07 Seeing with New Eyes: The Role of New Scientific Techniques and Perspectives in Revolutionizing the Search for the First Americans

A Pedoarchaeological Approach to the Holocene Period of the Central Desert, Baja California, Mexico, SAMUEL C. WILLIS (Oregon Department of Parks and Recreation, Oregon Parks and Recreation Department, Stewardship Section, Salem OR; Samuel.Willis@oregon.gov).

The Holocene period of the Central Desert region represents an opportunity to study a unique socio-ecological record. Patterns of human organization and land use throughout the Holocene co-occurred during periods of environmental and climatic transformations, including alternating periods of climatic stability and instability. While human behavior is culturally driven, it is, to an extent, responsive to both predictable and stochastic shifts in environmental productivity. Therefore, understanding the environmental context through time is paramount for more accurately reconstructing any synchronic and diachronic archaeological record. In this paper, the usefulness of applying a soil geomorphological methodology to an archaeological research program is discussed. Between 2009 and 2012, a multi-disciplinary study—the Central Desert Early Prehistory Project (CDEPP)—was undertaken to better understand the Holocene socio-ecological record of this remote and isolated region. A trans-peninsular mega-transect approach was used in this study from Punta Calamajue on the Gulf of California to Bahia Blanco located on the Pacific Coast. To create a broader explanatory framework, a soil geomorphology analysis was undertaken throughout each field season. By applying soil geomorphology methods to a larger archaeological research program allows for a more refined understanding of specific patterns of Holocene forager behavior and land use systems. Results of a soil geomorphology approach used in the CDEPP, in terms of its effect and refinement towards clarifying our understanding of past socio-ecological patterns in the Central Desert, were highly successful. More importantly, this study demonstrates the complimentary application and usefulness of a pedoarchaeological approach to large-scale archaeological research programs.

The Submerged Paleoamerican Cave Site of Hoyo Negro, Mexico: Recent Advances in Virtual Taphonomy, DOMINIQUE RISSOLO\(^1\), VID PETROVIC\(^1\), ALBERTO NAVA BLANK\(^2\), JAMES C. CHATTERS\(^3\), BLAINE SCHUBERT\(^4\), PILAR LUNA ERREGUERENA\(^5\), and FALKO KUESTER\(^1\) (\(^1\)Cultural Heritage Engineering Initiative (CHEI), Qualcomm Institute, UCSD Division of Calit2, University of California, San Diego, La Jolla, CA, drissolo@ucsd.edu, vpetrov@ucsd.edu, fkuester@ucsd.edu; \(^2\)Global Underwater Explorers, Seaside, CA, betonavab@gmail.com; \(^3\)Applied Paleoscience and DirectAMS, Bothell, WA, USA, paleosci@gmail.com; \(^4\)Center of Excellence in Paleontology and Department of Geosciences, East Tennessee State University, Johnson City, TN, schubert@etsu.edu; \(^5\)Subdireccion de Arqueologia Subacuatica, INAH, Mexico City, Mexico).

The submerged cave systems of Quintana Roo provide access to well preserved Late Pleistocene and Early Holocene deposits that can reveal a wealth of information about the ecology of the Yucatan Peninsula at the end of the Last Glacial Maximum. The interdisciplinary Hoyo Negro Project aims to identify and reconstruct the processes that have formed and transformed the site over millennia. In addition to ongoing studies of the human skeleton from Hoyo Negro and the diverse assemblage of Pleistocene fauna and botanical remains, the development of point-based visual analytics tools enable novel approaches to site-scale taphonomic studies. Domain experts can conduct a range of taphonomic or spatial analyses via a digital surrogate of the site. Rather than simply serving as models of the site and its ancient faunal and human remains to view and share, the full-resolution point-clouds can be manipulated by a variety of user-scripted tools. The interactive, point-based visual analytics workflow has proven to be especially empowering for researchers unable to otherwise access deep and remote underwater sites.

Gender and Settlement Patterns during the Terminal Pleistocene Migrations in Western North America, RAFAELLA LISBOA (California State University, Northridge, Department of Anthropology, Northridge, CA; rafaella.lisboa.98@my.csun.edu).

The social dynamics of human-environmental interactions have often privileged either an androcentric decision-making model or a heuristically ‘gender-neutral’ human community. Both of these approaches fail to consider the range of factors influencing human decisions regarding resource exploitation, settlement patterns, storage, and mobility that may vary in key ways depending upon the gender of the actors involved. The varied geographic and ecological contexts of the migrations at the end of the last Ice Age mean that the role of gender and its influence on the ecological decision-making would have been distinct for maritime and terrestrial groups. Additionally, groups with greater dependency on plant resources would have been tethered in ways distinct from those with greater dependence upon mobile herds of herbivorous animals. A particularly
appropriate regional case study is that presented by the Terminal Pleistocene archaeological record of the Baja California Peninsula.

Ancient DNA Analyses, Long Term Research Collaborations and the Yukisma Mound from Central California, CARA MONROE,12 ALAN LEVENTHAL1, CHARLENE NIJMEH1, MONICA V. ARELLANO4, and ROSEMARY CAMBRA4 (1University of Oklahoma, Laboratories of Molecular Anthropology and Microbiome Research; 2Department of Anthropology, University of Oklahoma, monroecara14@gmail.com; 3San Jose State University, Department of Anthropology, College of Social Sciences; 4Muwekma Ohlone Tribe of the San Francisco Bay).

Ancient DNA analyses from human skeletal remains is a controversial avenue of research, especially when there is minimal permissions or participation from descendant communities. However, it not only possible, but also critically necessary to create long term reciprocal research collaborations with descendant communities. The result is elevated scientific research that has mutual and meaningful investment and interest to all parties. In partnership with the Muwekma Ohlone Tribe, I will present ancient DNA and bioarchaeological data from CA-SCL-38 the Yukisma Mound (Place of the Oaks) a Late Period site in South San Francisco Bay.

Haskett, Clovis, and a Case for a Two-Tradition Colonization of North America, DARON DUKE1 and DAN STUEBER2 (1Far Western Anthropological Research Group, Inc., Desert Branch, Henderson, NV, daron@farwestern.com; 2University of Victoria, Department of Anthropology, Portland, OR, dan@thunderstones.com).

Recent discoveries of Haskett projectile points in the Intermountain West indicate that Haskett is overlapping or coeval with the well-known Clovis style. Haskett is likely the initiating point style for the Western Stemmed Tradition in the Great Basin, and it represents a specialized hunting culture akin to Clovis in its size and scale. These data suggest that two different traditions—perhaps two different peoples and cultures—were converging on the megafaunal extinction event in western North America at about the time of the Younger Dryas onset. In this paper, technological similarities, such as high craftsmanship, widespread toolstone transport, and spear-knife functionality are presented to advance Haskett into the story of North America’s colonization.

Technological Legacies and Innovations in the Context of the Late Pleistocene Peopling of the Americas, MATTHEW R. DES LAURIERS (California State University, Northridge, Department of Anthropology, Northridge, CA: mdeslaur@csun.edu).

Until the last 20 years, the consensus held by the archaeological community was that the principal ecological role occupied by the earliest human migrants to the Americas was that of a terrestrial focused big-game hunters. Discoveries across both North and South America in the last two decades have steadily accumulated to the point that those assumptions have been shattered. Debate still continues as to the routes of travel, ecological adaptations, and timing of the initial entry, but we find ourselves in a period of an adaptive radiation in perspectives. It now appears that migrations along the Pacific Rim were most likely responsible for initial human arrival on the American continents. These migrations would likely have included people with a range of cultural, linguistic, and technological traditions. These technological legacies should be acknowledged and traced to their most likely points of origin in order to more fully integrate the story of the Peopling of the New World with the larger picture of the modern human diasporas. The sites containing some of the earliest evidence for human occupation along the Pacific Rim include well-designed shell fishhooks that may tie the first occupants of the Baja California peninsula to populations whose original homelands were to be found among the archipelagoes of the Western Pacific, rather than the tundra of Eastern Siberia.

Tracking Late Pleistocene Technologies in the Americas with Digital 3D Geometric Morphometrics, LOREN G. DAVIS (Oregon State University, Department of Anthropology, Corvallis, OR: loren.davis@oregonstate.edu).

The complex form of precontact artifacts represents the physical manifestation of past human behaviors that are encoded in 3D data. While archaeologists have traditionally measured and employed morphometric data to define and relate artifacts across space and time, these approaches have and continue to be simple approaches to the analysis of form. The advent and application of digital 3D model building techniques offers powerful ways to record the form of artifacts and serves as a foundation for the development of new approaches to interpretation that examine morphometric correlates for artifact design, manufacture, and even use. Once developed, these morphometric correlates can be employed to study how the First Americans shared and put into practice stone tool technological strategies. Here, we discuss how geographic information systems can be used to extract novel measures from stone tools and how these measures can be used to compare elements of technological design, manufacture, and use as a method for tracing past networks of cultural transmission.