperature plasmas allow superficially non-destructive sampling of museum specimens, while higher plasma energies can sample carbide from the surfaces of historic metals.

Blinman, Eric [74] see Cox, J. Royce

Blitz, John (University of Alabama) and Lisa LeCount (University of Alabama)

[129] *Groundstone Manos and Metates as a Measure of Ancient Maya Political Economy at Actuncan, Belize*

Understanding the political economy of ancient Maya communities requires reconstructing the forms and scales of exchange, the articulated nature of exchange modes, and the degree to which elites controlled commoner access to goods. These issues are examined at the site of Actuncan, Belize, by documenting the chronology, morphology, raw material, and social context of a large sample of groundstone manos and metates distributed across structures ranging from a palace to large houses to patio groups. Results show no restricted access by context for mano and metate morphological types or material sources, including non-local stone, and thus no evidence that elites restricted access to groundstone. A significant chronological change in metate and mano shapes occurred, with flat and trough-type metates and square-type manos appearing at the Late Classic to Terminal Classic transition. Basalt manos and metates from distant sources also appear at this time, along with the ceramic comal. We interpret these changes in food-processing implements as marking the introduction of tortilla production. Using these data, we will examine continuity and change in exchange modes from Preclassic to Postclassic periods at Actuncan.

Bloch, Lindsay (Florida Museum of Natural History, UF), Neill Wallis (Florida Museum of Natural History, UF) and George Kamenov (Department of Geological Sciences, UF)

[81] *Analysis of Surface Treatments on Weeden Island Red Vessels via LA-ICP-MS*

One of hallmarks of Late Woodland period Weeden Island in Florida is the proliferation of ornate ceramics associated with ceremonial contexts. Recent elemental and petrographic analyses of Weeden Island ceramic pastes have established that despite visible standardization, these wares were traveling significant distances from large production centers, but also being made locally. This widespread movement of people and pots across the landscape provides a valuable context for exploring the spread of specialized technological knowledge. To better understand the production of these wares, we focused on the applied red surface on Weeden Island Red vessels, which previous analyses identified as among the most likely Weeden Island ceramics to have been locally made. In particular, we sought to define the recipe for this surface treatment, whether iron-rich ore or clay, and to identify the degree of recipe standardization across the ware type as reflection of shared production knowledge. LA-ICP-MS was used to independently analyze the elemental composition of the red surfaces of these vessels, complemented by NAA and petrographic analyses of paste composition.

[278] *Discussant*

Bloch, Lindsay [51] see Neiman, Fraser

Blom, Deborah (University of Vermont), Kelly J. Knudson (Arizona State University), Nicole C. Couture (McGill University) and Carrie Anne Berryman

[87] *Caring for Children in the Ancient Andes: Bioarchaeological and Biogeochemical Data from the Andean Middle Horizon (AD 500–1100) Tiwanaku Polity*

Bioarchaeological approaches can contribute much to our understanding of how children were cared for in the past. Here, we examine social, cultural, and physical care of children in the Tiwanaku polity of the South Central Andes between approximately AD 500 and 1100. Using multiple lines of evidence, we reconstruct patterns of childcare practices as well as the formation of different social identities at archaeological sites in the Moquegua Valley of southern Peru and the Bolivian Lake Titicaca Basin. More specifically, we use data from ethnographic and ethnohistoric sources, bioarchaeological data on cranial modification, paleopathology, and mortuary behaviors, and biogeochemical indicators of paleodiet, including weaning patterns, and paleomobility. By recreating individual life histories and lived experiences in the past, we examine how Tiwanaku-affiliated communities cared for their children in the past.

Blomster, Jeffrey (George Washington University)

[288] *Public Space, Sacred Place: Early Monumental Architecture and Corporate Identity in the Mixteca Alta, Oaxaca*

The Early Formative evinces the emergence of public space, and more complex communities, in Mesoamerica. Previous archaeological research at the site of Etlatongo, Oaxaca, Mexico, identified a large village during the late Early Formative/Cruz B phase (1200/1150—850 BC), including an area tentatively identified as early public space. The Formative Etlatongo Project has concluded three seasons, from 2015—2017, of large-scale excavations, confirming the identification of public space in the southern portion of the site. More specifically, this public space was focused during the Cruz B phase on two iterations of a ballcourt. We interpret the constructions of this ballcourt as a kind of public space that both linked emerging communal identity with socio-political complexity. Very specific kinds of materials were deposited in this public space; both these deposits, as well as the probable activities that occurred, transformed this into a sacred place, one that resonated beyond the Cruz B phase. The construction, subsequent maintenance and renovations reflect the collective effort of different social actors and corporate entities in the transformation of society at Early Formative Etlatongo.

[288] *Chair*

Blomster, Jeffrey [288] see Oliveira, Diogo

Blomster, Jeffrey [288] see Salazar Chavez, Victor Emmanuel

Blong, John (Newcastle University)

[126] *Terminal Pleistocene and Holocene Adaptive Strategies at the Paisley Caves, Oregon*

There are key questions about the timing of the initial settlement of the northern Great Basin, how settlers adapted to the pluvial lake and wetland landscape they encountered upon arrival, and how these adaptations changed in response to Holocene climate change. The Paisley Caves in south-central Oregon provide a unique opportunity to investigate these questions. The caves produced the earliest evidence for human settlement of the Great Basin including coprolites containing human DNA dating to 14,300 calendar years BP, as well as an assemblage of morphologically human coprolites from terminal Pleistocene through late Holocene contexts. These coprolites provide an important resource for a diachronic study of human occupation and subsistence in the region. This paper presents the preliminary results of pollen, phytolith, and plant macrofossil analyses of coprolites from the Paisley Caves. The goal of these analyses are to identify human coprolites in the cave deposits, and test models emphasizing a broad-based wetland-focused subsistence economy in the terminal Pleistocene and early Holocene with increasing reliance on plant resources in the middle

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Holocene. This research is part of a broader project investigating site formation processes and human occupation of the caves using biogeochemical, plant micro- and macrofossil, and sediment micromorphological analyses.

[126] *Chair*

Blumenfeld, Dean (Arizona State University)

[242] *Lithic Economy of Epiclassic Los Mogotes*

This study examines the flaked stone economy at the Epiclassic site of Los Mogotes, located north of the Basin of Mexico in central Mexico. We quantified obsidian and chert artifacts based on form and material in order to examine the nature of the lithic economy during this time. The findings suggest that the inhabitants of Los Mogotes were not primary producers of obsidian tools but were dependent on long-distance exchange for already manufactured goods. Despite being closer to high quality obsidian sources in Pachuca, Hidalgo, Los Mogotes relied on grey obsidian from sources located farther away (such as Ucareo, Michoacan). The lack of evidence of primary obsidian production suggests a down-the-line model of exchange of obsidian tools, many of which were later reworked into secondary or tertiary items. This pattern contrasts with evidence of primary production using more locally available chert. These findings conform to broader regional trends observed at contemporaneous sites during this time. Our interpretations focus on how the broader political economy shaped access to resources and the institutions necessary for their distribution.

Bobolinski, Kathryn (University of Montana) and Ashley Hampton (University of Montana)

[239] *Continuity or Change: A GIS Analysis of Artifact Distributions from Pre-colonial Housepit 54*

Housepit 54 at the Bridge River pithouse village in south-central British Columbia provides a glimpse into the complex cultural practices that occurred within this area in the past. This village, which includes approximately 80 semi-subterranean structures, was occupied during four time periods that together span from approximately 1800—45 cal. B.P., firmly placing the site within both a historic and a pre-Colonial context. Geographic Information Systems (GIS) will be used to explore the spatial distributions of artifacts from a subset of Housepit 54's pre-Colonial floors. This study should result in a more in-depth understanding of the structure's household organization and the past human behaviors that affected the creation of the assemblages under examination. Ultimately, if there were activity areas being used during the occupation of the Housepit 54 floors, then clusters of cultural material and possibly clusters of material types are expected. In addition, this study will also be looking for evidence of shared space and materials as well as trends through time, such as the continuous use of one area of the housepit for a specific activity. This should reveal more about how the housepit's organization and social structure changed over time.

Bocinsky, Kyle (Crow Canyon Archaeological Center)

[279] *Discussant*

Bocinsky, Kyle [221] see Gillreath-Brown, RPA, Andrew

Boczkievicz, Roberta [165] see Hudson, Jean

Bodenstein, Nicole

[89] *Comparing a NextEngine 3D Scanner with Casting Mediums for Making Positives of Cord-Imprinted Pottery*

In this paper, I compare using latex and Sculpey molds with a NextEngine 3D scanner in creating positive copies of upper midwestern, Late-Woodland, cord-imprinted pottery for analysis. Making cast positives of these impressions in casting mediums present different hazards to the sherd. A NextEngine 3D Scanner may present fewer hazards to sherds, while allowing for digital copies that are easily manipulated and measured. It is also portable and relatively inexpensive compared to other 3D scanning technologies. I list the benefits and problems of each method based on tests of a small number of sherds from the UWM-ARL collections. Pressure exerted on sherd, whether or not residues are removed, manipulability of final product, shrinkage, and clarity of the impression structure will be recorded and compared. I will also compare cost, time consumed, and ease of use. I will include how long it takes to learn how to use the NextEngine Scan Studio as well as how long it takes to manipulate the scans in Meshlab. I will then make separate illustrations based on the molds and 3D scans that are blown-up representations of the textile structure and compare the ease of illustration for each.

Boehm, Andrew (Museum of Natural and Cultural History, University of Oregon) and Erik R. Otárola-Castillo (Department of Anthropology, Purdue University)

[103] *The Energetics of Butchery*

Animal butchery is an important aspect of human evolution. While it provides obvious nutritional and non-nutritional benefits, the choice to butcher an animal involves costs. These costs are primarily time, energy. Most research investigating these costs has focused on time alone. By creating ranking schemes using post-encounter return rates, researchers usually hypothesize which animals or body parts hunters should butcher. Yet, the energetic cost of butchery and its effects on these rankings remain unknown. To shed light on this problem, we measured the energetic and time costs of butchers during butchery of domestic sheep using stone tools. We used a heart rate monitor to measure the energetic expenditure for each segment of butchery while documenting time during the event, and verifying it by reviewing video recording. These data were analyzed using basic Heart rate variability techniques using the RHRV package (v. 4.2.3) of the R computing environment. Adding energetic cost, an important yet often omitted variable, to quantifying the butchery sequence provides a basis to better understand the costs and trade-offs of processing animals. These data are applicable to all archaeological events involving the human butchery of medium-to large-sized mammals.

Bofill, Maria [298] see McNamee, Calla

Boileau, Arianne (University of Florida)

[217] *Testing the Stratigraphic Integrity of Shallow Deposits through Zooarchaeology at Lamanai, Belize*

Identifying formation processes of shallow archaeological sites can be difficult. At Lamanai, Belize, the main problem consists of distinguishing between pre- and post-Spanish contact deposits buried at a depth of 10 to 60 cm. Evidence of interaction with the Spanish includes a few European objects and two Christian churches. However, identifying pre-contact deposits is more challenging. Maya archaeologists typically rely on ceramic typology to establish chronology, but the main pottery type in use at Lamanai before Spanish arrival continued to be widely used after contact. Diachronic changes in the distribution of other archaeological correlates for pre- and post-contact assemblages, including structure features and lithics, are subtle and do not effectively demarcate deposit type. Here, I use the taphonomic study of animal remains to assess the integrity of the stratigraphic levels identified during excavations and determine whether these levels represent pre- or post-contact accumulations. The methods employed include bone counts, species composition, skeletal part distribution, refits on dry and green bone, and vertical distribution of elements. As Lamanai is one of few known locations of Maya and Spanish interactions in the southern lowlands, identifying pre- and post-contact deposits is essential for studying the impact of Spanish arrival on the Maya society.

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Boisvert, Richard (NH Div. of Historical Resources)**[294]** *Collaborative Research as an Adaptive Strategy among New England Archaeologists*

NH SCRAP (State Conservation and Rescue Archaeology Program) was created in 1978 principally to train and certify the general public in the conduct of archaeology in New Hampshire. While engagement in fieldwork draws many volunteers, generates substantial recognition, and serves to promote archaeology well beyond the borders of the state—analysis and publication have always been integral parts of the program. Outreach to undergraduate students, graduate students, and avocational archaeologists has produced a remarkable body of research and publication. Foremost has been the advancement of Paleoindian studies in the Northeast though hardly to the exclusion of other research. Accomplishments by SCRAP researchers are reviewed and the unique aspects of the program are elaborated.

Boivin, Nicole (Max Planck Institute for the Science of Human History)**[161]** *Who Owns the Anthropocene and Does It Matter?*

While there is little doubt that we currently live in an era in which humans have become the dominant force shaping climate and environments globally, the question of when we entered this era has become a contentious one. Many archaeologists argue for an early start date, but have been largely excluded from geology-driven discussions by the Working Group on the Anthropocene. Does this matter? This paper will explore this question, and consider more broadly the place of archaeology in shaping environmental discussion, action and policy today.

[137] *Discussant*

Boivin, Nicole [310] see Nayak, Ayushi

Bolender, Douglas (University of Massachusetts Boston) and Eric Johnson (Harvard University)**[170]** *Marginal Lives and Fractured Families. The Hidden Archaeology of Household Debt and Instability in Medieval Iceland*

Archaeologists generally assume that the absence of market exchange implies an absence of financial debt as a mechanism of exchange and social control found in more “advanced” economies. This implicit logic is reproduced in contexts where identifying market exchange largely relies on tracking the circulation of specialized and imported goods, as is the case in medieval Iceland: a society largely made up of subsistence tenant farmers where archaeological indicators of market exchange virtually disappear after the Viking Age settlement of the island. But David Graeber urges us to look deeper for sophisticated systems of value and material exchange in societies that have been traditionally considered to have primitive economies. His work also calls attention to the ways that debt, as a social and economic phenomenon, structures relationships and the juridical status of individuals. Reevaluating medieval Iceland with this lens, we see the disappearance of imported goods following the Viking Age not as evidence of a primitive subsistence economy but rather the development of an entrenched system of financial debt that had profound implications for the juridical and personal status of individuals as a failure to pay debts frequently resulted in the fracture of the family and household.

Bolender, Douglas [167] see Welch O'Connor, Lauren

Bolin, Annalisa (Stanford University)**[201]** *Friends and Enemies: Heritage Ethnography in the Shadow of the State*

Engaged archaeology and public anthropology depend on the goodwill, or at least tolerance, of numerous publics. This is frequently understood to mean local communities and nearby residents, but projects can live or die according to the will of groups less often discussed as part of the target public: authority structures such as permitting agencies or even national governments. How do such organizations figure into the “public” of public scholarship? What happens when research is pressured to produce the narratives that authority structures desire? Is it possible to practice engaged and ethical research in these contexts, and if so, what practical accommodations can we reach—or must we abandon the project altogether?

This paper investigates these questions in the context of post-genocide Rwanda, where social science research has become increasingly constrained. Some researchers have found themselves on semi-official “enemies lists”, while others encounter pressure to be “friends of Rwanda” who can be counted on to produce complimentary accounts of the country. Drawing on my experiences as a heritage ethnographer in Rwanda, I examine the ethical and practical difficulties of conducting research under the eye of a powerful and sensitive government, and negotiating responsibilities both to communities and to scholarship itself.

[201] *Chair*

Bollerup Overgaard, Susanne [63] see Erlingsson, Christen

Bollwerk, Elizabeth (The Thomas Jefferson Foundation—Monticello), Lynsey Bates (DAACS/The Thomas Jefferson Foundation—Monticello), Leslie Cooper (DAACS/The Thomas Jefferson Foundation—Monticello) and Jillian Galle (DAACS/The Thomas Jefferson Foundation—Monticello)**[286]** *What to Do with All Those Digital Data: Examples from the Digital Archaeological Archive of Comparative Slavery (DAACS)*

The Digital Archaeological Archive of Comparative Slavery (DAACS) is a Web-based initiative designed to foster inter-site, comparative archaeological research on slavery throughout the Chesapeake, the Carolinas, and the Caribbean. The goal of DAACS is to facilitate research that advances our historical understanding of the slave-based societies that evolved in the Atlantic World during the eighteenth and nineteenth centuries. In this paper we argue that the digital methods encapsulated within DAACS enable archaeologists to conduct innovative analysis at scales that would be impossible to achieve using analog methods. These methods consist of: 1) entering archaeological data into the DAACS Research Consortium (DRC) Database Application using well-defined classification and measurement protocols, 2) serving that data for free through the DAACS website (www.daacs.org), and 3) providing training and assistance for those who conduct research with the data. We offer three case studies to demonstrate how these methods enable collaborators to address old research questions using legacy collections, answer new questions with data from recent excavations, and adapt the system to incorporate data from different regions. These case studies illustrate how DAACS has balanced the need to maintain rigorous data entry standards and reproducible methods with the needs of an expanding user base.

Bolorbat, Tseveendorj [41] see Gillam, J. Christopher

Bond, Julie [135] see Dockrill, Stephen

Bond, Stanley**[193]** *Discussant*

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Bondura, Valerie (Columbia University)**[259]** *Ceramic Ecology as Deep Ecology in Northern New Mexico*

"This landscape is animate: it moves, transposes, builds, proceeds, shifts, always going on, never coming back, and one can only retain it in vignettes, impressions caught in a flash."

—Ann Zwinger, Downcanyon

We might think of ceramics as landscape "caught in a flash", a bringing together of different geological places into newly combined forms. Ecological thinking in Northern Rio Grande Pueblos frames this bringing together as a fluid gathering of forces that flow in and out of one another. "Deep ecology" is one current term the social sciences for this relational field of human and non-human interaction in the landscape—for Pueblo potters, it is how the world is.

This paper outlines a deep ecology of pottery from a Spanish land grant community and a neighboring Tiwa Pueblo. I present ongoing research on the composition of ceramics from these two places, a study that gives insight into how different communities engaged with the landscape. Comparative ceramic ecology offers a framework for thinking about historical relationships that includes but also moves beyond questions of ethnicity and identity to a focus on how people locate themselves within socio-environmental systems.

Bongers, Jacob (UCLA Cotsen Institute of Archaeology), Juliana Gómez Mejía (Universidad de Caldas) and Colleen O'Shea (Fine Arts Museums of San Francisco)**[66]** *Modeling Late Prehistoric Mortuary Practice in the Middle Chincha Valley, Peru*

This paper presents a model for mortuary practices associated with above-ground and semi-subterranean tombs known as chullpas, which date from the Late Intermediate Period (A.D. 1000–1400) to the Colonial Period (A.D. 1532–1825) in the middle Chincha Valley, Peru. Mortuary practices involve living-dead interactions that transform the status of the deceased. Historical sources and archaeological research suggest that chullpas in the south-central Andean highlands featured protracted living-dead interactions. Few investigations, however, have examined these tombs on the Peruvian coast. Here, we use data from five seasons of archaeological fieldwork and analysis to model sequences of chullpa mortuary activities in the middle Chincha Valley, located on the Peruvian southern coast. These data indicate multi-stage processes comprising tomb entry and reentry for depositing, manipulating, and re-depositing human remains, and making offerings of varying types to the dead. Throughout these sequences, local groups performed elaborate forms of postmortem body manipulation. Our model supports and nuances previous scholarship on chullpas by characterizing chullpa mortuary activities as part of a dynamic and extended program for curating and venerating the dead in the study area. This research contributes to Andean mortuary archaeology by expanding our understanding of variation in chullpa mortuary practice.

Bonneau, Nicholas (University of Notre Dame)**[204]** *An Accounting of the Dead: Historical Epidemiology and Big Data in the Arch Street Project*

As of the beginning of September 2017, the remains of over 250 individuals were recovered from the building site at 218 Arch Street. While the presence of bodies in what was once the First Baptist Church of Philadelphia burial ground should not surprise us, contemporary documents and written histories of the congregation state that all burials had been moved to the Mount Mariah Cemetery in the mid-nineteenth century. The abundance of human remains left on the original site raises questions for historians, archaeologists, and others concerned with the legacy of interments.

To create a foundation from which historians and archaeologists alike might explore these questions, I combine methodologies of big data management and analysis with more traditional historical research. This involved the collection of burial records for over 2,000 individuals interred in the cemetery and burial records for over 5,000 interred in other cemeteries in Philadelphia. I compare patterns of mortality in the larger Philadelphia community and those listed in the parish burial records, with data gathered from individual remains at 218 Arch Street. This allows us both the identification of the disease environment in which the burials occurred and suggests why connections with descendants may have faded.

Bonomo, Mariano [7] see Castro, Juan

Booher, Ashley (Rice University) and Brett A. Houk (Texas Tech University)**[173]** *Processional Architecture at Chan Chich, Belize*

Chan Chich is one of the dozen largest Maya ruins in Belize, reaching its apogee during the Late Classic period, ca. A.D. 750. The site has a number of notable site planning characteristics, including a massive public plaza, and two wide, radial causeways, that show connections to neighboring sites and suggest common ideas about city building. Some of these shared planning ideas reflect top-down design concepts related to specialized political and ritual functions for various buildings and features. Although plazas, buildings, and causeways may have had multiple functions, we use excavation data, comparisons to other sites, and depictions in Maya art to argue that the Late Classic rulers of Chan Chich designed some of their monumental architecture to function in part as the theater for public rituals and spectacles, including processions. The processional architecture at Chan Chich included the radial causeways, two possible terminus shrines, a massive range building, the ball court, and the main plaza. We suggest that the political need to host public spectacles as a way to create social connections between the non-elite and the ruling family drove many site planning decisions at Chan Chich and other sites in the region during the Late Classic period.

Boozer, Anna**[181]** *Material Collaborators: Making and Unmaking Roman Imperial Power at Trimithis (Dakhleh Oasis, Egypt)*

Egypt's Dakhleh Oasis preserves a Roman city, its hinterland, and a Romano-Egyptian house known to be occupied by a city councilor. We can do more than simply read these material remains as physical symbols of Roman political power. The intimate collaboration between imperial agents and the material world allows us to interpret the making and unmaking of Roman imperial power on the local level. This paper explores fluctuations in imperial power at Trimithis (Roman Amheida) through the changes inscribed in domestic, urban, and extra-urban material residues. This explicitly multi-scalar approach demonstrates how the entanglements between power, agents, and things reverberated throughout Romano-Egyptian society. Ultimately, I suggest that the same material worlds that collaborated in imperial power are also implicated in its collapse.

Borck, Lewis (Faculty of Archaeology, Leiden University), Corinne L. Hofman (Faculty of Archaeology, Leiden University), Manfred Schäfer (Computer & Information Science, Konstanz Univ.), Angus A. A. Mol (VALUE Foundation/Prince Claus Fund) and Daniel Weidele (IBM T.J. Watson Research Center)**[83]** *Fingerprints of Community: Decolonizing Archaeological Data Analysis through Networks*

This paper uses the Nexus 1492 database, built over approximately 30 years of fieldwork, to examine ceramic attribute variability throughout the Antillean Islands. Regional ceramic analyses often focus on the construction of ceramic typologies that are then used to compare typological proportions, differences, and similarities at various spatial resolutions across temporal periods. Long-standing critiques of the use of typologies and taxonomies in archaeology (*sensu* Brew 1946; Gnecco and Langebaek 2014; Henry et al. 2017; Wylie 1992) focus on the reifying power of their fixed

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nature. Essentially, typologies become the epistemologies within which we examine the archaeological record, and create the historical narrative. This can become an issue when we also acknowledge that we interpret the past through our modern framework. Thus, in order to more fully separate ourselves from the analysis of the archaeological record, or to decolonize the analysis of archaeological data (sensu Rizvi 2015), we use a networked approach to examine the distribution of ceramic attributes within and between the Antillean Islands. Our goal is to approach a more emic understanding of how communities of practice emerged and to help construct an indigenous social history prior to, and after, the violent arrival of Europeans.

Borck, Lewis [287] see Athenstädt, Jan

Borejsza, Aleksander (Universidad Autónoma de San Luis Potosí), Arthur Joyce (University of Colorado at Boulder), Jon Lohse and Isabel Rodríguez López

[59] *Yuzanu 36, a Late Archaic Site in the Mixteca Alta*

We report the discovery and excavation of a site radiocarbon-dated to 3000 BC near the village of Yanhuítlan in Oaxaca. The site is buried under alluvium at a depth of 5m. At the time of its occupation it was situated on the floodplain of a large seasonal stream. The excavation of 30m² revealed several superimposed features, including hearths, small refuse pits, and a bell-shaped pit. Debitage of different varieties of chert is ubiquitous, as is heat-spalled rock of different lithologies. Several observations suggest that the site was repeatedly occupied by large groups of people performing multiple activities. In the course of its existence, the function of the excavated area of the site seems to have changed from primarily residential to one that involved the periodic burning of the floodplain vegetation and churning of the soil, most likely in preparation for the planting of crops. Exposures of the same palaeosol at other nearby locales suggest that the site spans several hectares. In contrast to the majority of excavated Archaic sites in Mesoamerica, which seem to represent short-term occupations focused on very specific activities, Yuzanu 36 is a good candidate for a multi-purpose riverine basecamp occupied during several months of the year.

[59] *Chair*

Borejsza, Aleksander [59] see Lohse, Jon

Borrazzo, Karen (CONICET-IMHICIHU & Universidad de Buenos Aires)

[200] *'To be or not to be...' A Taphonomic Perspective on Pseudoartifacts*

An anthropocentric perspective governs most of archaeological research into lithic assemblages. Hence, spatial and morphological trends in the lithic record are interpreted primarily in terms of human technological behavior without a systematic assessment of unintentional and/or non-human factors as sources of variation. Surprisingly, controversies on the natural vs. anthropic character of several lithic assemblages or 'industries' did not prompt the adoption of taphonomic approaches by lithic analysts on a regular basis. Here I argue that archaeologist's lack of knowledge about the effects of taphonomic mechanisms -whether natural or cultural- on stone and other knappable materials is the main obstacle towards a more comprehensive analysis of lithic assemblages. Furthermore, I propose that the study of taphonomic patterns (or background noise) in non-archaeological contexts is a mandatory task that researchers need to undertake in every region to achieve a more thorough understanding of lithic assemblage formation processes and trends. From the perspective advocated here both naturalistic and experimental constituents of actualistic taphonomic research are key to identify the agents involved in the formation of any fossil record. I present case studies from Patagonia (Southern South America) to illustrate the main contributions of lithic taphonomy to assess pseudoartifact components in the surface record.

Borrero, Luis Alberto [7] see Martin, Fabiana María

Borrero, Mario (University of California, San Diego)

[30] *The Archaeology of the Southern Belize Region in Context*

The region of Southern Belize is part of the Maya lowlands, an area that is geographically circumscribed, and located in-between several larger regional centers such as Tikal to the west, Caracol to the north, and the sites of Copán and Quiriguá to the southeast. The general history of archaeological investigations for this area are presented, along with site-specific studies from the Southern Belize Region. The current archaeological data of four major ancient polities of this region are described: Pusilhá, Uxbenká, Lubaantun, and Nim li Punit. The review of this archaeological history consolidates the data to consider questions of regional economic and political integration, in light of a region that shared many common cultural and architectural attributes. Finally, I conclude by exploring the possible internal regional dynamics of the Southern Belize Region, and what might have connected it to its neighboring areas. A brief discussion of potential future research to be carried out in the area by the author is shared.

Bos, Kirsten [143] see Mann, Allison

Bos, Kristen (University of Toronto)

[272] *Another Indigenous Feminist on Settler Colonialism in Archaeology*

This paper addresses the ongoing phenomenon of settler colonialism that permeates even the best intentioned "decolonizing" efforts. This paper gives the same credence to Indigenous and non-Western laws, stories, and epistemologies; practices what Sara Ahmed (2014) calls "citational rebellion;" and puts substantial weight into the lived experiences of Indigenous peoples in order to argue that when white archaeologists capitalize on Indigenous, Black, or People of Colour's (BIPOC) things, bodies, and stories to further their research or theories (i.e., the ontological turn), their work just recenters whiteness (Tuck and Wang 2012).

Bostwick, Todd [91] see Wright, Aaron

Boswell, Alicia [265] see Carpioux, Natalie

Boucher, Anthony

[35] *Referencing the Archaic on a Woodland Landscape on Florida's Northern Gulf Coast*

During a period of uniformity in ceremonial practices, coastal dwellers of the Lower Suwannee diverged from the architectural norm. Although these coastal people were under the larger influence of Woodland-period traditions, their construction efforts continued to follow ancestral ideals in the form shell rings and ridges. Here I argue that differences in terraforming practices along Florida's Northern Gulf Coast were a citation to a revered and observed local history formulated by natural features of their aquatic landscape. I do so by drawing on concepts borrowed from theories of landscape and memory as practice with a case study of Shell Mound, a Woodland-period civic-ceremonial center, which until recently has been overlooked due to its coastal qualities.

Boucher, Brandon [21] see Cottreau-Robins, Catherine (Katie)

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Boudreaux, Sarah Nicole (University of Texas at San Antonio), Laura Levi (University of Texas at San Antonio) and Christian Sheumaker (University of Texas at San Antonio)

[37] *Provisioning the Household: Exploring Domestic Economic Integration within Two Lowland Maya Communities*

It is now well recognized that Late Classic Maya communities varied politically, economically, and environmentally. The corollary, however, that community and household variation went hand-in-hand in the Maya area often goes unrecognized or under problematized. Research that explores differences in household provisioning practices across a range of communities should help to rectify this situation. Referencing data from two large prehispanic Maya sites in northwestern Belize, this paper asks the question, "How were households integrated into their broader communities?" Those who study sources of household variation often invoke one of two determinants: either that 1) proximity to resources or 2) relationships to leadership dictated household subsistence and crafting activities. To understand how both positions might have value and relevance with respect to the same bodies of data, this study will explore how aspects of household provisioning were correlated with different kinds of community organizations, environmental contexts, and structures of leadership.

Boudreaux, Sarah Nicole [28] see Levi, Laura

Boulanger, Matthew (Southern Methodist University)

[186] *Cultural Transmission in the Paleoindian of Eastern North America*

The Paleoindian (ca. 13,000–11,000 calBP) record of eastern North America has long been characterized as exhibiting a remarkable variety of fluted-point forms. The temporal, spatial, and cultural significance of this variety remains poorly understood owing to a sparse radiocarbon record as well as to inconsistencies in nomenclature and traits used to define point forms. Building on previous studies, paradigmatic classification is used to create replicable fluted-point classes from a large database of eastern finds. Outline-based geometric morphometrics is used to define and explore the morphospace of these classes, and character- and morphological-based phylogenetics are used to propose historical and spatial relationships.

Bourke, James [156] see Frazer, William

Bourne, Stephen [135] see Pentney, Sandra

Bouslog, Heather

[251] *Oakley Cabin: Revisited*

This presentation will give an overview of the past and present investigations of this African American archaeological site in the heart of Montgomery County, Maryland. Particular attention will be given to Oakley Cabin's historical context as a "geography of resistance."

Bovy, Kristine (University of Rhode Island), Virginia L. Butler (Portland State University), Sarah K. Campbell (Western Washington University) and Michael A. Etnier (Western Washington University)

[10] *Analysis of Sorting Errors of Animal Remains from Shell Middens: Lessons Learned from the Čixwicən Project*

Zooarchaeologists routinely analyze assemblages that were initially sorted into major animal type (birds, mammals, fish, invertebrates) by students or lab technicians with little experience in zooarchaeology. Sorting errors are likely made, which affect taxonomic representation and understanding of human-animal relationships. Recent study of the immense faunal assemblage (over 500,000 NSP) from Čixwicən, a 2800-year-old Lower Elwha Klallam village located on the coast of Washington (USA), allows us to systematically analyze trends in sorting errors. For example, 22.6% of the bird bones included in our sample were initially mis-sorted into other classes, primarily mammal (13.1%), but also fish (7.5%) and shell (2%). Fish bones were less frequently mis-sorted, but certain taxa with unusual elements were affected (e.g. ratfish dental plates, dogfish spines, skate dermal denticles, cod otoliths). 34% of all mammal bone chips (from tool production) were mis-sorted. Failure to recognize and mediate these errors could lead to significant biases. Projects should recognize the potential for sorting error at the beginning and train lab technicians in the kinds of faunal remains they will be encountering, including distinctive elements. Collaborative researchers need to develop protocols for transferring specimens, and those working with "legacy collections" should not assume the collections were sorted correctly.

Bowekaty, Carleton (Pueblo of Zuni)

[96] *Discussant*

Bowen, Corey (University of Illinois at Chicago)

[222] *Archaeology AskHistorians: Public-driven Inquiry and Outreach in the Digital Age*

With over 640,000 subscribers and 1.6 million unique monthly views, AskHistorians is the Internet's largest public history education forum. AskHistorians' simple Q&A format connects people with questions about the past to those with expert-level knowledge in the topic at hand, be it armored snails or erotic Moche pottery. Users of the popular, if controversial, social media site reddit post questions to the AskHistorians forum, and receive responses from a diverse panel of volunteers selected solely on demonstrated proficiency, not on outside credentials. AskHistorians is also an experiment in the public as a driver of historical education and research: users ask the questions, they vote on questions to increase visibility, and any user may answer, provided it meets the rigorous standards of scholarly quality. AskHistorians allows anyone with Internet access to set the course for the research and discussion of the past. This poster discusses the public experience, understanding, and misunderstanding of archaeology as represented in 6 years of AskHistorians, as well as the role of internet forums and social media in public archaeology. We examine how publicly directed engagement can inform our approaches, particularly in online context. Lastly, we evaluate social media strategies to connect with an alienated, misinformed public.

Bowers, Jordan

[229] *Space, Place, and Landscape at Cividade de Bagunte*

The Cividade de Bagunte is located on a prominent hill near the confluence of the Rivers Ave and Este. During the Iron Age, there likely would have been panoramic vistas that stretched well over 15 kilometers on a clear day, though this is mostly unnoticeable at ground level in modern times due to dense foliage. From the few areas that do not have trees and in combination with technology to 'see' through the trees, it is clear the site's viewshed includes several other Iron Age castros, as well as the hinterlands through which the two rivers run. This presentation uses landscape phenomenology and GIS to explore the sensory affordances granted to the inhabitants of Bagunte and investigates these factors in juxtaposition with other nearby settlements. The goal of this research is to highlight unique features of the settlement that may have allowed for exploitation of these sensory aspects to create an advantageous environment for the development of Bagunte into one of the largest settlements in the area.

Bowser, Brenda (CSU Fullerton)

[220] *Living Things in the Landscape: Gendered Perspectives from Amazonia*

Santos-Graneros writes about persistent places in Amazonia, places that have been used by generation after generation of people, because of their special qualities—waterfalls, mountains, caves. The current interest in the ontology of objects, inspired by the work of Ingold, Latour, Gell, and others

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has opened the door for archaeologists to consider how we can investigate the meanings of places and objects in these ways, as living things. Like objects, places are alive. The headwaters of the Tigre River in the Ecuadorian Amazon provides a dynamic context for understanding the meanings of ancestral places in terms of Native ontologies and the complex relationships underlying memory, materiality, landscape, history at multiple scales, cultural transformation, and identities. Reflecting on long-term ethnoarchaeological research in the Ecuadorian Amazon, I consider how gendered perspectives on living things in the landscape contribute to a greater understanding of the material record and these complex phenomena, including ancestral claims to places of the past.

Boyd, Carolyn (Texas State University)

[180] *Soul Expression: Speech-Breath in Pecos River Style Rock Art*

Pecos River style rock art was produced in the Lower Pecos Canyonlands of southwest Texas and Coahuila, Mexico during the Archaic beginning around 2700 BC. This style is characterized by finely executed anthropomorphic and zoomorphic figures arranged in highly-ordered, complex compositions. Pecos River style anthropomorphs are frequently portrayed with a series of dots emanating upwards from an open mouth. Zoomorphic figures of felines and deer are also represented with this pictographic element. "Soul Expression" explores the significance of this recurring motif in Pecos River style rock art and proposes that it is a graphic representation of breath, soul, and speech. In ancient Mexico, breath was believed to be a manifestation of one's soul. Breath soul, when expressed in ritualized speech or song, was a powerful force engaged in both creation and maintenance of the cosmos. Graphic representations of breath soul and speech first appear in Mesoamerica during the Middle and Late Formative periods (900 to 100 BC) as volutes or scrolls issuing from the mouth of anthropomorphic and zoomorphic figures. The speech-breath motif in Pecos River style rock art may represent the oldest graphic expression of the vitalizing breath soul.

[214] *Discussant*

Boyd, Carolyn [73] see Cox, Kim

Boyd, Carolyn [180] see Roberts, Jerod

Boyd, Charles (Radford University), Donna Boyd (Radford University Forensic Science Institute) and Marta Paulson (Radford University)

[223] *How Experimental Research in Forensic Archaeology Informs Archaeological Practice: Differentiating Perimortem Fracture from Postmortem Breakage*

Often perceived as a highly specialized and peripheral subfield of archaeology, forensic archaeology contributes to our understanding of not only forensic anthropology and forensic science, but also traditional archaeological practice. Forensic archaeologists' extensive knowledge of postmortem taphonomic effects on material objects has led to more precise interpretations of postmortem interval, environmental (including scavenger-induced) scattering and alteration of human remains, and site formation processes. Experimental taphonomic research has formed the core of these advances in site interpretation, particularly through its focus on differentiating perimortem (at or around the time of death) from postmortem events. This concept is illustrated through RU Forensic Science Institute (RUFISI) research aimed at differentiating perimortem bone fracture from postmortem breakage. A sample of 300 *Sus scrofa* ribs underwent controlled Blunt Force Trauma in the RUFISI at known periodic perimortem and postmortem intervals, ranging from 0 to 112 days of environmental exposure. Resulting rib fractures were analyzed macroscopically and microscopically to define signature fracture morphology across time periods. These results allow differentiation of perimortem fracture versus postmortem breakage and inform period of exposure and contextual history of field remains. Forensic archaeology research can therefore play an integral role in interpretations of traditional archaeological method and theory.

Boyer, Zachary

[43] *Nine Gal Tavern Faunal Analysis*

Over 400 pieces of bone and eggshell were collected during excavation at the Nine Gal Tavern site (11CH541) located in western Champaign County, Illinois in 1987 and 1991 by a team led by archaeologist Lenville Stelle. The majority of the remains analyzed were recovered within feature context in the immediate vicinity of the established Nine Gal Tavern structure. The purpose of this paper is to describe the identification of these faunal remains which are housed at the Anthropology Program at Parkland College. The identification of these remains was carried out as part of an Honors Project under the supervision of Steven Kuehn, Zooarchaeologist at the Illinois State Archaeological Survey (ISAS).

Boyle, Nathan

[289] *Discussant*

Boytner, Ran [130] see Kansa, Sarah Whitcher

Boza Cuadros, Maria Fernanda (Syracuse University)

[40] *Places, Ports and Their People: The Rise of the Peruvian Post-Colonial State in the Arequipa Coast*

In this paper I provide insight into the earliest decades of the Peruvian post-colonial state (1821–1879) from the vantage point of the Arequipa coast. The Andean south, with its center in Arequipa, had a traditional mercantile basis that favored improvements in trade, particularly those that resulted in the rapprochement of the city of Arequipa to the sea. After independence (1821–1824), new ports were established; the operation of certain coves sanctioned; and extractive activities shaped the region. The ports on the Arequipa coast supplied markets across the Andean south and Bolivia, and were a necessary and desired stop for European and North American ships sailing the Pacific. The economic networks that operated throughout the Arequipa coast encompassed a vast portion of the population. The region was strategic for the mercantile classes across the Andean south, the national government and foreign dignitaries in charge of the Peruvian trade. Utilizing archaeological, cartographic and documentary sources, and modeling in Geographical Information Systems, this presentation outlines the ways in which ideas of development global commodity trade impacted the configuration of the southern coastal landscapes, from the extraction of guano to the establishment of new ports and the construction of railroads.

Bracewell, Jennifer (McGill University)

[219] *A GIS Approach to Understanding Post-sedentary Hunter-Gatherers: A Case from Northern Finland*

This paper considers post-sedentism in hunter-gatherers: how the fact of having previously been sedentary affects the behaviour of societies that increase their mobility in response to changing environmental conditions. The case-study in question is the transition in Northern Finland from a sedentary Sub-Neolithic, supported by high concentrations of marine resources in the river estuaries of the region, to an increasingly mobile adaptation in the Early Metal and Iron Ages. Although village sites disappear, the tradition of building cairns and other stone monuments continues, and there is evidence of re-use of the older monumental landscape. The shifting patterns of monument construction, situation and clustering at the regional scale are analyzed using GIS techniques, and interpretations draw on resilience theory to try to understand the specific constraints a less-mobile history has on post-sedentary societies.

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Bracken, Justin (CUNY Graduate Center)

[252] *Preclassic Fortified Spaces: Within and Beyond the Ramparts at Muralla de León*

A third season of fieldwork at the fortified site of Muralla de León has expanded the scope of coverage for the project by mapping and excavating nearby hilltop occupations on the shores of Lake Macanché. The work serves to contextualize the space contained by the site's enceinte, a physical barrier that serves also as a boundary feature. Earlier investigations into the site interior and the ramparts of the enceinte itself begged for a comparative data set, as the significance of a barrier apparently built to keep people out relies in part on an understanding of what existed outside of it.

The hilltop excavations uncovered a sequence of occupation containing multiple periods apparently corresponding to the chronology of Muralla de León. Further, evidence in support of dating the defensive architecture at the site to the early phase of occupation there emerged from one of these centers, where a possible rampart wall was uncovered beneath later construction volume and set atop bedrock. Regardless of the implications for their role in conflict, these walls represent concern with controlling the movements of individuals at a monumental scale, and with physically restricting movement into a space.

[252] *Chair*

Bradbury, Andrew (Cultural Resource Analysts, Inc.) and Philip Carr (University of South Alabama)

[90] *Flintknapping Experiments and Middle-Range Theory*

The manufacture of stone tools in the present and careful recording of resulting flake debris over the past thirty years typified middle range theory building and allowed new insights into past human behavior, especially regarding mobility systems. Walter Klippel, best known for contributions to zooarchaeology, encouraged our going down a rocky path of middle-range theory building. Flintknapping experimentation has generated a great deal of individual data sets but the promise of "big data" achieved in many other fields has not been reached by lithic analysts. Here, we examine various flintknapping data sets and the possibility of a flake debris meta-analysis.

Bradley, Betsy (Goucher College)

[201] *We All Need to Talk about Archaeology in the CRM Power Nexus*

The archaeological component of the National Historic Preservation Act Section 106 consultation embodies an intersection of power that has privileged archaeologists and their work at the expense of accomplishing all legal mandates and has elevated the practice of archaeology as a science above any need for negotiation for project-specific approaches. This cross-disciplinary conversation is necessary as the current situation increasingly affects the ability of other Cultural Resource Management professionals to serve the public and conveys a sense of insufficient reflexivity and disinterest in change from within the discipline of archaeology. The intersections of power and ethical framing of proposed work in this arena must include reflection on past and current practice and incorporate the expectation for flexibility that the regulations articulate. A complicated (non)negotiation of an archaeological program for an urban-renewal scale federal project in a legacy city illustrates the fault lines and power plays in historic archaeology practice. The difficult challenges include the consideration of both ethically and equitably providing mitigation for the loss of resources for the current, as well as some future, sectors of "the public."

Bradley, Bruce (University of Exeter)

[79] *Legends of the Dinsmore Hilton*

Learning to be an archaeologist is a craft that comes in many forms from formal academic training, field and lab work, to informal unstructured experiences. These become known through academic degrees, peer reviewed publications, project reports, conference presentations and interactions with peers, colleagues, the public and even the media. Formal training is listed in detail in personal vitae and may be measured and judged by the outputs but how we do archaeology as individuals is also the result of our personal experiences, not least of which are the projects we work on and the people with whom we work and interact. Legends of the Dinsmore Hilton chronicle these experiences. To date, these are primarily in the form of oral tradition as many of the participants are still extant and written versions might be subject to civil suits. As time passes my memory becomes ever more selective and inventive. Never the less, working for and with Dennis on the High Plains of Eastern Colorado in the mid-1970s has had a fundamental influence on who I have become as an archaeologist and person.

Bradley, John [180] see Steelman, Karen

Bradshaw, Kayla

[193] *Discussant*

Bradshaw, Ryan (California State University, Sacramento), Martijn Kuypers (California State University, Sacramento), David Zeanah (California State University, Sacramento) and Robert Elston

[92] *Technological Organization of Two Prearchaic Sites in Grass Valley, Nevada*

The research presented here works from the proposition that patterns in lithic assemblages reflect human organizational strategies. Preliminary investigations of 26La4434, a single component Prearchaic site in Grass Valley, reveal a pattern of large game exploitation in proximity to a Pleistocene shoreline. Standard metric, morphological, and edge-wear analysis of the flaked stone assemblage is used to evaluate whether the site facilitated access to local wetland resources and large game intercept hunting. We compare these results with the Knudtsen site (26La781), a dense site with a diverse assemblage that suggests a broad range of tasks and site functions. We argue that the observed technological organization is conditioned by several factors, including the local environment, raw material availability, and group mobility.

Bradshaw, Ryan [92] see Elston, Robert

Brady, Ashley and Tanya Peres (Florida State University)

[102] *Stones in the Shell: A Lithic Analysis of a Woodland Shell Ring in Florida*

The ability to manufacture and modify tools was an essential skill for the people of the past. Each tool manufactured served at least one purpose, and often multiple purposes. This includes flakes from tool modification and reworking. This poster represents the results of analysis of flakes and debitage from the Woodland period (ca. 2400 rcy BP) shell ring site of Mound Field (8Wa8), along the north Gulf Coast of Florida. Over 2,000 flakes, tools, and other modified lithics recovered from shell midden and feature contexts were analyzed as part of this research. The lithic data are integrated with the preliminary zooarchaeological, feature, and ceramic data to allow for a more robust interpretation of tool use and function.

Brady, James (Cal State L.A.)

[258] *Joseph Ball and the Reformulation of the Protohistoric: Revisiting Critical Issues*

At the 1985 Maya Ceramic Workshop, Arthur Demarest noted the intense interest in the Protohistoric. Indeed, ceramists with only a mammiform support and a handful of sherds would pause to speculate on the significance of a statistically insignificant number of sherds. During the 1990s, Joseph Ball and I doggedly worked to reexamine every aspect of the Protohistoric issue. Aided by contributions of a number of colleagues, the resulting

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document attempted to strip the Protoclassic of association with a specific temporal period and specific culture-historical events, reducing it to a simple ceramic stage. In the wake of the publication, a number of attempts have been made to reestablish a Protoclassic. This presentation discusses the flaws in those proposals and clarifies points made in the original publication.

[134] *Chair*

Brady, Liam (Monash University)

[113] *Referencing the Relational in 'Saltwater' Rock Art, Northern Australia*

Over the last decade, a major challenge for archaeologists has focused on understanding the relationship between people, things and the sea. As part of this effort archaeologists have increasingly focused their attention towards rock art as a symbolic means to referencing a maritime identity. At one level, identifying this connection can be relatively straightforward via marine-themed imagery (e.g. watercraft, marine animals) but what else can we draw upon to understand the nature and depth of this relationship? In this paper, we turn to the ethnographic record as a lens to explore how specific motifs and sites from two locations in northern Australia (western Arnhem Land's Wellington Range, and the Sir Edward Pellew Islands in the southwest Gulf of Carpentaria) are embedded in complex social and cultural networks for Australia's 'saltwater people'. At the core of our argument is the need to recognize how aspects of the ethnographic record such as song, kinship, cosmology and memory can play a pivotal role in accessing the meaning and symbolism of 'saltwater' rock art as well as how these images encode or communicate information about people's social identities.

[113] *Chair*

Brady, Niall [98] see Connell, Samuel

Bragdon, Kathleen (William and Mary)

[22] *Re-evaluating Wampum: Wearing Wealth in Native Southern New England*

For more than fifty years, scholars have been debating the role of the shell "currency" known as wampum (wampampeag), which began to circulate among the Native societies of New England in the seventeenth century, stimulated by the Dutch and English fur trade in the region. Following an assessment of current scholarship on the Dutch in New England in the early contact era, this paper further explores the role that wampum played within Native societies as a symbol of wealth, as well as its tangible embodiment. In particular, the rich embellishment of clothing using wampum, especially among Native elites and documented in many sources is considered in light of recently revived phenomenological theories of value.

Braje, Todd (San Diego State University)

[161] *A Meaningful Anthropocene?: Golden Spikes, Transitions, and Boundary Objects*

Despite opposition by a number of anthropologists, archaeologists, sociologists, and other historical and social scientists, a proposal to designate a geologic epoch of humans, the Anthropocene, is moving forward with a proposed starting date sometime in the last 50 years. The Anthropocene Working Group (AWG) and other, mostly, geological scientists have focused on the stratigraphic signatures for the boundary marker in lieu of understanding the long-term processes that have resulted in human domination of the Earth. As a growing number of papers that explicitly reference the Anthropocene are published, a theme that ties them together is the general lack of continuity on how we should define an Anthropocene. While the AWG strives to reach a consensus definition, we argue that the Anthropocene is best viewed as a 'boundary object,' where it can be adaptable enough to incorporate multiple viewpoints but robust enough to be meaningful within different disciplines. In doing so, we can maintain the original intent of an Anthropocene epoch, as a call-to-arms for future sustainable management of local, regional, and global environments, and fundamentally reconfigure established boundaries between nature and culture and the social and natural sciences.

[161] *Chair*

Bramstäng Plura, Carina (Swedish National Historical Museums) and Petra Nordin (Swedish National Historical Museums)

[23] *Archaeological Traces of Consumption of Colonial Goods in Eighteenth Century Gothenburg on the West Coast of Sweden*

The fortified city of Gothenburg was established around 1620, constructed when the Swedish trade intensified its involvement in the world sea commerce. Parts of the fortification, a Garrison Cemetery and two old country estates have been archaeologically excavated as a result of large-scale development of infrastructure in the city.

The excavation results give new perspectives on the garrison and its cemetery. Osteological analysis contributes to the interpretation of everyday life among garrison soldiers and their families. Indications of social change in the population were discovered. Exotic commodities had become available and popular through world sea commerce; rapidly adopted by the gentry of the town. A widespread increase in consumption of colonial goods such as sugar, coffee and tobacco is evident.

During the 1800th century some of the old country estates developed large-scale specialised cultivation of a mono-cultural and industrial kind, for example growing tobacco. Knowledge of new commodities, such as colonial products, brought status and provided households with the possibility to advance in social position.

Branam Macauley, Kelly (St. Cloud State University)

[166] *An Ethical Anthropology—What This Cultural Anthropologist Learned from Larry Zimmerman*

From American Indian representations in film, to working with descendent communities and sacred sites, to understanding families experiencing homelessness, Larry Zimmerman's scholarship, guidance, and way of being an anthropologist has greatly influenced the intellectual and professional development of many cultural anthropologists. It is an ethical anthropology that transcends any one subfield of anthropology, which includes owning one's disciplinary history and identity, learning from it and changing the discipline from the inside by not just the work you do, but how you do the work, that is the focus of this paper. As my faculty mentor at IUPUI, Larry always led and taught by example, and I witnessed his ethical anthropology in constant practice. Part discussion of my own intellectual history, part analysis of pedagogy, and part examination of method, I discuss Larry's ethical anthropology and his contributions to not only archaeology but to four subfield anthropology.

Brandes, Ulrik [287] see Athenstädt, Jan

Brandl, Michael (Austrian Academy of Sciences, (OREA)) and Daniel Modl (Universalmuseum Joanneum, Graz)

[140] *The Rein Basin Chert Mine, Styria, Austria: A Neolithic Center for Tabular Chert Quarrying*

Since 2009, the Neolithic chert quarrying site in the Rein Basin in Styria (Austria) has been the focus of a multidisciplinary research project. A mining area for tabular chert, approximately 10 hectares in size, was established at this locale in the course of a series of archaeological excavations, core soundings and a geophysical prospection. At Rein, tabular chert occurs in residual loams and mined in up to four meter deep shafts. According to this evidence, the site is only the second archaeologically traced Neolithic chert mine in present-day Austria.

The extracted raw chert plates suitable for chipped stone tool production were either worked on-site or shaped into bars, and subsequently transported into the settlements for further processing. Radiocarbon dates from charcoal samples derived from the prehistoric backfilling of the shafts indicate the

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Rein chert mine was in operation between 4500 and 3800 BC.

Additionally, the raw material was petrographically and geochemically characterized, allowing for accurate provenance studies of artifacts from prehistoric sites produced from Rein chert. These analyses revealed prehistoric distribution networks indicative of extensive contacts between Neolithic groups in the southeast Alpine realm, and afford the investigation of socio-economic developments on a supra-regional scale.

Brandt, Steven (University of Florida), Alice Leplongeon (Muséum national d'histoire naturelle, France) and Clément Ménard (Université Toulouse-Jean Jaurès, France)

[198] *Hunter-Gatherer Responses to the "Early" African Humid Period ~15–12 ka*

Recent paleoclimate studies indicate rainfall increased dramatically over many parts of northeastern and eastern Africa at the end of MIS 2 and the hyper-arid LGM ~14.7 ka, thereby marking the beginning of MIS 1 and the "African Humid Period" (AHP). These studies also suggest that not only should the "early" AHP be decoupled from the start of the Holocene some 3000 years later, it should also encompass the cooler, more arid Younger Dryas (12.9–11.7 ka). This paper explores two key questions: 1) can we identify archaeological evidence for hunter-gatherer activities in this region during the early AHP ~15–12 ka; and 2) if so are there technological, settlement, dietary and other behavioral changes that can be linked to climatic change or other possible causal mechanisms? A preliminary review of the early AHP archaeological record shows that despite a small data set and a limited number of chronometric ages, there appears to be few sites in the Nile Valley, while in eastern Africa there are substantially more. We conclude by discussing how a richer understanding of the early AHP archaeological record might better prepare and inform us of the significant human responses to the later part of the AHP ~12–5.5 ka.

Brannan, Stefan (New South Associates)

[5] *Settlement Scaling in the Eastern Woodlands of the United States, ca. 3500 BC to AD 1700: Size, Monumentality, and Public Space*

The concept of settlement scaling is increasingly being utilized in archaeology to empirically evaluate mathematical properties of urban and non-urban settlements. However, principles based on settlement scaling theory have yet to be tested in the Eastern Woodlands of the United States despite the existence of a robust sample of settlements, including those containing monumental architecture. As part of a broad regional study, I collected spatial data on settlement size, monuments, and public spaces at 70 sites located in the Eastern Woodlands occupied between 3500 BC and AD 1700. In general, sites exceeding 20 hectares exhibit distinct characteristics related to monumental architecture and public space when compared to smaller examples. A central question is whether these larger settlements possess fundamentally different scaling relations or if the former merely represent scaled-up versions of the latter. This paper explores the relationship between those attributes to determine quantitative patterns and qualitative differences between small and large settlement patterns. The results are used to develop a generalized theory of settlement scaling in the Eastern Woodlands which is then employed to explain the patterns of aggregation and dispersal in the lower Chattahoochee River valley of the United States, ca. AD 1100–1500.

Brannan, Stefan [266] see Coker, Adam

Branscome, Mason [88] see Gidusko, Kevin

Braswell, Geoffrey (UC San Diego)

[176] *Discussant*

[258] *Chair*

Braun, David R. (George Washington University), Matthew Douglass (University of Nebraska-Lincoln), Benjamin Davies (University of Auckland) and Jonathan Reeves (George Washington University)

[200] *Whole Assemblage Behavioral Indicators: Expectations and Inferences from Surface and Excavated Records at Elandsfontein, South Africa*

Large scale surface surveys represent singular insights into the landscape scale variation in behaviors. Detailed investigations of the spatial distribution of artifacts across large spatial extents allow archaeologists to investigate a landscape as a single site. Surface assemblages have the advantage of large sample sizes and large aerial extents. However, biases associated with the formation processes of surface assemblages often undermine our confidence in the behavioral inferences derived from these records. Here we investigate patterns of behavior recorded in several whole assemblage behavioral indicators for seven assemblages recovered from the Acheulean dunefield site of Elandsfontein (800 ka -1 Ma) from the Western Cape in South Africa. Large surface and excavated assemblages of stone artifacts from similar locations allow us to investigate the impact of deflation processes on behavioral inferences. We use agent based models to develop expectations about the spatial variation in behaviors across this ancient landscape. Results suggest that the processes that created deflated surface assemblages have varied impacts on whole assemblage behavioral indicators. Some of these proxies of behavior appear to provide faithful representations of patterns derived from excavated assemblages. We compare these behavioral inferences to contextual data collected from excavated contexts.

Braun, David R. [41] see Beaudoin, Ella

Braun, David R. [41] see Hlubik, Sarah

Bray, Tamara (Wayne State University), Leah Minc (Oregon State University) and Sergio Chavez (Central Michigan University)

[100] *Recent Research in Copacabana, Bolivia, the Intinkala Sector*

Copacabana has been a pilgrimage destination and a site of extraordinary reverence from Formative times to the present. Together with the Islands of the Sun and Moon, it formerly comprised one of the most sacred ceremonial complexes in the Inca Empire. Recent archaeological research in Copacabana has focused on the Intinkala sector located just east of the modern basilica. The principal aim of the first season was to ascertain the nature of Inca engagement with this powerful locale as evidenced through spatial and material patterns and practices. Fieldwork conducted in 2016 included a geophysical survey of the area, photogrammetric documentation of the cutstones, topographic mapping of the site, and excavations. The excavations produced evidence of both large and small rectangular structures associated with the above-ground sculpted stones and outcrops, as well as an Inca midden. Subsequent analyses have focused on 3D spatial rendering of features identified, compositional study of the variety of Inca ceramics recovered using INAA, and comparative assessments. The study ultimately aims to provide insights into the ways in which topographies of the sacred are constructed; how attachments to place are formed and transformed over time; and how power, place, and identity are materially and mutually constituted.

[181] *Discussant*

[181] *Chair*

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Breault, Sarah**[288]** *Ceramics and Community: A Yucuita Phase Ceramic Cache at Etlatongo*

Feasting is a well-documented phenomenon in Mesoamerica as a means of community integration and interaction. Ceramic analysis of Op. B, Pozo 20, Feature 1 from the site of Etlatongo may point to one such feasting event at the site. This Yucuita phase (500–300 BC) feature was a primary refuse deposit of ceramic, lithic, and faunal artifacts intermixed with extremely ashy sediment, probably from a specific event. An overview of the stratigraphy of the feature and an inventory of the assemblage will be given, with a particular focus on ceramics, with a summary of primary data that considers pastes, forms, and slips of vessels as well as details of technological style such as wall thickness and angle, as part of an ongoing effort to explicate the full range of Yucuita phase pottery. Patterns will be compared with other Yucuita phase collections in order to verify if these patterns occur throughout the region or are specific to particular deposits and/or the site of Etlatongo. A consideration of possible depositional events will follow, based primarily on frequency of vessel forms as compared to other Yucuita contexts from both this site and the site of Yucuita.

Breiter, Sarah (Northwestern University)**[167]** *A Long Relationship: The Reuse of Monastic Stones after the English Reformation*

The English Reformation had a swift impact on the people of the rural landscape. The movement away from the Catholic church altered the relationship that people had to the physical manifestation of church authority. During the Dissolution of the Monasteries, Church landholdings were sold off to private owners, and the architectural core was repurposed for secular use. Most of the research on the Dissolution focuses on how the new landowners reused the land, or converted churches into manor houses. However, people who lacked the means and resources to make large-scale changes to the former monasteries still found a way to express their new relationship through removing and reusing the stone in the farms and villages near the monastery. At Thornton Abbey, multiple agricultural and village properties were surveyed for monastic stone. The stone was reused as building material, garden decorations, and, more recently, as gifts. How the stone is used appears dependent on the variety and the age of the property, indicating that the stone was interpreted in different ways based on the individuals and their social context. People continue to reuse the stone, marking the enduring presence of the Church on the landscape.

Brenner, Mareike [124] see Conard, Nicholas

Brenskelle, Laura [217] see Emery, Kitty

Breske, Ashleigh (Virginia Tech)**[70]** *Politics of Repatriation, Formalizing Indigenous Cultural Property Rights*

This theoretically-oriented project engages discussions of historical arguments for the repatriation of indigenous cultural property that ultimately led to the creation of the Native American Graves Protection and Repatriation Act (NAGPRA) in 1990. I will investigate how institutions and cultural values mediated changes in repatriation policy both nationally and internationally. By examining ownership paradigms and institutional power structures, it is possible to understand the ramifications of formalizing repatriation. The current binary of cultural property nationalism/cultural property internationalism in relation to cultural property ownership claims does not represent the full scope of the conflict for indigenous people. Inclusion of a cultural property indigenism component into the established ownership paradigm will more fully represent indigenous concerns for cultural property held in museums and other collections. Looking at the rules, norms and strategies of national and international laws and curatorial policy within museum institutions, I will also argue that there are consequences to repatriation claims that go beyond possession of property and a formalized process (or semi-formalized approach internationally) like NAGPRA can aid in addressing indigenous rights.

Bretzke, Knut (University of Tuebingen)**[227]** *A Probabilistic Approach to Study Diachronic Patterns in Human Behavior: A Case Study from the Paleolithic Sequence at Jebel Faya, UAE*

Jebel Faya is a key Paleolithic site in Arabia. The site provides important data on the history of human occupation of desert environments during the Late Pleistocene. One central question is if the observed diachronic pattern of occupation is largely driven by climatic change, as often assumed, or if other factors such as adaptation processes play significant roles. Based on the assumption that survival in the often unpredictable environments of SE Arabia requires increased behavioral flexibility and risk minimizing strategies this paper examines Jebel Faya's Paleolithic stone artifact assemblages with regard to economization of lithic raw material and the intensification of social relations. Attributes such as production efficiency and re-use potential represent raw material economization, while technological complexity, occupation intensity and raw material provisioning are used to deduce an indirect estimate for the intensity of social relations. To assess the degree of economization and social relation, the archaeological assemblages are compared to data modeled under optimality assumption using a probabilistic approach based on Naïve Bayes classifier. These results were used to track changes in social relations and raw material economy through the archaeological sequence from Jebel Faya to see if these data provide meaningful information on differences in social learning.

Bretzke, Knut [124] see Conard, Nicholas

Brewer, James T. [305] see Delaney, Colleen

Brewer, Katherine (University of New Mexico)**[115]** *A Comparative Analysis of Historical Artifacts Recovered from Room 28*

Historical artifacts from Room 28 in Pueblo Bonito provide a unique opportunity to investigate what the Hyde Exploring Expedition, Moorehead, and National Geographic Society excavations left behind during their excavations between 1896 and 1927. Using the 2013 UNM excavations in Room 28 as a starting point, analysis of the historical artifacts found in excavation and stabilization over the last century provides an important perspective on how those early excavators discarded their own material culture in the rooms of Pueblo Bonito. As a whole, this analysis provides an archaeology of the early "archaeologists" of Pueblo Bonito.

Brewington, Seth (Hunter College, City University of New York)**[34]** *Fowling and Food Security in the Faroe Islands*

Seabird fowling has long played an important role in the traditional domestic economy of the Faroe Islands, a small North Atlantic archipelago. Direct evidence for seabird exploitation in the earliest period of Faroese prehistory has been lacking, however. In this paper, I present new archaeofaunal evidence for substantial and sustained seabird exploitation in the Faroe Islands from the 9th through 13th centuries CE. The data suggest that seabirds represented a significant resource in the Faroese subsistence economy from the earliest Norse settlement onward. Fowling thus represented one component of a broad-based subsistence regime that was aimed primarily at decreasing vulnerability to food shortfalls, particularly those caused by failures in the agro-pastoral economy. When compared to typical contemporaneous archaeofauna from Norse Greenland and Iceland, the role of fowling in the Faroese domestic economy is quite large. The Faroe Islands in this respect appear more similar to some northern insular communities of the British Isles, and the Outer Hebrides in particular.

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Bria, Rebecca (University of Minnesota—Twin Cities)**[297]** *Interlinking Practices and Community Assemblages: Agriculture and Ritual in Ancient Hualcayán, Peru*

This paper combines assemblage theory with ritual economy in the study of long-term community formation at prehistoric Hualcayán, in highland Ancash, Peru. In particular, it explores how the people of Hualcayán interlinked and coordinated their practices of building, food production, and ritual consumption to assemble a Recuay community during the Andean Early Intermediate Period (AD 1–700). It traces the archaeological evidence of how religious ideologies, social group divisions, and agricultural technologies shifted together during this process of community formation, including how ritual and food production practices and materials were integrated into particular events and local spaces. It concludes that the integration of these practices was essential to establishing common goals, consent, and material dependencies between a community of builders, ritual participants, and food producers. Ultimately, the paper argues that to examine community is to inquire into the overlapping ritual and labor practices that constitute social interaction and create meaningful relationships between people and non-human actors such as land, plants, animals, and supra-human beings.

[297] *Chair*

Bria, Rebecca [292] see Walter, Doris

Briceño, Jesús [297] see Bardolph, Dana

Briceño, Jesús [165] see Billman, Brian

Briceño, Jesús [165] see Hudson, Jean

Bridgman Sweeney, Kara [24] see Sweeney, Alex

Briggs, Emily [304] see Melton, J. Anne

Briggs, Rachel (University of North Carolina-Chapel Hill)**[220]** *The Mississippianization of Women in the Black Warrior Valley of Alabama, A.D. 1120–1250*

By A.D. 1120 in the Black Warrior Valley of west-central Alabama, a Mississippian identity, predicated on the dissemination and subsequent adoption of maize, had firmly begun to take root at what would become the ritual-ceremonial center of Moundville. Traditionally, researchers have modeled the origins of Moundville within a political-economic lens: the growing aspirations of elites, who are implied to be male, are supported and fueled by stores of and feasts of maize, which is treated primarily as a resource to achieve their ambitions. However, through a careful analysis of the early landscape of practice of the hominy foodway of the Black Warrior Valley, I suggest that during this early period, it was not the activities of men, but instead those of new and endemic women to the area that first sparked and then united the early Moundville landscape. This analysis further suggests that what has largely been interpreted as a homogenous cultural expression for all people regardless of gender within the area was instead more heavily driven by, and had a greater impact on, female gendered activities.

Brighton, Stephen (University of Maryland)**[296]** *The Materiality of Cultural Resilience: The Archaeology of Struggle and Transformation in Post-famine Ireland*

Cultural resilience or collapse has been the focus for the study of prehistoric and proto-historic societies. Little, if any work in historical archaeology, or the archaeology of the modern world, has linked the impact of traumatic natural events and social, economic, and political structures to how cultural groups respond. In this paper, cultural resilience theory is employed to discuss the capacity of a culture to maintain and transform its world-view, cultural identity, and critical cultural knowledge. In this context, extreme events, challenges, and societal or cultural stressors inhibit or test the structure of a culture. Such is the context of the decades following Ireland's Great Hunger. This presentation details the on-going research on Ireland's cultural resilience in terms of the impact of the mid-nineteenth century Great Hunger. This paper focuses on the author's archaeological research in Skibbereen, County Cork seeking to find the material manifestation of cultural resilience in the decades following the Great Hunger. The aim is to use the material remains to illustrate how Ireland's cultural structure once on the brink of collapse was resilient enough to transform after losing half its population to either emigration or death.

Brinkman, Adam (UMass Boston)**[104]** *Ollas and Inequality: Reflections on Space, Ceramics, and Power Relationships at the Sanchez site.*

Spanish exploitation of Indigenous people's labor was a foundational component of the initial colonization of New Mexico. Pueblo Indians and enslaved Plains peoples worked on Spanish public infrastructure projects, built Spanish Missions, tended friar's livestock, and helped with the daily operations of outlying estancias. At the Sanchez site, evidence of daily labors can be seen in broken manos and metates scattered around the site, the presence of the adobe structures that were built by Pueblo Indians, and the distribution of Pueblo Indian ceramics in the Spanish home and adobe barn. By studying the spatial distribution of these materials throughout the Sanchez Site, this poster seeks to explore how labor exploitation was reinforced and perpetuated throughout the early colonial period.

Brinkmann, Robert (Hofstra University)**[215]** *The Sustainability Lessons from the Archaeological Work of Lynne Goldstein: The Curious Environmental Stories of Aztalan, Fort Ross, and Michigan State University*

Sustainability can be defined as meeting the needs of the present without depleting natural resources for the future. With such a time focused definition, there is no doubt that the meaning of sustainability changes over time and by culture. An examination of three of Lynne Goldstein's field sites, Aztalan, Fort Ross, and Michigan State University, provides an opportunity to dissect our modern take on sustainability. At Aztalan, sustainability of Native American culture comes into question as there is evidence that social equality did not lead to sustainable conditions. At Fort Ross, environmental conditions created problematic challenges for a pioneer settlement. At Michigan State, economic and environmental changes caused rapid constructions of what it means to be sustainable. Each case highlights the significance of the three pillars of sustainability (environment, social equity, and economic development) in analyzing past and present cultures. When taken together, the three sites challenge today's thinking about the meaning of sustainability and how it can be achieved.

Britt, Krystal (University of Illinois at Chicago), Claire Barker (Arizona State Museum), Samantha Fladd (University of Arizona, University of Cincinnati) and Danielle Soza (University of Arizona)**[218]** *Sunset at Rock Art Ranch: Human Use and Occupation of the Middle Little Colorado River Valley before the Homol'ovi Settlement Cluster*

From 2011–2016 the Rock Art Ranch (RAR) field school, directed by E. Charles Adams and Richard Lange, surveyed about 17 square kilometers and conducted excavations at three sites to understand how groups utilized the prehistoric landscape of the Middle Little Colorado River valley. Research at RAR, located near the modern town of Winslow, Arizona, sheds light on over 10,000 years of human settlement and contextualizes over three decades of work by Adams and Lange at the nearby Homol'ovi settlement cluster. During six seasons, the RAR field school documented 220 sites

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representing use beginning with mobile hunter-gatherer populations through Ancestral Puebloan communities of the Pueblo III period. Additionally, ceramic evidence indicates that visits by Hopi people continued through the early Historic period—demonstrating the continued importance of this area.

The intensive survey and excavation data collected by the RAR field school is regionally significant as very little of the surrounding landscape has been investigated outside of the Homol'ovi settlement cluster of the Pueblo IV period and the extensive rock art from which the ranch derives its name. In this paper we summarize our findings, which help to contextualize the social and physical landscape prior to aggregation at the large Homol'ovi pueblos.

Brittingham, Alexander (University of Connecticut), Michael Hren (University of Connecticut), Gideon Hartman (University of Connecticut), Keith Wilkinson (University of Winchester) and Daniel Adler (University of Connecticut)

[177] *Organic Molecular Proxies for Fire in Archaeological Sediments*

A number of different direct and indirect proxies are used to identify fire at archaeological sites. We propose a new organic molecular proxy for identification of anthropogenic fire in archaeological sediments, polycyclic aromatic hydrocarbons (PAHs). These molecules are a byproduct of the incomplete combustion of organic biomass, and are preserved well on deep time scales. We applied this proxy to Lusakert Cave, a Middle Paleolithic site in the Hrazdan Gorge, Armenia. From these same samples, we also extracted n-alkanes, the molecular remains of the epicuticular waxes of terrestrial plants. We analyzed the δD and $\delta^{13}C$ values of the n-alkanes to measure vegetation and hydrological changes at the site during its occupation. This coupled record of climate and fire from sediments containing archaeological material gives insight into the ability of Middle Palaeolithic hominins to control fire through changing ecological regimes.

Britton, Emma [95] see Schleher, Kari

Brizuela Absalón, Álvaro [42] see Vargas, Amilcar

Brizuela Casimir, Alvaro and Gloria Biffano Marcial

[260] *El sitio arqueológico de Barrigón. Un cementerio precolombino del Gran Chiriquí*

We present a review of the data obtained during the "Proyecto de Rescate Arqueológico Estí (PRAE)" that took place between 2000–2003 in the context of the environmental mitigations of the Estí hydroelectric project; and with special attention to the Barrigón site.

Barrigón is a cemetery site from prehispanic times localized near to the Gualaca city in Chiriquí province (Panamá). This kind of "necropolis" was placed in the flat top of a little hill a few meters from the Barrigón river. We identify a typology of graves and explore at least two of each one, several artifacts were recovered in acceptable conditions in order to made conservation or restoration actions whit diffusion meaning. AES Panamá (the project promotor) build a little local museum in Gualaca fist square, to present this legacy at the region and national community.

The material cultural that has been rescued, both ceramic and lithic, has been identified as Aguas Buenas (Bugaba) tradition.

Brochado De Almeida, Pedro

[229] *The Cividade de Bagunte Archaeological Project*

The Cividade de Bagunte is the most publicized archaeological site of the Municipality of Vila do Conde and is classified as a Portuguese National Monument. Located on a mound with great visibility over the territories to the north and south of the Ave River, approximately 30km north of Oporto city, it called the attention and interest of various archaeologists such as Ricardo Severo and Martins Sarmiento, in the end of the 19th century, and F. Russell Cortez in the 1940s. F. Russell Cortez organized excavation campaigns at the site that uncovered a mixture of Castrejo and Roman type buildings and structures, distributed into orthogonal spaces that already have the seal of a Roman influence in the region. The urban reorganization of the town happened in the 2nd half of the century, with the Flavian dynasty. Since the 1990s, the Municipality of Vila do Conde is running a project to preserve, study and provide public access to the archeological site. This presentation is a way to publicize, in an international environment, the achievements made by this effort.

[229] *Chair*

Brock, Terry (The Montpelier Foundation)

[215] *Mentorship, Professionalism, and the MSU Campus Archaeology Program*

In 2008, Lynne Goldstein founded the Michigan State University Campus Archaeology Program. I had the opportunity to serve as the first Campus Archaeologist, a position that I thought would give me much needed experience in conducting and leading archaeological excavations. In addition to this, I ended up learning more about becoming a complete professional and public archaeologist, the intangible skills that are so difficult to teach, but that Dr. Goldstein has bestowed upon many of her students and staff through this program. This paper will talk about the importance of the Campus Archaeology Program, the early years of its development, and how Dr. Goldstein's mentorship allowed me to learn about the elements of being a professional archaeologist that are so often ignored, go untaught, or viewed as being in the way of pure academic scholarship.

Brodie, Laura (University of WI-Madison)

[260] *Settlement Locations and Soil Fertility in the Volcán Barú Region of Panama*

Analyses of settlement locations (such as hamlets and farmsteads) within the Volcán Barú region of Panama and their associated periods of occupation suggest that during certain times, such as the Chiriquí Period, soil fertility was an important factor in determining the location. However, during other periods, it does not seem to have been significant. There also is a centralization of the population during the late formative, or Late Bugaga Phase, which correlates with previous findings of Barriles and Pitti-Gonzalez getting larger during that phase. Soil fertility does not appear to have been an essential feature of the first settlements in the region.

Brody, Rachel (Boston College) and Rebekah Mills (Barnard College)

[23] *Castles in Communities: Recent Findings in the Field*

The archaeological and anthropological field school Castles in Communities, organized by Foothill College, completed its third field season this past summer at the site of Ballintober Castle, County Roscommon, Ireland. The construction of Ballintober Castle (early 14th century) is attributed to the Anglo-Norman Richard de Burgh, Earl of Ulster. Shortly after its Anglo-Norman occupation, the castle came under Irish control (1381) and has been the property of the O'Connor family ever since. After being attacked in 1642, the castle was abandoned as a residence. The castle now lies in ruins, portions stand 4m high. Extensive non-invasive field survey and excavation have been performed, not only on the site of the castle, but within its surrounding landscape and adjacent fields. This paper will present the findings exposed in excavations conducted in the north-east tower of the keepless castle. Excavation has shown a complex stratigraphy and multi-phased building construction. It will be postulated that the identified different phases in castle construction can be linked to changed hands in ownership, reconstruction in response to outside attack, and period remodeling efforts.

[23] *Chair*

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Broehl, Kristen (California State University, Chico), Colleen Milligan (California State University, Chico), Kelsie Hart (California State University, Chico), Karin Wells (California State University, Chico) and Vanessa Reeves (California State University, Chico)

[179] *Paleopathology and Non-specific Indicators of Stress from Point San Jose*

Paleopathology encompasses the understanding of disease processes that affect skeletal remains as well as the timeframe and context in which they occur. Although most such studies focus on changes observed at an individual level, the Point San Jose assemblage provides a challenging perspective on paleopathology because it consists of separate skeletal elements lacking association with whole individuals. Consequently, our focus is on the types of bony changes seen rather than specific diagnoses of the etiology of those changes. A total of 240 (12%) bones of approximately 2,000 observable elements show changes in bone shape, bone loss, bone formation, trauma, non-specific infection, or joint disease. Among the elements displaying pathology, the highest prevalence involves bone formation (68%, 163/240) associated primarily with traumatic and degenerative processes. Although bone formation is also associated with shape changes and trauma, joint disease accounts for the majority of bone formation (60%, 97/163). Of the elements that demonstrate trauma, most (83%, 20/24) are appendicular elements. In addition, all periosteal reactions from infection occur on appendicular elements, most commonly associated with fractures.

Brooks, Alison (George Washington University) and John Yellen (National Science Foundation)

[227] *Social Learning Among recent Hunter-Gatherers: Jun/wasi Examples*

While interest in the role of social learning in the Paleolithic has focused extensively on stone artifacts, very little attention has been paid to social learning in living forager populations. In this paper we report on many years of fieldwork among the Jun/wasi of northwestern Botswana and Namibia. We argue that most cultural transmission in relation to domains such as technology, language and food acquisition was informal, and was acquired in the context of close daily relationships between children (including ours) and Jun/wasi adults, as well as between younger and older children in the context of play groups as children grow. We will also discuss the transmission and acquisition of new technologies from contacts outside the Jun/wasi community. These ethnographic data have direct implications for interpreting the archaeological record, particularly the spatial patterning of culturally transmitted material cultural remains.

Brooks, Alison [227] see Ranhorn, Kathryn

Brooks, Allyson

[151] *Discussant*

Brother, Janie-Rice [94] see Henderson, A. Gwynn

Brother, Rosemary

[38] *From Features to Figures: Quantitative Analysis of California Native American Baskets*

There are only a few recognized experts on California Native American basketry and their informed opinions establish the current state of knowledge. It takes years of experience under the guidance of a knowledgeable mentor and examination of hundreds of baskets to develop such expertise. While analysis by the few experts may be quantitative, scientific, and exacting, designation of a basket's ethnic identification continues to be subjective. In some instances, authors cite little but their own research. This raises the question whether statistical analysis of basketry attributes can be used to identify a basket's ethnic origin.

To answer this question, baskets of selected northeastern California Native American groups, will be statistically compared to test whether ethnic origin is indicated in the results, and whether linguistic affiliation or geographic propinquity best account for differences and similarities between basket weavers. The analysis will include sixty-five different basketry attributes from each of one hundred fifty to two hundred individual baskets. The potential for seeing previously unknown associations between ethnic groups is likely. Newly recognized associations have the potential to influence future research on population migration, genetic studies, and linguistics.

Brouwer Burg, Marieka

[133] *Certainty about Uncertainty: Lessons Learned from Modeling Human Land Use and Decision Making*

A cornerstone of William Lovis' career has been the investigation of human land use dynamics, with strong emphasis on methodological rigor and statistical analysis. He has led a generation of students to consider these issues in the Great Lakes and beyond. The modeling of past human decision making is useful as a heuristic for exploring goals and motivations, about which there is certainly a tremendous amount of uncertainty. Instead, modeling past behavior is inherently an exercise in balancing this uncertainty with assumptions, existing knowledge and theory, data (and their limitations), and technology. This paper will explore the role William Lovis played in inspiring and driving research in this vein. In the end, only deeper and broader insight about past natural and social-behavioral dynamics is to be gained when we push our research to the edge of uncertainty.

[235] *Discussant*

[133] *Chair*

Browman, David [335] see Baka, Abby

Brown, Alexander (Researcher- ArchaeoTek Archaeology)

[85] *The Archaeology of Gossip: Delineating the Space of Interpersonal Performance*

Much of the literature on performance in cultural and political spheres in archaeology over the last 4 decades has focused on social memory. This paper shifts that discussion from the arena of public commemoration and cultural rites to the de facto performances of the domestic sphere. Private, interpersonal interactions are important in the transmission and creation of social memory as well- they place an individual's social world in the context of shared social memory, and vice versa. Gossip is cited with frequency in ethnographic accounts and anthropological analysis as containing a wealth of sociocultural meanings; is it possible in archaeology to gain perspectives from such "immaterial" interactions?

This study identifies and interrogates the physical environments in which gossip would have occurred, entertainment and congregation spaces in domestic contexts, by modeling Roman domestic space as a performative space in which interpersonal influence was crucial. In the Roman Empire, gossip was a notoriously influential sociopolitical practice that was enacted and documented in many public forums with great performative flair, and thus provides an excellent case for comparison of the material conditions of this practice with written accounts.

[85] *Chair*

Brown, Clifford (Anthropology Dept., Florida Atlantic University)

[263] *Nonlinear and Multiscalar Dynamics of Migration*

The quantitative model of diffusion traditionally studied in archaeology uses Gaussian statistics and Brownian motion to envisage a slow wave of advance. It originates from Fisher's model for the diffusion of advantageous alleles across the landscape, but was then applied in archaeology to the

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diffusion of agriculture from the Near East into Europe. More recently, Lévy flights, which are random walks with step lengths derived from power-law distributions, have been proposed as models for human movement, especially for foragers. The archaeological signatures for these two dynamical processes—Brownian motion versus Lévy flights—are potentially quite different, making them useful and practical to consider. It seems likely *prima facie* that both processes are good models for different kinds of prehistoric migrations, and, moreover, in each case tuning the parameters of the model yields different patterns. In this paper, I discuss historical and archaeological evidence for these two different dynamical regimes of migration models and their implications for our interpretations.

Brown, David (University of Texas at Austin), Mark Willis (Blanton & Associates, Inc.) and Chester Walker (Archaeo-Geophysical Associates, LLC)

[324] *The Late Prehistory of Ecuador from Above and Below: Remote Sensing in the Northern Highlands*

Remote sensing, including both low level aerial photography and subsurface geophysical methods, has become an increasingly key element in archaeological fieldwork over the last few decades. During that time, our team has used various techniques to accurately map late prehistoric Ecuadorian sites and to search for buried features. In the last two years we have used drone aerial photography, ground penetrating radar, and magnetometry to aid in investigations at the monumental site of Cochasquí. Photogrammetric processing of aerial photos has allowed us to create precise topographic maps, three-dimensional models of architectural features, and to calculate volumes of constructed features and adjacent quarry areas. Concurrent geophysical investigations have revealed numerous subsurface features, allowing the excavation team to selectively focus on appropriate loci for study.

Brown, Gabriel (VCP Alexandria) and Guillian Hurte Sr. (VCP Alexandria)

[326] *Forensic Photography and the VCP—Teaching Veterans and Capturing History*

One of the unique opportunities given veterans within the Veterans Curation Program (VCP) is professional training in high quality digital artifact photography that far exceeds the quality of photography practiced by most Cultural Resource Management firms. A representative sample consisting of 10% of every collection processed by VCP is photographed by the veteran technicians and subsequently combined with the finalized collection. These digital images are reviewed and a selection is eventually uploaded to the Digital Archaeological Record (tDAR), an international digital repository for the records of archaeological investigations. The process of training veterans with little or no background in photography relies primarily on well-established step-by-step methods, ongoing personalized training and mentoring, and an accessible reference guide designed specifically for the VCP. With the skills and experience acquired through the VCP, many veterans have discovered the value of photography not only as a therapeutic and satisfying hobby, but also as a possible career choice.

Brown, Ian

[291] *The Reuse of Indian Mounds as Historic and Modern Cemeteries*

Stephen Williams had strong interests in the history of archaeology, prehistoric Indian mounds, and historical archaeology. This paper combines aspects of each of these interests. Cemeteries associated with Indian mounds commonly occur in the Ohio and Mississippi valleys. Numerous reasons have been put forth over the years as to why early Anglo-American settlers decided to bury their dead on mounds, ranging from flooding issues, to avoidance of valuable farmland, to a preference for burying on high land. The fact that a number of mound sites along the bluffs of western Mississippi also have non-Indian cemeteries on them, despite even higher land occurring nearby, suggests that the story is far more complex than perceived. I suggest here that the use of mounds for burial purposes may be related to early nineteenth-century Anglo-American populations having made symbolic power statements over land that was still either being occupied or claimed by Indians. The erection of gravestones on prehistoric mounds targeted what were clearly the most visible and curious monuments of this contested landscape.

Brown, James (Northwestern University)

[133] *Discussant*

Brown, Kelly (VCP Augusta), Alison Shepherd (VCP Augusta) and Josh Wackett (VCP Augusta)

[326] *The Tombigbee Historic Townsites Project: A New Look at a Previously Excavated Collection*

With the curation crisis growing more prominent in the realm of archaeology, research focus is slowly being shifted to previously excavated collections that are under analyzed and underreported. Many of these previously excavated collections are overlooked by potential researchers because of the perceived difficulties of re-establishing provenience and quantitative control for artifacts that have been long separated from their original archaeological context. Since 2009, the Veterans Curation Program (VCP) has rehabilitated 231 at-risk United States Army Corps of Engineers (USACE) owned archaeological collections. The Tombigbee Historic Townsites Project is one such collection. Completed in 1983, this project aimed to salvage data from three of the earliest towns situated along the Tombigbee River in the eastern region of Clay County, Mississippi. This paper will provide an overview of the research and educational opportunities that can be derived from the analysis of transferware in a previously excavated collection.

Brown, Linda A. [40] see Jackson, Sarah

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

[129] *The Shifting Political Landscape of the Mopan Valley: A Diachronic Perspective*

The Mopan River valley of Belize is home to five closely spaced Lowland Maya ceremonial centers with extensive settlement occupying the landscape between. From south to north, the ceremonial centers are Arenal, Early Xunantunich, Classic Xunantunich, Actuncan, and Buenavista del Cayo. Archaeological evidence suggests that each of these centers was initially occupied by the Middle Preclassic, but they had distinct histories, evolving into ceremonial/political centers at different times, from the Middle Preclassic to the Late Classic. Additionally, the decline, collapse and eventual abandonment of these ceremonial centers occurred at different times and with varying impact on nearby hinterland communities. In this paper we present archaeological data from the Mopan Valley in order to place the site of Actuncan within this regional history. In doing so, we highlight the changing political organization of the Mopan valley, as political authority became more centralized and the institutions of divine kingship developed, flourished, and eventually collapsed.

Brown, Ryan (Superior National Forest)

[106] *Following the Voyageurs Highway: Cultural Resource Management in the Boundary Waters Canoe Area Wilderness*

Wilderness areas are generally managed as unpeopled landscapes, in the words of the Wilderness Act, "an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain." However, wilderness areas do have human histories, and these historical narratives and the archaeological record they left behind can greatly enrich the visitor experience. In the Boundary Waters Canoe Area Wilderness in northeastern Minnesota, visitors portage canoes over the same trails and paddle the same routes used by voyageurs and Native

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Americans centuries before, creating a tangible link with the past. This continuation of historical landscape use for modern recreation creates challenges for cultural resource management by concentrating visitor impacts on areas of high archaeological probability and significance. Of 2080 designated wilderness campsites, approximately 40% are collocated with identified archaeological sites. These sites are at risk of degradation through visitor induced erosion and campsite maintenance activities. Due to the remoteness of the area, only a small number (approximately 13%) have been surveyed to current standards. However this remoteness and the designation as a wilderness area has also served to help preserve the archaeological resources of the Boundary Waters region.

Brown, William (Department of Anthropology, University of Washington)**[118]** *Formal Theory in Demographic Temporal Frequency Analysis: Decomposing the TFD Data Generating Process*

John Rick's 1987 paper in *American Antiquity* presented the first systematic overview of theory underlying the "dates as data" approach (i.e., demographic temporal frequency analysis, dTFA), describing the general outline of a data generating process (DGP) linking paleopopulation dynamics to temporal distributions of archaeological materials (temporal frequency distributions, tfds). While research pursued in the dTFA framework has gained momentum over the intervening decades, questions regarding its reliability if not legitimacy have also emerged. Arguably, this critical pushback is the result of the tacit but persistent reluctance both of advocates and critics to give full formal expression to dTFA's core theory. In turn, this reluctance has led to the inadvertent conflation of the program's foundational principles and its special-case conditions, as well as to vague impressions regarding the degree to which non-demographic forces obscure demographic information in tfds. In response, I explicitly formalize Rick's framework as a functional decomposition of the tfd DGP. Features of this formal theory are highlighted that can be productively leveraged in the service of demographic inference, specifically in the context of inverse uncertainty quantification (e.g., backward uncertainty propagation and sensitivity analysis). Both paleopopulation size and growth rate estimation are considered.

Browne Ribeiro, Anna (University of Louisville Kentucky)**[254]** *My Grandfather's Castanhal: Plants, Community, Territory, and Memory in the Brazilian Amazon*

In contemporary Gurupá, a rural municipality in the Brazilian Amazon, life is largely shaped by movement of, and among, plants. Plants here are mobile, but spend most of their lives stationary. In this paper, I examine the relationship between people and plants—as living, but nonetheless spatially rooted elements of the landscape—in these agroextractivist communities. I explore the significance of planting and plant life in regulating territorial use and notions of rights, access, and possession, as well as social relations and family ties. Through *trabalho de campo* (field labor), both communal and solitary, Gurupaenses continually transform this forested landscape into a mosaic of greenery of varying sizes, shapes, shades, and meaning. The work of tending, weeding, cutting, and harvesting shapes gardens, dooryards, trails, and interstitial spaces, simultaneously configuring identities and social relationships within and beyond kinship groups. The present landscape is the result of generations of management of plants, as gardens, fields, stands, or trees—which are, importantly, individuated and associated with specific community members or families. These features regulate and communicate access to the spaces and fruits, literal and metaphorical, of *trabalho de campo*. Simultaneously, they materialize social relations, history, memory, and genealogy.

Browne Ribeiro, Anna [240] see Ellis, Grace

Brumbach, Hetty Jo (University at Albany) and Robert Jarvenpa (University at Albany, SUNY)**[220]** *A Comparative Ethnoarchaeological Approach to Gender and Landscape: Livelihood and Viewshed*

The sexual division of labor in many societies situates women and men in livelihood activities which differ markedly in their locations, facilities, and relationship to other features in both the built and non-built environment. The repeated juxtaposition of these behaviors and elements over time result in rather distinctive female and male viewsheds or vistas and, ultimately, gendered perceptions and interpretations of the landscape. Consider the perceptual field of a woman scraping hides on the side of a storage cache as contrasted with that of a man tending fish nets on a nearby lake. How do key livelihood strategies contribute to variable viewsheds and interpretations of the landscape by women and men? Under what conditions are these experiences and interpretations likely to change? Such issues will be addressed with data from a comparative ethnoarchaeological investigation of gender and subsistence in four circumpolar hunter-fisher and hunter-herder societies: Canadian Chipewyan, Siberian Khanty, Finnish Sami, and Alaskan Inupiaq. Suggestions will be offered for applying viewshed dynamics in living cultural systems to ancient archaeological landscapes.

Brunner, Kyle (New York University)**[196]** *Urban Spatial Relationships during the Early Islamic Period: Reassessing Investigations into the Market and Mosque at Sīrāf, Iran*

There has been much debate on what defines an Islamic city (*madīna*) and what made cities become "Islamic" after the Islamic conquest. These studies have often marginalized the Islamic period, associating street encroachment and overall shifts away from the "classical" model as signs of decline. Scholars have relied on western notions of what defines a city and have used strict urban typological models, which do not conform to the region or period. In addition, these studies have neglected to include examples of cities (*shahristan*) from the Sasanian empire and other regions of the Islamic world. This paper will use archaeological evidence to investigate the spatial relationship between the mosque and market at the site Sīrāf in southwest Iran. This case study furthers our understanding of the cultural forces that went into this shift from the *shahristan* to the *madīna*. By comparing Sīrāf to contemporary sites in Iran and Syria-Palestine, we see a similar spatial-layout where the congregational mosque is placed at one of the main entrances to the market, and shops are incorporated into the architecture of the mosque. Such a design allowed for the religious and economic systems of urban life to flow into a central zone.

Bruno, Maria C. (Dickinson College), Christine A. Hastorf (University of California-Berkeley) and Jewell Soriano (University of California-Berkeley)**[297]** *Landscapes and Agricultural Rituals on the Taraco Peninsula, Bolivia*

Generations of ethnographers have documented the many levels of ritual that contribute to Andean food production, from subtle coca offerings to community-scale canal cleaning festivals. Here, we discuss a ritual conducted on a yearly basis in the community of Chiripa on the Taraco Peninsula, Bolivia to ward off crop damage by hail. This ritual involves a group of community leaders specifically charged with protecting the agricultural lands and yields. They walk two specific routes and burn offerings at several sacred locations. Through audio, video, and spatial documentation of these routes, we examine the physical manifestations of this ritual, how it links agricultural practice to key natural elements of the landscape, and reveals the local understanding of where risk comes from and how to mitigate it. We will consider some of the ways this ethnographic case study can inform our understandings of past ritual ecologies in this landscape.

Bruno, Maria C. [334] see Jones, Makensie

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Brunswig, Robert (University of No Colorado), Pawel Valde-Nowak (Institute of Archaeology Jagiellonian University) and Michael Kimball (University of Northern Colorado)

[29] *European and North American Mountain Archaeology and the Concept of Transhumance Applied to the Prehistory of Colorado's Southern Rocky and Poland's Tatra Mountains*

Significant advancements have been made in mountain archaeology throughout the world in recent decades. A central and rapidly expanding research theme has been that of seasonal transhumance, movement of human groups between lower to higher mountain-foothills-piedmont environmental zones in order to exploit annual economic resource variability. Emerging European mountain records suggest human transhumance, based in seasonal variability of both economic plants, migratory game species, and, much later, as pastoral nomadism, began as early as Neanderthal times, ca. 60,000 BP. The lead author, over three decades, has documented more than 12,000 years of persistent hunter-gatherer transhumance in the Colorado Rocky Mountains and, in collaboration with co-author Polish mountain archaeologist, Pawel Valde-Nowak, and co-author Michael Kimball have begun a project to investigate prehistoric hunter-gatherer and pastoral livestock transhumance in Poland's Tatra Mountains of the western Carpathians. This paper describes background, methods, and early results of the Tatra project which draws on the investigators' mutual and complementary experience in the Northeastern European Tatras and Colorado Rockies.

Brush, Emily (University of Wyoming)

[303] *High Elevation Land Use in the Cougar Pass Region of the Absaroka Mountains of Northwest Wyoming*

Historically, high elevations have been considered as peripheral to past human cultures. Indeed, high elevation areas are somewhat marginal given their increased energy demands and generally low productivity; yet, archaeological evidence shows that human use of high altitudes reaches far into prehistory. Here I present an analysis of human land use through time and its relationship to major environmental and climatic shifts to determine the conditions under which humans make more or less intensive use of high altitudes. The case study comes from the Cougar Pass Region of Wyoming's Absaroka Mountains and contains fifteen distinct archaeological sites situated near six permanent ice patches that have preserved dateable artifacts and paleobiological specimens. Projectile points also provide a means of determining occupation in broad chronological categories. Through the comparison of various artifacts and associated dates, the relationship between high elevation land use by prehistoric people and the environment can then be determined. This research has the potential to be applied to other, environmentally similar regions.

Bryant, Katherine [227] see Stout, Dietrich

Bryant, Mary (Texas A&M University)

[290] *Is Traditional Pollen Analysis Obsolete?*

For more than 100 years, palynologists have relied on the traditional method of pollen analysis to provide essential information on paleodiets, paleoenvironments, archaeology, and other research such as forensics. The past traditional method has focused on the use of light and scanning electron microscopy and then used those results to obtain information and values which palynologists can use to interpret those. During the past decade, some scientists have turned to using other techniques such as DNA and isotopes of pollen grains to gain information about the above research goals. This paper investigates if these new techniques can in fact replace traditional pollen analysis. Ultimately, the current state of DNA and isotope research technology is unable to provide some of the most crucial information provided only by utilizing microscopic pollen analysis. Currently, the molecular and microscopic methods are complimentary. However, the relationship between the microscopic and molecular methods will need to be reevaluated as new technologies are developed.

Bryant, Vaughn (Texas A & M University)

[126] *Coprolite Analysis: The Early Years*

Volney Jones was one of the first to examine coprolites found in Eastern Kentucky caves. By today's standards, his technique was primitive, but it did provide information about early human diets. During the mid-1950s Eric Callen pioneered the study of coprolites when he looked at coprolites from the site of Huaca Prieta de Chicama in the coastal region of Peru. Later, in the early 1960s Callen worked in Mexico with Richard MacNeish at Tehuacan. Callen worked in isolation at McGill University in Canada where he was little appreciated for his coprolite work. By 1970 he joined Richard MacNeish in Ayacucho, Peru for the first major coprolite study in South America but died there unexpectedly of a heart attack. After his death others refined Callen's techniques leading to a slow expansion of coprolite analysis from different areas new ways to sample and analyze coprolite contents. Soon, studies included pollen, phytoliths, plant macrofossil, faunal and insect remains as part of the analysis. Those studies advanced our knowledge of diets and laid the groundwork for the future of the discipline, which now includes not only the basic studies but also additional searches for isotopes, DNA, steroids, amino acids, parasites, and more.

[290] *Discussant*

Bryce, Joseph (Brigham Young University) and Spencer Lambert (Brigham Young University)

[10] *Fremont Fishing: New Data from Recent Excavations in Utah Valley*

The Utah Valley, with easy access to montane, lacustrine, and riverine resources, is the location of some of the largest known Fremont habitation sites. Two of these sites have recently been excavated resulting in a wealth of new data. While many aspects of Fremont diet have been explored in depth, the role of fishing is often understudied due to poor preservation of fish remains and fishing tools. In this poster we report the analysis of the fish bones and the recovery and analysis of bone and antler harpoons. We attempt to better understand the fishing practices of the Fremont in Utah Valley and analyze the differences between Fremont sites at varying distances from Utah Lake.

Bryce, William [27] see Tsouras, Theodore

Brzezinski, Jeffrey (University of Colorado Boulder)

[190] *Producing Community and Communal Production: Examining Evidence for Collective Practices at Complex B, Cerro de la Virgen, Oaxaca, Mexico*

Recent research in the lower Río Verde Valley of Pacific coastal Oaxaca, Mexico has indicated that, during the Terminal Formative Period (150 BC—AD 250), public buildings were loci of communal practices such as feasting, collective labor, cemetery burial, and object caching. Idiosyncrasies in these practices among Terminal Formative sites in the valley suggest that political authority and community identity was constituted on the local level. While the best evidence for these practices comes from ceremonial features, recent research at the secondary center of Cerro de la Virgen suggests that public buildings were also the setting for economic production. This poster examines evidence from Complex B, a public building located in the ceremonial center at Cerro de la Virgen. Research conducted in 2016 indicates that Complex B was the location of a "masonry workshop," where residents produced large, faced granite stones to be used in building foundations and terrace walls. The complex also exhibits evidence for mortuary ceremonialism and the use, maintenance, and discard of obsidian prismatic blades and groundstone axes. Overall, the evidence from Complex B suggests that the communal practices that defined local communities extended beyond the ceremonial to include those that were economic in nature.

Brzezinski, Jeffrey [9] see Wedemeyer, Rachael

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Bubp, Rebecca**[81]** *Put What? in Your Pipe and Smoke It*

Holly Bend, a prolific and successful early 19th century plantation owned by Robert Davidson in Mecklenburg County, North Carolina has seen multiple excavations and research over the past several years. In particular, a collection of ceramic tobacco pipe fragments that have been excavated are analyzed to better understand the local smoking culture. Several methods are used, including X-ray fluorescence spectrometer analysis to determine local sourcing of the ceramic elements, residue analysis providing plant and material content of the pipe fragments, and a pipe typology identification. Residue analysis yields late 18th and early 19th century plant and material species associated with smoking and plantation life. Pipe typology identification provides the stylistic and economic elements attributed to smoking cultures.

[81] *Chair***Buchanan, Brian (Durham University and Eastern Washington University), Sarah Semple (Durham University) and Sue Harrington (Durham University)****[40]** *People, Place, and Identity: Funerary Landscapes and the Development of the Early Medieval Kingdom of Northumbria*

Early medieval Britain witnessed dramatic changes to the socio-cultural landscape due to the withdrawal of Roman authority, climatic change, and the arrival of migrants from the continent and from different regions of Britain. The analytical and scientific analysis of the burial record, from a landscape perspective, allows an investigation of key questions related to the scope and nature of this migration, the development of social identity, and how portions of Britain expanded from small polities into a series of large and powerful kingdoms ruled by dynastic lineages. Northumbria was one of the largest kingdoms of early medieval Britain and at its greatest extent incorporated modern-day lowland Scotland and northern England. The Leverhulme Trust-funded People and Place: The making of the kingdom of Northumbria 300–800 CE project is undertaking a full reassessment of all known funerary evidence from the kingdom. The project is combining scientific assessments of skeletal and artefactual evidence, archival research, and spatial analysis in a multi-scalar GIS to refine chronologies, characterize communities, and investigate the results from a landscape perspective. This paper presents the preliminary findings of the project and how these results are reshaping our understanding of the formative processes in this period.

Buck, Paul (Nevada State College/Desert Research Institute), Sachiko Sakai (CSU Long Beach) and Cheryl Collins (Desert Research Institute)**[164]** *Prehistoric Population Aggregation of the Mt. Trumbull, AZ area*

More than 20 years ago Margaret Lyneis published a thorough review of the Virgin Anasazi, summarizing what was known at the time about chronology, settlement, subsistence, spatial aggregation, exchange, and other topics. Her summary raised a number of key issues needing resolution. Among these was the nature of aggregation in the Plateau area of the Virgin Anasazi. She noted, despite evidence from other places in the Southwest of increasing residential aggregation in PII, there seemed to be little evidence of this from the Mt Trumbull area. In this paper, we present evidence from two sites (Zip Code and Zip Code 2) suggesting a pre-aggregation phase in BMIII or PI times. These sites are interesting because, although they are quite large, extensive sites, they appear to be early in age because pottery is almost entirely unpainted and non-corrugated, projectile point styles also seem to pre-date PII, and radiocarbon and OSL dates suggest a BMIII or PI age. Other large sites at Mt Trumbull appear much more aggregated than the Zip Code sites, and have been identified as PII based on pottery styles, radiocarbon and OSL dates. It is likely populations were increasing and more densely clustering together in PII.

Buck, Rex**[253]** *Responsibilities to the Ancient One*

The tribes and bands of the Columbia Plateau have an inherent responsibility under our religious beliefs and practices to care for the ancestors buried within our homeland. The Confederated Tribes of the Colville Reservation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes and Bands of the Yakama Nation, the Nez Perce Tribe, and the Wanapum Band of Priest Rapids (Claimant Tribes) have stood by our knowledge and traditions which told us the Ancient One is our Ancestor. Annual ceremonies with the Ancient One ensured he knew he was not forgotten. The practice of guaranteeing the ancestors return to the earth and continued journey is an integral part of Plateau culture and tradition. In accordance with our spiritual and cultural practices we work together to achieve repatriation goals.

[322] *Discussant***[253]** *Chair***Buckley, Brendan (Lamont-Doherty Earth Observatory), Rosanne D'Arrigo (Columbia University), Caroline Ummenhofer (Woods Hole Oceanographic Institute), Michael Griffiths (William Paterson University) and Kyle Hansen (Columbia University)****[213]** *Climate Change (Global and SE Asia)*

We have developed millennial length reconstructions of regional hydroclimate using multiple collections of tree cores from throughout Southeast Asia. Several published records of seasonal hydroclimate from Vietnamese cypress represent the most robust and well-replicated tree ring records from the global tropics, and allow for detailed analyses of the regional hydroclimate for multiple seasons. We demonstrate zonal changes in the mean climate over the past millennium with strong linkages to the El Niño-Southern Oscillation phenomenon and the equatorial Pacific Ocean, with a high degree of decadal scale variability. We are actively pursuing improvements in the metrics used for climate reconstruction through ecophysiological measurements from rare Southeast Asian conifer species, such as Blue Light Intensity as a proxy for lignin content, which is strongly correlated with seasonal rainfall. While tree rings yield annual to subannual resolution, recent development of speleothem records add greater temporal depth over the region. This information, taken collectively, can be used to explore ecosystems health across mainland Southeast Asia in the face of a warming climate, and to analyze the arc of human development under dynamical changes of the regional climate over the recent Holocene.

Buckley, Gina (The Pennsylvania State University), David Carballo (Boston University), Daniela Hernández Sariñana (Boston University), Kenneth Hirth (The Pennsylvania State University) and Douglas J. Kennett (The Pennsylvania State University)**[184]** *Bayesian 14C Chronology of Tlajinga, Teotihuacan Compounds 17 & 18*

A high-resolution chronology of two residential compounds (17:S3E1, 18:S3E1) recently excavated in the Tlajinga district of Teotihuacan has been developed using high-precision AMS 14C dating and artifact seriation datasets. The Tlajinga district is located along the southern Street of the Dead and was a possible entrance for migrants and visitors to the densely populated urban center of Teotihuacan during the Classic Period. Ceramic evidence suggests this district was occupied during the height of the city from the Early Tlamimilolpa period (A.D. 170–250) until the collapse of the city in the Metepec period (A.D. 550–650). With over 30 14C dates with measurement errors below ± 25 14C yr from both human bone and charcoal specimens, Tlajinga is now one of the most dated districts at Teotihuacan. Combining high precision dating with ceramic evidence and utilizing the Oxcal Bayesian framework, this project explores the rise and decline of Teotihuacan's southern neighborhoods providing insights for apartment compound construction events and population dynamics during the apogee of the city's occupation.

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Buckley, Michael and Muxin Gu (University of Manchester)**[43]** *Machine Learning Species Identification with ZooMS Collagen Fingerprinting*

The creation of a robust method of species identification using collagen fingerprinting, also known as ZooMS (Zooarchaeology by Mass Spectrometry) has been useful for objectively defining the composition of the fragmentary component of archaeological assemblages. The method usually works through the measurements of the sizes of collagen peptides following enzymatic digestion, which yield a fingerprint that can be genus or even species-specific. However, even these peptide biomarkers have been determined with a level of subjectivity, largely influenced by those most peaks that are commonly observed. In some taxa, particularly the domesticates, sequence data can be used to confirm this variation but ZooMS is being increasingly applied to a greater range of wild taxa. In the absence of sequence information, peptide biomarkers are proposed through observations from reference material, but often with less confidence. Here we apply machine learning to our assemblage of >10,000 Pin Hole Cave (Creswell Crags, UK) fragmentary Late Pleistocene microfaunal remains, demonstrating that an objective manner of biomarker determination can be achieved which builds upon those already determined manually. Most importantly, machine learning approaches appear able to rapidly identify not only known species but can reveal taxa beyond the expected, widening our knowledge of a faunal assemblage.

Buckley, Michael [16] see Frasier, Brenna

Buckley Vargas, Lilly [134] see Poister, Nicholas

Budar, Lourdes (Universidad Veracruzana)**[128]** *Dioses de Agua y Montaña. El paisaje ritual y las deidades enmascaradas de la costa este de Los Tuxtlas*

El corredor costero al este de Los Tuxtlas, delimitado por los Volcanes de Santa Marta y San Martín Pajapan, el mar del Golfo de México y las Lagunas de Sontecomapan y del Ostión, es una zona que se caracterizó por la multiculturalidad y la variedad de patrones debido a la presencia de un sistema portuario que estuvo activo desde el periodo Formativo medio hasta el Clásico tardío (1200 aC-1000 dC). Así mismo, la presencia de estos elementos naturales que lo delimitan fue y sigue siendo el escenario perfecto para el desarrollo de un complejo paisaje administrativo, político y ritual. Entre la gran diversidad de patrones existentes en la zona, dos llaman nuestra atención para fines de esta presentación: la ausencia de figurillas cerámicas y la presencia de un complejo escultórico pétreo que corresponde a la representación de deidades antropomorfas que portan máscaras en la parte superior de sus cabezas y que hemos denominado sencillamente como: "dioses enmascarados". En este trabajo se analizarán tres aspectos esenciales de estas representaciones que presentan una larga duración en la región: 1. el análisis formal de estas esculturas, 2. su contexto arqueológico y 3. el paisaje administrativo, político y ritual en el que se desarrollaron.

[192] *Discussant***[93]** *Chair*

Budar, Lourdes [93] see Becerra, Gibránn

Budd, Jon [44] see Seikel, Katherine

Budd, Tommy (Arizona State University)**[185]** *Biological Kinship and Cemetery Organization in Eastern Zhou Period China*

The social significance of large kinship structures such as clans and lineages has been demonstrated throughout Chinese history, and kinship has in part determined social ties and participation in various social activities. Clan emblems appear on artifacts from as early as the Shang Dynasty, and kinship remains an important element of social identities in modern China. In relation to mortuary practices, kinship identities may affect factors such as mortuary assemblages and burial location. This study focuses on biological kinship as it relates to burial location in an Eastern Zhou Period (771–256 BCE) cemetery. This study utilizes a sample of 45 individuals from the site of Tiancheng in Xinzheng, Henan Province, China. Cervical odontometric data were collected, and measures of biological distance were calculated to examine the relationship between geographical and biological distances among the individuals interred across the site to address the question of whether burial location was influenced by biological relationships. Results are presented, and their significance with regard to an understanding of ancient Chinese kinship and burial practices is discussed.

Bueno, Marilyn (California State University, Los Angeles)**[134]** *The Role of Rockshelters among the Lowland Maya*

Because of Maya religion's heavy focus on the sacred Earth, subterranean spaces tend to be seen as sacred landmarks. Caves in particular have been shown to be the most promising context for the archaeological study of Maya religion (Brady and Prufer 2005). Rockshelters, however, have received less attention and appear to have identities and meanings that are negotiable across the lowlands. Recent rockshelter excavations have uncovered skeletal remains (Bonor 1995; Glassman et al. 2005; Saul et al. 2005), suggesting that some of these features may possess the only true Pre-Columbian cemeteries in the Maya lowlands. As such, rockshelters are non-normal burial locations. Discussions thus far have not engaged Maya attitudes towards death and the afterlife in attempts to explain why such cemeteries were formed. As research on rockshelters move forward, it is imperative to establish a Maya cosmological model that incorporates religious beliefs. This paper will address such questions.

Buffington, Abigail (The Ohio State University) and Smiti Nathan (New York University)**[121]** *Transformative Trees: The Social and Ecological Impact of Woody Taxa in Prehistoric Southern Arabia*

While trees are often integral to the ecology of certain landscapes, the propagation of specific woody taxa can also reflect significant social aspects imbued on anthropogenic spaces. Following the seminal work of Rita Wright, we are utilizing a comparative approach in this paper. We examined woody vegetation management by early food producing societies in two regions of southern Arabia: southeastern Arabia (modern-day northern Oman) and southwestern Arabia (modern-day southeast Yemen). Despite their nearby geographic position, the trajectory of food production is distinct in these two regions. Nonetheless, both agrarian landscapes are impacted and developed by certain woody taxa. Using a niche construction framework, the concept of a "keystone species" is reenvisioned by utilizing archaeological, anthracological, and ethnographic datasets. These proxies enable us to investigate the social and ecological impact of the date palm (*Phoenix dactylifera* L.) in southeastern Arabia and the fig tree (*Ficus* spp. L.) in southwestern Arabia. This paper explores the modern social value of each tree type, the role of these woods in the agrarian history of each respective region, and how the southern Arabian landscape has been shaped and modified by association to these trees.

Buikstra, Jane E. (Arizona State University) and Jason King (Center for American Archeology)**[215]** *The Missing Years: Continuity and/or Change in Woodland Funerals in the LIV*

Lynne Goldstein has significantly advanced knowledge of ancient peoples in many theoretical and empirical domains, including her seminal studies of ancient cemeteries, especially their spatial organization and interpretation through the judicious use of ethnographic sources, critically evaluated. The senior author has had the pleasure of collaborating with Dr. Goldstein in several of these ventures, some under challenging conditions of heat and cold, which were bearable only due to Lynne's remarkable energy and good humor.

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In this paper, we address a long intractable issue for Lower Illinois Valley (LIV) mortuary archaeology, in a region that anchored Dr. Goldstein's long and productive career. While Middle Woodland (Hopewell) and late Late Woodland mounded tumuli are well represented in the archaeological record, not so for cemeteries from the several intervening centuries. Relying on data from the archaeological record, primarily radiocarbon dates, variation in cemetery structure, mound location, and material culture, we address this issue. Possible explanations range from the simple, depopulation and regional cultural discontinuity, to nuanced, complex interpretations of funerary activities and interment facilities from throughout the Middle and Late Woodland periods. Our perspectives are also enhanced through the judicious use of ethnographic and ethnohistoric sources.

[298] *Discussant*

Buikstra, Jane E. [66] see Fletcher, Brittany

Bukhsianidze, Maia [41] see Coil, Reed

Bull, Ian [126] see Whelton, Helen

Bullion, Elissa [185] see Hansen, David

Burger, Rachel (Southern Methodist University), Ian Jorgeson (Southern Methodist University) and Michael Aiuvalasit (Southern Methodist University)

[103] *Raising a Rafter: A Cost-Benefit Analysis of Ancestral Pueblo Intensification of Turkey Husbandry in the Northern Rio Grande Region, New Mexico*

Zooarchaeological research in the Northern Rio Grande shows that turkey husbandry became increasingly important to the Ancestral Pueblo during the Classic Period (AD 1350–1600). During this time, immigrant and local communities coalesced into increasingly larger villages and towns, with abundant evidence for turkey husbandry. Turkeys served as a critical resource for both subsistence and ritual uses. Yet, it remains uncertain at what scale (household, sub-community, or community) turkey management was organized. We develop cost-benefit models for the intensification of turkey husbandry, incorporating ethnographic and archaeological data with research into animal sciences on turkey raising. These socio-ecological models are then tested against the archaeological record of Sapa'owingeh (LA306), one of the largest Ancestral Pueblo communities in the region.

Burger, Richard (Yale University), Lucy Salazar (Yale University) and Michael D. Glascock (University of Missouri)

[46] *New Evidence of Inca Ceramic Production and Exchange in the Cuzco Heartland*

INAA analyses of ethnographic and archaeological ceramics from the Cuzco heartland yield new insights into the patterns of production and distribution of Inca pottery in the Cuzco heartland. Multiple centers of production existed in this region and significant levels of exchange in imperial pottery occurred between the Sacred Valley and the Cusco Basin. Possible centers of production are suggested on the basis of the new results.

[178] *Discussant*

Burgess, Don [218] see Lyons, Patrick

Burgio-Ericson, Klinton (University of North Carolina-Chapel Hill)

[139] *Revisiting the Rubber-Sided Museum: A Case Study in Collections-Based Research*

Archaeological repositories abound in significant but overlooked collections. This paper presents a case study based in one such collection: the Hendricks-Hodge Expedition to the ancestral Zuni pueblo of Hawikku, NM (1917–1923), which accumulated 25,000 artifacts now in the NMAI, many remaining unstudied. Drawing on current interdisciplinary research into its seventeenth-century Spanish mission, this paper considers challenges of extracting new interpretations from older collections. Research revisiting underutilized collections proffers opportunity for new questions, expanding insight, and refining disciplinary history. In particular, Hawikku's mission remains and primary sources indicate its residence was a working and living space for Native laborers alongside Spanish Franciscans, comprising an everyday arena of cultural negotiation. Revisiting overlooked collections also furnishes occasion for collaboration with source communities, often excluded from the original research. Multi-level engagement with Zuni Pueblo informs this research project, increasing its relevance to community concerns, and enriching Smithsonian collections data for future use. When financier Harmon Hendricks wrote in 1918 that the Museum of the American Indian should build expanding rubber walls to contain the large collections from Hawikku, he exposed the expedition's acquisitive motive but also presaged their rich and ongoing potential for research a century later.

Burgis, Harley (Indiana University of Pennsylvania) and Lara Homsey-Messer (Indiana University of Pennsylvania)

[52] *Using Microartifacts to Investigate Prehistoric Cooking Methods at the Archaeological Site of Dust Cave*

Microartifacts—generally considered to be artifacts measuring less than 6.35 mm (¼ inch)—have traditionally received little attention in North American archaeology. We argue that microartifacts are not simply smaller versions of larger artifacts, but rather provide different and complimentary data. This study investigates microartifacts from the archaeological site of Dust Cave (10,650–3,600 BCE), located in northwest Alabama, in order to better understand prehistoric diet and cooking technologies. Our goals are twofold. First, we examine microartifacts from four different feature morphologies (which vary in shape and size) to see if the micro debris reflects differences in what was cooked and/or how foods were cooked over time. We then integrate the microartifact data with previously published faunal and experimental results. Second, we advocate for taking a more robust approach to microartifact data analyses to include ubiquity and diversity measures in addition to the more commonly used density measures of comparison. Preliminary results suggest that while some features were multipurpose in function, others were more specialized for processing particular kinds of foods using cooking methods ranging from broiling, to steaming, to parching. Finally, cooking technologies appear to remain surprisingly homogenous through time until the Middle Archaic.

Burgos, Rafael [37] see Plank, Shannon

Burgos Morakawa, Walter (CUNY) and Brent Woodfill (Georgia State University)

[37] *Understanding Maya Rituals of Power in the Candelaria Caves, Guatemala: A View from the Polychrome Ceramics of the Early Classic*

The Candelaria Caves System, with its approximately 18 km of passageways, forms the second largest underground karstic complex in the Maya Area. As a result of their location at the highland-lowland transition and close to Great Western Trade Route, it was an important pilgrimage center for people of different cultural and geographical regions. The Early Classic period (A.D. 250–500) marked the introduction of polychrome ceramics, mainly Dos Arroyos-group ceramics, which played an important role in ritual activity in practically all caves used during the same time. Ceramic analysis and its relationship with context have allowed scholars to understand certain patterns in rituals related to power and prestige as expressed through the use of specific vessels. On one hand, these ceramics are related to public rituals that took place in great chambers close to the cave entrance that would have been visible to an audience. On the other hand, although their production was standardized, there are at least two distinct ceramic traditions or

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proveniences. In this paper, the authors present some conclusions related to these polychrome ceramics and their significance in regional ideology and interregional exchange.

[37] *Chair*

Burham, Melissa (University of Arizona)

[11] *Minor Temple Groups, Water Management and Community Formation at Ceibal, Guatemala*

Recent investigations of reservoirs associated with minor temple groups at Ceibal, Guatemala shed light on the role of water management in intermediate-level sociopolitical organization in ancient Maya society. Over the course of the Late and Terminal Preclassic periods (ca. 350BC-AD200), as Ceibal grew into an urban center, minor temples were built at regular intervals around the site core. These temples were the centers of local communities that were integrated primarily through ritual practices. Many temple groups are associated with reservoirs or other sources of water. As many scholars have noted, reservoirs would have been important locations for day-to-day interactions, and crucial to supporting local populations. In this way, water management was also central to local community formation and organization. This study examines water management at the community level by focusing on 1) excavation data and field observations of five reservoirs; 2) geospatial analyses that explore the distribution of reservoirs in relation to residential zoning patterns around minor temples; and 3) analysis of pollen in soils collected from the reservoirs. Overall, this research suggests that water catchments were managed at the household and local community level, and supports decentralized models of social and political organization in ancient Maya society.

Burke, Adam

[244] *Reevaluating Florida's Chert Quarry Clusters: An Update on Sampling Strategies, Methodological Approaches, and New Results from Northwest Florida*

This paper presents preliminary results from an ongoing study of Coastal Plains chert from Florida. Past research has demonstrated that Florida cherts can be coarsely differentiated into various quarry clusters on the basis of microfossil inclusions, and more recent research has suggested that geochemically characterizing these cherts may further improve provenance determinations. New methodological approaches include using a combination of microfossil analysis, NAA, and LA-ICP-MS to provide accurate qualitative and quantitative descriptions for Florida cherts. Additionally, the sampling and description of previously unstudied prehistoric quarry sites is improving our understanding of the geochemical and microscopic variability inherent in Florida cherts. By intensively sampling both terrestrial and inundated sites on a cluster-by-cluster basis, our characterization resolution will be significantly enhanced on regional and local levels, and new conclusions can be drawn about past human mobility within an improved geographic and temporal framework. Current advances in chert provenance studies will form the core of future research on Paleoindian lithic technological organization in Florida, and using modern analytical techniques on new and existing collections will greatly benefit this research.

Burke, Ariane (Université de Montréal)

[219] *Discussant*

Burke, Chrissina C. (Northern Arizona University), Katie K. Tappan (Northern Arizona University), Gavin Wisner (Northern Arizona University), Julie Hoggarth (Baylor University) and J. Britt Davis (Northern Arizona University)

[147] *To Eat, Discard, or Venerate: Faunal Remains as Proxy for Human Behaviors in Lowland Maya Terminal or Problematic Deposits*

Deciphering middens, feasting, ritual, or terminal deposits in the Maya world requires an evaluation of faunal remains. Maya archaeologists have been and continue to evaluate other artifact classes, but often simply offer NISP values for skeletal elements recovered from these deposits. To further understand their archaeological significance, we analyzed faunal materials from deposits at the sites of Baking Pot and Xunantunich in the Upper Belize River Valley. We identified the species, bone elements, bone artifacts, taphonomic signatures, and quantitative ratios recovered to test whether a deposit can be identified as a midden, part of a feasting ritual, terminal ritual, or other rituals significant to the Maya. Our analyses allow us to begin building a system for using faunal remains as a proxy for interpreting the significance of these deposits. In this paper, we present our results and hope to open the conversation for future evaluations of faunal remains in similar deposits.

Burke, Chrissina C. [7] see Wisner, Gavin

Burkholder, Jo (University of Wisconsin—Whitewater)

[335] *Continuity and Change: What the Late Intermediate Period at Pisanay Can Tell Us About Middle Horizon Arequipa*

Data from excavations at the site of Pisanay, a Late Intermediate Period "sanctuary" with some remains of Early Intermediate Period ceremonialism, can be used to frame a sort of "before and after" picture of Middle Horizon developments in the Sihuas Valley of Arequipa and the changing nature of cultural ties to the region. Most striking of these is the shifting pattern of materials ties impacted by the intervening influence of the Wari cultural horizon, seen in the ceramics and textiles associated with funerary sites. At the same time, there is evidence for in situ development of funerary and other ceremonial traditions, only minimally influenced by the Wari culture.

Burks, Jarrod (Ohio Valley Archaeology, Inc.)

[190] *New Magnetic Gradient Survey Results from Two Intermediate-Sized Earthwork Clusters in Southern Ohio: Junction Group and Steel Earthworks*

Ohio is home to hundreds of Woodland period (ca. 300 BC- AD 400) earthwork sites. Most contain mounds and ditch-and-embankment enclosures in geometric shapes. Site size and complexity varies widely, from small, lone circles (often surrounding a mound) in the Early Woodland to the mega-large Middle Woodland Newark Earthworks. How and why earthwork construction moved from small to massive are enduring questions yet to be solved. Recent magnetic survey in southern Ohio at two sites of moderate size, Junction Group (33Ro28) and Steel Earthworks (33Ro62), provides mounting evidence for an intermediate level of size and complexity. Both sites contain a range of geometric shapes, including some that are unique. Enclosures are clustered in their spacing and orientation, suggesting growth through time. And at least three kinds of architecture were in use: traditional ditch-and-embankment enclosures of varying size, small enclosures demarcated by narrow trenches (perhaps without embankments), and circles of posts lacking ditches or embankments. Earthwork sites of intermediate size provide a link in time, complexity, and perhaps space between the small sites of the Early Woodland and the immense complexes of the Middle Woodland. They also signal a change in the organization of people and activities on the landscape.

Burks, Jarrod [190] see Ruby, Bret

Burley, David [189] see Wildenstein, Roxanne

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Burnett, Paul (SWCA Environmental Consultants)**[103]** *Bears Ears Archaeological Probability Models*

Currently encompassing over 1,300,000 acres, Bears Ears is notable for abundant cultural resources and is in a renewed spotlight following the 2017 recommendation by the Interior Secretary to reduce its acreage. Archaeological probability models were recently developed for lands within the jurisdiction of the Bureau of Land Management, Monticello Field Office, which encompasses the Bears Ears National Monument. Regardless of the outcomes of that process, these models were developed to help land managers make well-informed decisions and implement its multiple use mission, including managing for recreation, grazing, and oil and gas. Modeled site types include up to four prehistoric site types and two historic site types. Given available site data, certain site types are not modeled for all areas. Stepwise logistic regression is used to combine significant environmental variables to produce probability maps with values ranging from 0 (low) to 1 (high). Certain site types are modeled more effectively than others. For example, prehistoric sheltered and rock art sites are more precisely modeled than open-air sites. The site type models were also combined into a composite sensitivity model, which shows that high and moderate probability areas cover much of the National Monument.

Burnette, Dorian (University of Memphis), David Dye (University of Memphis) and Arleen Hill (University of Memphis)**[291]** *Stephen Williams and The Vacant Quarter Phenomenon*

Stephen Williams proposed the idea of a Vacant Quarter based on the abandonment of numerous Mississippian polities throughout much of the Midsouth and Midwest. The unprecedented, large-scale depopulation of an approximately 130,000 square kilometer area has been linked with population movements as well as interpolity conflict. By taking a dendroclimatological approach we evaluate the role of climate change in this process, while also being cognizant of social processes. We postulate a staggered process of depopulation with distinct polity histories resulting from both climatic and social variables characterized by numerous, small-scale abandonments and regional population movements.

Burnette-Egan, Polly (Cornell University)**[189]** *Zooarchaeology and Spatial Analysis at Tepe Farukhabad: New Life for Legacy Data*

This poster presentation presents a reanalysis of legacy faunal material, collected by Henry Wright and the zooarchaeological analysis conducted by Richard Redding, during the 1968 excavation on the Deh Luran Plains in southeastern Iran at the 4th-millennium site Tepe Farukhabad. It behooves all researchers to give more attention to the existing data sets already collected and available for research. In that vein, this study re-evaluates the faunal data sets at Tepe Farukhabad and looks for patterns in architectural spaces during the Uruk period at Tepe Farukhabad. The Uruk Phases are isolated for the purpose of this study, as this is a period of major changes in social and political complexity. These spatial data are coded and the faunal material is organized by these zones, then is sorted by taxa, element, side, and the relative status of species and meat-cut to illuminate the lifeways of the people who lived and worked in this early town on the Deh Luran Plain. The research situates the zooarchaeological findings at Urukian Deh Luran in the wider context of the Uruk phenomenon in southern Mesopotamia

Burnor, Luke and Claudia Garcia-Des Lauriers (California Polytechnic University Pomona)**[118]** *Los Horcones, Offering 1: 3D Imaging, Analysis, and Reconstruction*

The three dimensional imaging of artifacts discovered at the Los Horcones site in Southern Chiapas Mexico has enabled archaeologists to approach artifacts in a brand new way. With the use of a 3D scanner hardware and 3D program software, objects and features of various sizes are scanned to create a proportional and scale digital version. The scanning of artifacts allows for minimal handling of the objects decreasing the likelihood of wear, damage, deterioration, and contamination, effectively lending to conservation. This technology facilitates a full range of examination capabilities in a manipulable high resolution digital format that is easily transferrable and portable. In addition, digital formats enhance teaching pedagogy and public outreach. The potential of 3D scanning promotes a new kind of research that provides a practical interactive interface to websites, e-books, and research papers that contributes an entirely new dimension to responsive learning. Furthermore, in conjunction with 3D printing, the data can be physically reproduced inexpensively and fairly quickly to provide a tangible object that can be used for a variety of research, educational, and demonstrative purposes.

Burns, David, Luisa Aebersold (UT Austin), Fred Valdez (UT Austin), Samantha Krause (UT Austin) and Anastasia Kotsoglou (Cornell University)**[243]** *Excavations at Two New Operations at Colha*

Colha, an ancient Maya site located in northern Belize, has undergone archaeological research interests since the 1970s. Previous investigations demonstrate a long occupational history at the site that spans from the Late Archaic (ca. 3400 BC) to the Early Postclassic (AD 1200). Building upon previous research, a primary goal of the 2017 season was to explore the transition between the Archaic (3400 BC) and Preclassic (1000 BC) periods while focusing on technological and social continuity. This paper reports on the general excavation strategies, results, and avenues of future research pertaining to two main excavation areas. The 4000 sector of Colha, located within the larger settlement zone of the site, focused on defining the Archaic-Preclassic transition. While excavations within the 2000 sector, situated within the main site plaza, concentrated on investigating an Early Middle Preclassic village that was partially exposed in previous seasons. Notable artifact assemblages and features include burin spalls and associated shells, an early hearth, a ceramic cache, and diagnostic lithic tools. The data from these excavations, as well as associated ongoing analyses, work towards the goal of developing a more holistic, diachronic understanding of the cultural history of the site.

Burns, Jonathan [334] see Swisher, Christopher

Burrell, Jennifer (University at Albany SUNY)**[109]** *Ethnographic Perspectives on Debt & Political Economy: Contributions to a Conversation on Graeber*

This paper contributes contemporary ethnological perspectives and a case study on debt, moral economies, financial citizenship and human rights to a conversation among and between archeologists considering these perspectives in Mesoamerica.

Burrillo, R. E. (SWCA Environmental Consultants)**[39]** *The Mikesboy Site Complex: Historic Archaeology and the Utes of Bears Ears*

In 2016, SWCA Environmental Consultants conducted a limited Class II cultural resource inventory in the Bears Ears area in order to test a predictive model generated on behalf of the Monticello Field Office of the BLM for a Class I report. A historic stone-and-timber sheep corral with nearby rock inscriptions was located and mapped on the Butler Wash side of Comb Ridge during these efforts, and determined to be a historic Ute site with Navajo cultural elements. Subsequent revisits to the site revealed that it was part of a much larger site complex, including a second sheep corral, a temporary camp and wood-cutting area, and the remains of a hogan with badly-weathered inscriptions on an adjacent rock face that included the name "Mikesboy." This talk presents the results of research on Mikesboy and historic archaeology of the Utes of Bears Ears.

[96] *Discussant*

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Burt, Nicole (Cleveland Museum of Natural History)**[205]** *Public Perception of the Ethics of Physical Anthropology*

The history of physical anthropology contains figures and movements that improperly used science to hurt or diminish other groups or was utilized by such movements after publication. This haunted past can manifest as a bumpy future for modern practitioners working under a shadow of racial typology, eugenics, and other horrific applications of their science. Anthropologists continue to be haunted where our peers in anatomy or biology are not, due in part, to our theoretical approach as a biocultural science, which used both culture and biology as a weapon. Scholars have begun to confront the past in student training and working with research participants (Weiss, 2006; Marks, 2017). In this talk, I approach the subject as a museum curator, who is engaging with the public about research and the science of physical anthropology. The encounters range from very supportive to hostile. The public perception of the ethics of the field can be a huge hurdle in engaging and educating. Physical anthropologists need to communicate the modern ethics of the field effectively while remembering and acknowledging that the history of the field cannot and should not be ignored. This presentation focuses on what has and has not worked for public engagement.

Burton, Margie [172] see Levy, Thomas E.

Burt, Amanda (Indiana University)**[212]** *The Diet of Dogs: Dental Microwear Texture Analysis to Interpret the Human-Canine Connection in Prehistoric North America*

The archaeology of dog-keeping by indigenous Native North Americans enriches our understanding of ways people conceptualized their environments in the past. Finding new ways to investigate this topic contributes to broader anthropological knowledge about relationships among humans and the natural world. In this paper, I present exploratory research to examine ways that domestic dogs were maintained and the assumed value of dogs among Native Americans who lived in the Ohio River valley, in Plains Villages, and in the foothills of the Rockies during the Late Prehistoric period. I employ Dental Microwear Texture Analysis (DMTA) to examine human-canine connections and dog feeding/provisioning strategies. Analyzing the diets of domestic dogs (*Canis familiaris*) provides a proxy for human intentions to sustain canine companions. Baseline data from members of the Family Canidae provides comparative microwear textures and a more contextualized insight into the dietary behavior of dogs that lived with humans in geographically and culturally distinct areas of North America.

[212] *Chair*

Bury, Rick [214] see Ryan, Christopher

Bush, Dominic**[7]** *Animal Use in the Last Maya Kingdom*

The archaeological site of Flores is a small, lacustrine island located in Northern Guatemala. Despite lacking in physical size, the island has a lengthy occupational history, dating from the Preclassic Maya period through the present. Flores, which became a provincial capital during the late Postclassic, was able to resist Spanish rule until 1697 AD, making it the last Maya holdout. Given this distinction, the island has been under much archaeological scrutiny and the subject of many publications. However, there has yet to be a thorough, diachronic study of animal use at Flores, and how the site compares to other Maya lowland settlements. Due to its proximity to freshwater, Flores was in an area of great floral and faunal resource abundance. This study aims to not only taxonomically identify faunal remains recovered on Flores, but also searches for patterns possibly tied to shifts in the social, economic, and political landscapes, especially as it relates to the Classic Maya "Collapse" and the arrival of the Spanish. By understanding the history of animal exploitation and past ecological conditions, part of the answer to why Flores outlasted its contemporaries in regards to resistance to the Spanish is teased out.

Bush, Jason [299] see Solinis-Casparius, Rodrigo

Bussiere, Lauren (Texas Archeological Research Laboratory, University of Texas at Austin) and Nadya Prociuk (University of Texas at Austin)**[21]** *Northern Gulf Coast Trade in the Mesoamerican Postclassic: The Evidence from Brownsville*

The Postclassic period (ca. 1000–1520 CE) in the coastal Gulf of Mexico was characterized by an increase in trade and interaction between groups moving along the coastline and larger inland polities such as the Aztec empire. While exchange between Mesoamerican groups is increasingly well documented, the extent of interaction between people in Mesoamerica and those living further northward is poorly understood. Evidence of the nature and strength of cultural ties between the Huasteca of the Gulf coastal lowlands and more northerly coastal peoples exists in several collections from south Texas sites, namely those of the Brownsville Complex in the Rio Grande Delta. Although they appear superficially to be a marginal culture isolated from the larger interaction spheres of both the Aztec tributary polities to the south and the Toyah and Rockport cultures of Texas, the people of the Brownsville Complex may in fact represent the northern periphery of Mesoamerican interaction. This paper reviews the evidence for Brownsville Complex connections to the Huasteca and other coastal peoples and characterizes the relationship between these groups within the greater context of Postclassic interaction along the Gulf Coast and beyond.

Bustamante, José (PRALC—Universidad del Valle de Guatemala)**[337]** *Early Political Changes in La Corona: Architecture and Function in the Palace Complex*

Over the past decade, the La Corona Archeological Project has been investigating the site's palace complex, focusing primarily on its final construction phases. The focus is common in lowland Maya archaeology because of the relative ease of conducting extensive excavations on terminal phase architecture. However, at La Corona, major tunneling efforts have also explored the earlier architectural phases of the palace. As a result, the project has identified three construction phases that date to the Early Classic, two of which date to before the beginning of the site's long-lived political alliance with the Kaanul kingdom. In this paper, we discuss the architectural patterns of an Early Classic palace in the Maya lowlands as well as demonstrate how this palace was modified after the La Corona rulers became Kaanul's vassals.

Büster, Lindsey (University of Bradford, UK)**[29]** *Death, Dying and Horlicks: Structured Deposits as Problematic Stuff in European Prehistory*

Personal possessions are inherent in the construction and maintenance of social identity. In some prehistoric cosmologies, artefacts may even have been integral to an individual's personhood. As such, they can become culturally and ritually charged objects within a community. What happens then to this social remnant of an individual when they die? Objects that are on the one hand redundant but on the other too problematic to be casually discarded. In the increasingly materialist and consumerist societies of the modern west, the 'stuff' we leave behind can be difficult to deal with. This is demonstrated, for example, in the establishment of dedicated 'house clearance' firms, while in other cases it becomes the focus of family feuds. In prehistoric societies, when the number of objects associated with specific individuals was far fewer, it is likely that such items carried even greater symbolic charge and that the problematic nature of the material residue of the deceased was further amplified. Can we detect these tensions

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archaeologically? This paper argues that the 'structured deposits' of European prehistory represent the 'problematic stuff' of the past, and can provide greater insights into individual and communal experiences of death, dying and bereavement among past societies.

Butler, Virginia L. [10] see Bovy, Kristine

Buttles, Palma (Carnegie Mellon University/Software Engineering Institute) and Fred Valdez (The University of Texas at Austin)

[243] *Colha, Northern Belize: A History and Record of Research*

The northern Belize prehistoric Maya site of Colha was first archaeologically documented by the Corozal Project in the early 1970s. The most significant archaeological research at the site was conducted as The Colha Project (1979–1983), with subsequent projects of specialized interests (1994–2017). Though known primarily for its lithic dimension as a major production and distribution center of stone tools, many other aspects of Maya society have been identified from the numerous seasons of research. A brief review of Colha's research history is presented along with general comments on significant findings as well as continuing interests and potential.

Buttles, Palma [243] see Sullivan, Lauren

Button Kambic, Emily (National Park Service) and Lauren Hughes (National Park Service)

[202] *Retracing Reconstruction: America's Second Founding in Archaeological Perspective*

The National Park Service's release of a theme study on Reconstruction and the creation of Reconstruction National Monument in Beaufort, SC, mark the agency's commitment to scholarly and public engagement with the complex and continuing legacies of the post-Civil War period. The National Capital Region and the Organization of American Historians are conducting a historic resource study of Reconstruction sites in the region, including urban sites in Washington, DC, and small town and rural sites in parts of Virginia, West Virginia, and Maryland. This paper will discuss how spatial and archaeological perspectives on Reconstruction can enrich historical and political narratives. First, previous archaeological excavations at National Park Service units have uncovered insights into the conditions and challenges of daily life for rural and urban African Americans that can now be considered comparatively as part of a regional understanding of Reconstruction. Second, mapping the distribution of preserved and no longer extant historic and archaeological sites can help visualize regional trends and differences in African American community and institution building. It can also build connections to the present by revealing how urban development and demographic trends correspond with differences in site preservation across the region.

Bybee, Alexandra

[88] *Historical and Bioarchaeological Investigation of the Evansville State Hospital Cemetery (12VG598), Vanderburgh County, Indiana*

In 2014, Cultural Resource Analysts, Inc., conducted the archaeological relocation of graves from the Evansville State Hospital Cemetery. At the request of Beam, Longest, and Neff, LLC, on behalf of the City of Evansville and the Indiana Department of Transportation, the graves of 31 individuals who were patients at the reform-era hospital between circa 1890 and 1928 were relocated in advance of construction of a pedestrian bridge. The population consisted primarily of young to middle adults, with roughly even numbers of males and females. Numerous skeletal and dental pathologies were identified (e.g., osteoarthritis, degenerative joint disease, and healed bone breaks, along with dental caries, calculus, hypoplasias, and antemortem tooth loss). Other skeletal and dental pathologies that may have been associated with the admittance to or retention of a patient at the hospital were also identified, including deformities consistent with metabolic or other genetic issues. This paper provides a historical context for the treatment of mental health issues in the region during the nineteenth through early twentieth centuries, along with information about the health of the population and their treatment after death.

Byers, David (Utah State University), José M. Capriles (The Pennsylvania State University), Adolfo Gil (IANIGCA/CONICET—Grupo Vinculado San Rafael), Judson Finley (Utah State University) and Jacob Freeman (Utah State University)

[105] *PEOPLE 3K (PaleoClimate and the Peopling of the Earth): Investigating Tipping Points Generated by the Climate-Human Demography-Institutional Nexus over the Last 3000 Years*

One of the least understood aspects of paleoscience is the interplay between climate, human demography, and how changes in population influence resource management strategies. With the goal of understanding such processes, we created the PEOPLE 3000 research network to study trade-offs inherent to the climate-human population-institutional adaptation system over the last 3000 years. We propose that strategies reducing variation in food production and institutions for protecting those strategies generate ever more complex socio-ecological systems (SES). The growth of complexity, accompanied by a loss in social and subsistence diversity, can result in major reorganizations due to external or internal changes that drive a SES across a critical threshold. We explore this proposition using case-studies from the Great Basin, northern Chile and western Argentina. We compare radiocarbon SPDs with records of palaeoecological change, and changes in the diversity of subsistence and social strategies. The results show that population increased from 2000 to 800 BP in all three locations, and populations declined and societies reorganized between 700–550 BP. Our analysis reveals possible trade-offs associated with simultaneous adaptation to population growth and climate change and provides a more informed position to understand relationships between social-ecological parameters and threshold changes in modern SES.

Byers, David [105] see Robinson, Erick

Byrd, Brian [84] see Kajjankoski, Philip