BACKDIRT

ANNUAL REVIEW OF THE COTSEN INSTITUTE OF ARCHAEOLOGY AT UCLA

DECEMBER 2015



BIG PICTURE ARCHAEOLOGY

Message from the Director of the Institute



WELCOME TO THE LATEST issue of *Backdirt*. We witness another banner year for the Cotsen Institute of Archaeology as reflected in this review. The good news just keeps rolling in. We continue to publish great books in our award-winning press; the latest include a major report from an excavation at Tell al-Raqa'i in Syria, one on the intensive excavations at an Archaic shellmound in Chiapas, a study of Bronze Age cultures from the Russian steppes, and a book on excavations of the last refuge of the Inca in the jungle town of Vilcabamba, Peru. This small sample highlights the diversity of our list and reflects the vast range of research that we support and teach here at the Cotsen.

Also in this issue, Professor Sarah Morris tells us about our new cohort of incoming graduate students. As you can see, we yet again lived up to our top-rank reputation in recruiting the best and the brightest from the world's undergraduate programs. Our current graduate students—many of whom have received external grants for their studies here at the Archaeology Program—continue to flourish. The same is true of the Conservation Program. Professor Ioanna Kakoulli reports on the outstanding crop of new students in this demanding program.

This issue of *Backdirt* also includes reports from Cotsen researchers about their work across the globe, including India, Egypt, Ethiopia, Jordan, Peru, Tunisia, and the Philippines. Once again, we see how our vision and focus are global in scope.

Our relatively new undergraduate archaeology club is flourishing. This group brings the fascination and relevance of archaeology to young men and women in the College and provides a forum in which to meet faculty and graduate students. Even if most club members do not go on to pursue careers in archaeology, they will have many memorable experiences working in the lab and the field. This is a key message that Lloyd Cotsen always emphasized with me as we built the CIoA over the last 15 years. Archaeology is relevant for many reasons, not the least of which is that it can enrich the lives of people from all walks of life.

In that regard, I am delighted to see the article by Elizabeth Kahn on the Rainbow Bridge-Monument Valley Expedition conducted in the 1930s in the Four Corners area of the Southwest. Two of the principal archaeologists on the project were some of the earliest anthropology professors at UCLA. The Rainbow Bridge project is now reborn by the passionate volunteers and staff of Onward!, a nonprofit dedicated to creating visual tools to highlight this Depression-era research. As director of the CIoA, I am delighted to see this come together. And as a member of the public, I am excited to join the folks of this program in Rainbow Bridge this November for what will prove to be an amazing few days of touring and learning.

I am fond of pointing out that the CIoA, composed of the research arm and the two educational interdepartmental programs of archaeology and conservation, provides a true embarrassment of riches in opportunities to hear speakers on every topic in archaeology. In this issue of *Backdirt*, we hear about the successes of the Fifth Annual Graduate Research Conference and the many talks in the Wednesday pizza series, the Friday seminars, and the Friends of Archaeology dinner lectures.

In this issue we also hear from some of our distinguished supporters and alumni. We include research reports from around the world and news about our open house and other activities.



Charles Stanish

Director, Cotsen Institute of Archaeology

Lloyd Cotsen Chair in Archaeology

I am saddened to note the tragic and untimely deaths of two of our most distinguished alumni—Pochan Chen and Michael Walsh. Their obituaries are in this issue. Their contributions to both archaeology and the Cotsen Institute were many; they are both deeply missed. I likewise sadly note the passing of Patty Anawalt, a dear friend of the Cotsen Institute and of UCLA. Patty was a great scholar and friend; she will be deeply missed as well.

This will be my last message as director of the CIoA. I am proud to leave next July on such a high note when my final term expires. I leave the directorship with the Cotsen Institute intellectually and financially sound and full of energy from so many wonderful people. I wish to express my deepest gratitude to my colleagues—both faculty and staff—and to the amazing students, supporters, and friends who have made us the best. I especially thank Mr. and Mrs. Lloyd Cotsen for their extraordinary vision and support, without which this work would not be possible. It has been an amazing 15 years.

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@2015 UC Regents

FRONT COVER:
UCLA graduate student Reuven Sinensky, just below Mountain Lion Mesa in Petrified Forest National Park, documenting one of the many prehistoric rock art sites with imagery dating to the Pueblo II (900–1125 C.E.), Pueblo III (1125–1300 C.E.), and Pueblo IV (1300–1475 C.E.) periods. Photo by archaeologist Gregory Luna Golya.

BACK COVER:
Local children joining the excavation crew of the Ifugao Archaeological Project (IAP), a collaborative research program of the Save the Ifugao Terraces Movement, the National Museum of the Philippines, the University of the Philippines, the National Commission on Indigenous Peoples–Ifugao, and UCLA. Photo by Stephen Acabado, assistant professor in the Anthropology Department at UCLA.

ABOVE:
Photo by Gregory Areshian.

THE INSTITUTE IN THE NEWS

Cotsen Graduate Student Achievements

One measure of the success of any graduate program is the record of placement and professional accomplishments of its graduate students, and here we take the opportunity to list some examples of recent student success in academic positions, publications, and fieldwork. Our newest graduates are enjoying post-degree opportunities, beginning with **Joseph (Seppi) Lehner**, whose dissertation on Bronze and Iron Age economic systems in Anatolia led to a postdoctoral fellowship at the Research Center for Anatolian Civilizations at Koç University in Istanbul, Turkey. Our first doctoral student from Albania, **Esmeralda Agolli**, filed her Ph.D. in 2014 and is now teaching in the new Department of Archaeology and Cultural Heritage at the University of Tirana, where she leads a new field project in collaboration with Dr. Charles Stanish of UCLA. An unusual teaching opportunity as Dean's Lecturer in the Social Sciences was offered to Dr. **Sonali Gupta-Argawal** (Egyptology, 2015), who designed an advanced undergraduate course on ethnoarchaeology as a tool for studying contemporary social issues, which she taught in spring 2015 and repeated for two quarters this year. Among last year's graduates, **Brett Kaufman** is beginning his second postdoctoral year at the Joukowsky Institute at Brown, where he has brought his expertise in ancient Near Eastern metallurgy to a number of new courses and a local collection of Luristan bronzes. Last year, he also launched a new field project at a Neo-Punic/Roman site (Zita) in Tunisia, where he runs a field school as well. **Anne Austin** (Egyptology) was awarded a competitive, two-year Mellon postdoctoral position in the Department of History at Stanford, where she has literally made headlines. Her unique fusion of Egyptian texts, ancient skeletons, and a scalar approach to the study of short-term illness ("sick days" among workers) and its impact on daily life has led to her first article in the peer-reviewed *Journal of Near Eastern Studies* (2015).



Cotsen Institute graduate Brett Kaufman in his excavation unit in the portico of the Roman forum in Zita (Tunisia).

Farther down the career path, Dr. **Anke Hein** (prehistoric Chinese archaeology, 2013) followed two prestigious international postdoctoral appointments (in Israel and Germany), which produced a number of publications and ultimately a tenure-track appointment in Asian archaeology at Oxford University. After two years of postdoctoral and teaching appointments, **John (Mac) Marston** found his tenure-track home at Boston University, where he directs the Environmental Archaeology Lab, has coedited his first book on paleoethnobotany, and is active in several Mediterranean field projects, successful fund-raising, and a stream of publications. Historical archaeologist Dr. **Kelly Fong** (Ph.D. 2013), who focused on the archaeology of the Chinese American community at Isleton, California (the Sacramento River delta), for her thesis, is teaching Asian American studies near her alma mater, at California State University–Northridge.

Other UCLA students prepare for and practice museum careers. Before finishing his degree, **Seth Pevnick** was appointed Richard E. Perry Curator of Greek and Roman Art at the Tampa Museum of Art, where he organized the exhibition *Poseidon and the Sea* while finishing his thesis and copublishing the

Graduate Achievements (continued)

ceramic finds from the UCLA project at Lofkënd in Albania. In June 2015, current UCLA student **Jacob Bongers** was hired as a curatorial consultant for a new exhibit at the Los Angeles County Museum of Natural History called *Mummies: New Secrets from the Tombs*.

Students still finishing degrees in archaeology have also put their names and that of the Cotsen Institute in lights, with an article on urbanism in second-millennium B.C.E. Iran by Evan Carlson in *Iran* (2014) and an article on the use of analytical chemistry in archaeology coauthored by Ben Nigra in *Analytical Chemistry* (2015). Recently, graduate students have teamed up with faculty for think-tank seminars that resulted in publications in major journals. Lana Martin, Katelyn Bishop, Brittany Jackson, Myles Chykerda, and Professor Richard Lesure reevaluated the Mesoamerican Neolithic Demographic Transition in *Current Anthropology* (2014). Meanwhile, Scott Sunnell, Ben Nigra, Katelyn Bishop, Terrah Jones, Jacob Bongers, and Professor Jeanne Arnold tackled evolutionary thinking and complex hunter-gatherers in *Journal of Archaeological Method and Theory* (2015). Farther south, Cotsen student Karl La Favre coauthored a book on survey of the Huancane-Putina drainage in the Titicaca Basin, Peru (2014). Another student on the verge of her Ph.D., Christine Johnston, has had her presentation at the annual Chacmool conference (University of Calgary), on a distributional analysis of the economy of Late Bronze Age Ugarit (Syria), accepted for publication in the next proceedings of the conference.

Finally, a number of our students are working toward the next level by winning competitive grants at UCLA and beyond. Evan Carlson, Chelsey Fleming, Hannah Lau, and Karl La Favre received dissertation-year fellowships through the UCLA Graduate Division. Ben Nigra received a Dissertation Research Improvement Grant through the National Science Foundation, and Katelyn Bishop won a National Geographic Young Explorer's Grant to further her research goals.

We are proud of our outstanding students and their successes during their UCLA years, as well as after they complete their degrees, and we look forward to future generations of excellence.

— Sarah Morris and Ben Nigra



Cotsen Institute faculty and affiliates join in congratulating our six new Egyptologists.

Egyptology at UCLA

The Egyptology section of the Department of Near Eastern Languages and Cultures at UCLA consists of three faculty members: Kara Cooney, Jacco Dieleman, and Willeke Wendrich. Together they study, publish, and teach the art and architecture, language, and archaeology of ancient Egypt, from the Epipaleolithic up to the advent of Islam in the seventh century C.E. Recently, much public interest was generated by Kara Cooney's book *The Woman Who Would Be King: Hatshepsut's Rise to Power in Ancient Egypt*. UCLA Egyptologists oversee two large ongoing online projects: the UCLA Encyclopedia of Egyptology (UEE, http://uee.ucla.edu/) and, together with the Deutsches Archäologisches Institut, Ancient Egyptian Architecture Online (AEGARON, http://dai.aegaron.ucla.edu/). Their work also includes two field projects: one comprises excavation of the Greco-Roman city of Karanis (Kom Aushim) in the northern Fayum Oasis, just southwest of Cairo, combined with the study of Epipaleolithic remains in the deserts in the vicinity; the other project studies and publishes coffins held in museums throughout Europe. Another research focus is philology, in particular the intersection of ritual and scribal culture in the first millennium B.C.E. and the Hellenistic and Roman periods. By editing unpublished liturgical and magical papyri, the Egyptologists investigate social dynamics of ritual practice and the interaction of Egyptian and Greek language and culture. All these activities have attracted and facilitated a growing number of graduate students, six of whom received the doctoral hood in June 2015. In alphabetical order these were: Anne Austin, Emily Cole, Sonali Gupta-Agarwal, Bethany Simpson, Angela Susak Pitzer, and Eric Wells.

— Hans Barnard

THE INSTITUTE IN THE NEWS



ANNE AUSTIN
combines the fields of Egyptology and osteology in order to document medicine and disease in the past. Specifically, she uses data from the human remains and daily life texts of the ancient Egyptian village of Deir al-Medina to reconstruct ancient Egyptian health care networks and identify the diseases and illnesses people experienced in the past. Anne is currently a Mellon Postdoctoral Fellow in the History Department at Stanford University. She recently published "Accounting for sick days: A scalar approach to health and disease at Deir el-Medina" in the *Journal of Near Eastern Studies*.

2015 Doctoral Graduates



EMILY COLE
studies the social history of Egypt from the first millennium BCE onward from both a philological and archaeological perspective. In her dissertation she examined the practice of translating older Middle Egyptian texts into lat er phases of the language, comparable to translating Chaucer into modern English. She contextualized these multilingual Egyptian texts within Egyptian scribal culture to demonstrate the social prestige this intellectual practice offered and came to be part of broader Egyptian cultural identity during the Ptolemaic and Roman Periods. Throughout her time at UCLA she has worked with the URU Fayum Project and will be starting a new project at the Fayum site of al-Qarah al-Hamra with Bethany Simpson. In their first season, they want to date the occupation of the site and begin to establish a connection between this smaller site and nearby Karanis. During the 2015-2016 academic year, she will teach for the Department of Near Eastern Languages and Cultures at UCLA. She recently published " The gendered individual in funerary papyri of the Ptolemaic and Roman Periods" in the *Journal of the American Research Center in Egypt*.



SONALI GUPTA-AGARWAL
completed her thesis *"Understanding Transmission of Skill as Influencing Continuity or Change Through Locally Manufactured Utilitarian Ware at Greco-Roman Karanis,"* in which she was able to identify ancient communities of potters in Karanis, Egypt, based on insights gleaned from ethnoarchaeological research in both Egypt and India. Her research methods included visual and chemical analysis, quantitative variability, as well as qualitative analysis of activities, gestures, postures and the use of space. She is currently the Dean's Lecturer in Social Research at UCLA for 2015-2016, teaching a course on the relevance of archaeology and ethnoarchaeology in understanding contemporary social issues, and has been appointed visiting professor at the National Museum, New Delhi, where she teaches a course on ancient art and archaeology. Meanwhile she is applying for permanent academic positions that will allow her to continue her research in Egypt and India. She recently published the chapter "Cultural transmission and the influences of consumer demand: A case study using ceramics from Karanis, Egypt" in the volume *Late Roman Coarse Ware: Cooking Ware and Amphorae in the Mediterranean*.

Egyptology at UCLA—2015 Doctoral Graduates (continued)



BETHANY SIMPSON
completed her dissertation, entitled *"Neighborhood Networks: Social and Spatial Organization of Domestic Architecture in Greco-Roman Karanis, Egypt."* In it she examines domestic architecture in the ancient world and the relationship of private versus public spaces. Since 2007 she has been a member of the archaeological research project at Karanis, Egypt, where she conducted a survey of the site's ancient mudbrick architecture. She is currently working as Adjunct Professor of Egyptology at UCLA, and will be co-directing excavations at the Greco-Roman site of al-Qarah al-Hamrah, near Karanis, with Emily Cole.



ANGELA SUSAK PITZER
examined how value was assessed in the ancient world through the study of Roman glass from Karanis, Egypt. Her multi-disciplinary study combined archaeological and analytical data with ethnoarchaeological and historical insights. She deployed portable X-ray fluorescence spectrometry on site and electron probe micro-analysis at UCLA, after which she conducted quantitative analysis to identify compositional groups within the Karanis assemblage. Further statistical analysis revealed patterns within these groups and variables likely related to the value of the objects. These diverse, yet complementary research techniques exposed the interplay between objects and social phenomena. Angela is currently applying for postdoctoral positions and academic teaching positions in which she aims to continue her research in Egyptian archaeology, ancient glass, and material culture.



ERIC WELLS
studies the social history and religion of Egypt in the New Kingdom. His research employs philological, art historical and quantitative methodologies to examine the ways in which individuals express social identities and status through religious material culture and text. His dissertation *"Display and Devotion: A Social and Religious Analysis of New Kingdom Votive Stelae from Asyut"* is currently under peer review for publication in the *Zeitschrift für Ägyptische Sprache und Altertumskunde* supplemental series. Eric demonstrates that individuals from all levels of society—not just elite men—coopted religious practice and used it as a vehicle to participate in competitive religious display as a way of highlighting their social and economic capital, while simultaneously presenting their position in the local patronage structures. Eric currently has a position as academic counselor at UCLA's Academic Advancement Program.

THE INSTITUTE IN THE NEWS

Summary of Achievements of the UCLA/Getty Conservation Interdepartmental Program

Ioanna Kakoulli was appointed the first Lore and Gerald Cunard Chair in Conservation, with an endowment of $500,000, and she secured two Kahn Trust Conservation Fellowships, with another $500,000 endowment. These achievements were rewarded with an Andrew W. Mellon Foundation endowment match of $1 million. Together with Ya-Hong Xie and Sergey Prikhodko, she also obtained a $150,000 instrument grant from UCLA's Consortium of Shared Resources for the upgrade of a Raman system with an external laser probe, a millisecond electron multiplier charge coupled device, and a motorized stage.

Major publications by faculty and staff of the Conservation IDP included the following articles in peer-reviewed journals:

• Ioanna Kakoulli, Sergey V. Prikhodko, Christian Fischer, Marianne Cilluffo, Mauricio Uribe, Hans A. Bechtel, Sirine C. Fakra, and Matthew A. Marcus. 2014. "Mapping and Chemical Speciation of Arsenic in Ancient Human Hair Using Synchrotron Radiation." *Analytical Chemistry* 86:521–526.

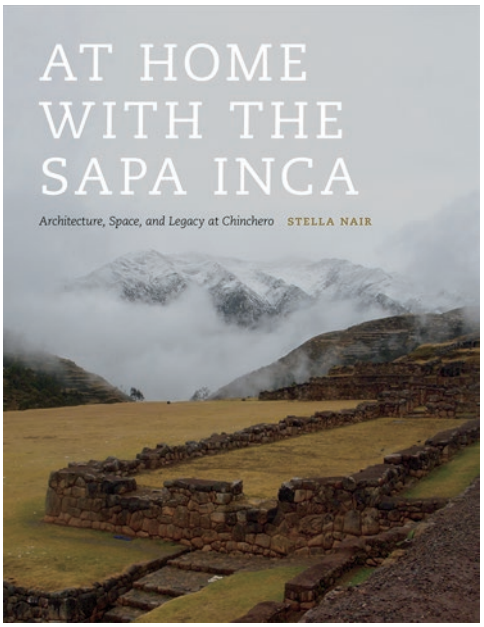
• Ioanna Kakoulli, Sergey V. Prikhodko, Andrew King, and Christian Fischer. 2014. "Earliest Evidence for Asbestos Composites Linked to Byzantine Wall Paintings Production." *Journal of Archaeological Science* 44:148–153.

• Sergey V. Prikhodko, Diana C. Rambaldi, Vanessa Muros, Elizabeth Burr, and Ioanna Kakoulli. 2014. "Interfaced SEM and Micro-Raman Spectroscopy for SERS Analysis of Dyes on Single Fibers." *Microscopy and Microanalysis* 20(S3):S2008–S2009.

— Hans Barnard

Stella Nair publishes *At Home with the Sapa Inca*

Stella Nair, associate professor in the Department of Art History and core faculty member of the Cotsen Institute, recently published *At Home with the Sapa Inca: Architecture, Space, and Legacy at Chinchero* (University of Texas Press). Her investigations range from the paradigms of Inca scholarship to individual elements of the built environment of Chinchero. What emerges are the subtle, often sophisticated ways in which the Inca manipulated space and architecture in order to impose their authority, identity, and agenda. These dynamic settings also created private places for an aging ruler to spend time with a favorite wife and son while providing impressive spaces for imperial theatrics that reiterated the power of Topa Inca, his preferred heir. The careful study of architectural details exposes several false paradigms that have misguided how we understand Inca architecture, including the belief that it all ended with the arrival of the Spaniards. Nair reveals instead how amid the entanglement and violence of the European encounter, there emerged an indigenous town, rooted in Inca ways of understanding space, place, and architecture.



Lofkënd Book Launch and Donations to Institutions in the Balkans



Left to right: CIoA Press Editorial Director Willeke Wendrich, *Lofkënd* authors Sarah Morris and John Papadopoulos.





Left to right: John Papadopoulos, Willeke Wendrich, Jill Silton, and Richard Lesure.

In March 2015 we were pleased to celebrate the publication of *The Excavation of the Prehistoric Burial Tumulus at Lofkënd, Albania* with a special launch at the Cotsen. The authors, John K. Papadopoulos and Sarah P. Morris, gave short presentations on the five-year-long project that culminated in this thorough site publication, copiously illustrated with plans, maps, photographs, drawings, and data graphics, and glasses were raised to toast the publication and its authors. At their suggestion, the event also served as an opportunity to donate copies of the book to libraries and institutions in the Balkans, where budgets are often lean, especially for archaeology. Donors stepped up to purchase books, with the cost of shipping and customs duties included, and copies of this impressive, two-volume archaeological report on a prehistoric tumulus in what was once ancient Illyria were sent to recipients in



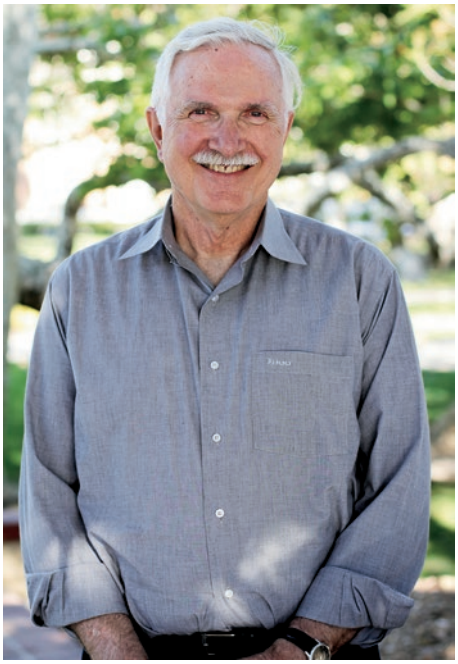
Cotsen Friends of Archaeology members Rue and Ben Pine.

Kosovo, Albania, Croatia, Bosnia-Herzegovina, and Greece. Sincere thanks are due to Lloyd and Margit Cotsen, Chris and Marydee Donnan, Katherine King, Abigail Levine, Ron and Anne Mellor, Sarah Morris, John Papadopoulos, Rue and Ben Pine, and Chip Stanish for their generous gifts. Each book sent had a custom-designed bookplate imprinted with the Cotsen Institute logo and the names of the donor and the recipient institution.

— Randi Danforth

Dwight Read Elected Fellow of the American Association for the Advancement of Science

Dwight Read, distinguished professor emeritus in the Anthropology Department, was elected Fellow of the American Association for the Advancement of Science. His research spans the subfields of anthropology and integrates a mathematical way of thinking with anthropological reasoning. Read considers artifacts to be a manifestation of the ideational domain of shared concepts. His publications on the concepts and methods of artifact classification allow archaeologists access to that domain. In sociocultural anthropology, Read focuses on the structure of kinship terminologies, central to our understanding of human social systems. This work has resulted in a paradigm shift, from assuming that kinship is primarily an expression of biological reproduction to viewing kinship as a symbolically determined system of relations expressed through the generative logic of kinship terminology. This field integrates with biological anthropology through research on the evolution from nonhuman primate forms of social organization, based on face-to-face interaction, to human forms of social organization, based on culturally constructed systems of relationship expressed through kinship terminologies.



Big-Picture Archaeology from the Village Ecodynamics Project

by Tim Kohler,[1] Donna Glowacki,[2] and Kyle Bocinsky[3]

ONLY A FOOL WOULD TAKE one of Michelangelo's subjects and try to improve it. Sculpt a better *David*? Repaint the ceiling of the Sistine Chapel? Please! Yet the Village Ecodynamics Project (VEP) team was forced to stand, if we could, on the shoulders of the giants of southwestern archaeology. Working through the valleys and mesas in the shadows of Jesse Walter Fewkes, Edgar Lee Hewett, A. V. Kidder, Sylvanus Morley, Jesse Nusbaum, and other famous and near-famous archaeologists, the VEP team set out to add to and make sense of a century of research in two of the Southwest's most celebrated areas: in Colorado, the central Mesa Verde (CMV) and in New Mexico, the northern Rio Grande (NRG) (Figure 1). How many people lived in these areas and how did the population levels change through time? Why did people live in small settlements in some times and places and in large villages in other times in many of the same places? Why did people leave the northern area in the 1200s C.E. and where did they go?

How many people lived in these areas and how did the population levels change through time?

Even though we were extremely lucky to be funded by two grants from the National Science Foundation, these areas are so large (1,776 and 2,685 square miles, respectively) that we could not hope to do a great deal of original fieldwork. Accurate maps and counts of surface ceramics from the largest sites in our research areas were particularly important, so we concentrated five field seasons on obtaining those from poorly documented sites. Three of those seasons

1. Washington State University, Santa Fe Institute, and Crow Canyon Archaeological Center.
2. University of Notre Dame and Crow Canyon Archaeological Center.
3. Washington State University.

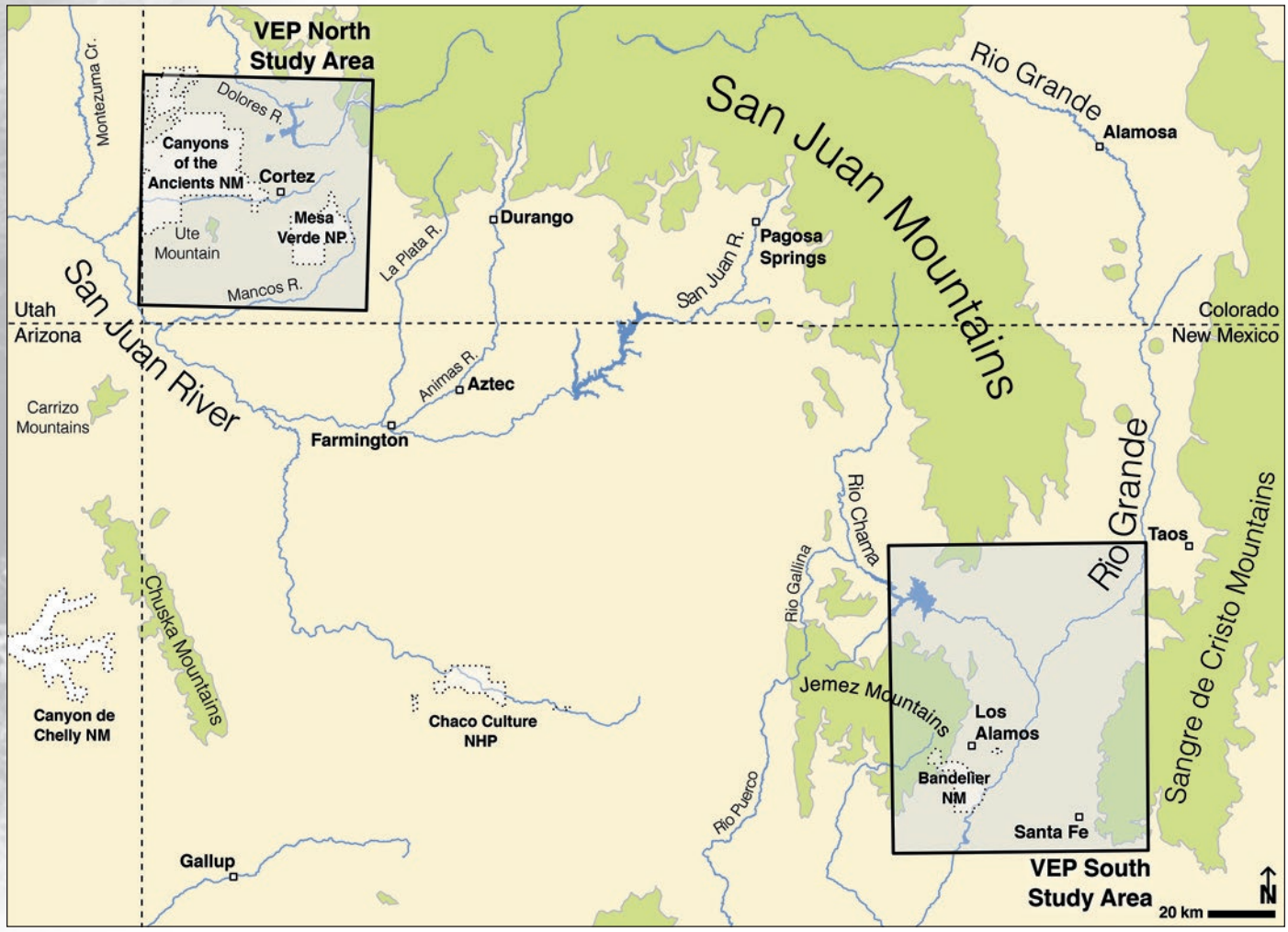


Figure 1. The northern and southern research areas of the Village Ecodynamics Project. Graphic by Kyle Bocinsky.

were in the spectacular backcountry of Mesa Verde National Park—areas off-limits to tourists (Figure 2).

Less dramatically but just as crucially, we built large databases of previous research, which includes a great deal of survey as well as a century of site-specific work. We developed new techniques for using these data to estimate how many people lived in each of our areas through time (Ortman 2014; Schwindt et al. in press). To put these large areas into an even broader context, we also assembled as much data as we could on the age and sex of human remains from throughout the Southwest to build a picture of change in population size through time, and we began to pull together the vast corpus of wood that has been tree-ring dated in the Southwest. Finally, the VEP has been deeply engaged in the decidedly nontraditional activity of computer modeling—specifically agent-based modeling as an aid to understanding shifts in settlement location and subsistence. Our strategy has been to build models based on the assumption that households are located to minimize their costs for farming enough maize; hunting enough deer, hare, and rabbits; and gathering enough fuel wood and water to meet a family's needs. These models are not just educational but are fun, as we can actually watch the households move around on their virtual resource landscapes. We then compare the outputs from these models to what we observe in the archaeological record. This allows us to make well-grounded inferences about what factors were likely important in determining household settlement practices and why these varied through time. We also use modeling to investigate the causes of the rise of the polities that encompassed many villages by the ninth century C.E. and the obvious shift toward consumption of domesticated turkey in the 1000s. Models also help identify the processes at work in the changes we note in the archaeological record. So far, all our models have been set in the northern study area, but we hope to begin simulating settlement in the southern area soon, to understand migration between these two areas and many other issues. So: What are we learning? Keeping in mind that several of our most important publications will not be available for a year or more, and that some analyses still have to be completed, we offer the following provisional overview.



Figure 2. VEP crew members mapping a small site on Battleship Rock, Mesa Verde National Park, 2011. Photograph by Kay Barnett.

Over the years, southwestern dry-farmers performed a slow dance to track the elevational belt where they could produce maize.

POPULATION HISTORIES

Population growth in most of the Southwest for most of the period that we study (600–1600 C.E.) is closely linked to local potential for the dryland farming of maize (based solely or primarily on rainfall). This in turn is affected by rainfall patterns that change through time and also by changing summer temperatures. As a tropical cultigen, maize rarely gets *too much* water in those portions of the Southwest that are warm enough for it to grow; more often it needs more water than it gets. Over the years, southwestern dry-farmers performed a slow dance to track the elevational belt where they could produce maize. Already by around 1 C.E., nearly 70 percent of their diet came from maize (Coltrain and Janetski 2013), and that would only increase, albeit slowly. This dance became more complicated as the Southwest filled up and movement became more difficult. In our two study areas, we estimated population size by count-

ing and dating pit structures (using ceramics and tree rings) or roomblocks that mark locations of households. Then we extrapolated from the surveyed areas to the unsurveyed portions of each study area.

For the larger Southwest, we took a more general approach, drawing on research by demographer Jean-Pierre Bocquet-Appel. He found that a simple ratio (the number of burials of those 5 to 19 years old divided by the number of individuals 5 years or older) provides an accurate estimate of birth rate. We can also estimate life expectancy by constructing life tables from burial populations. Playing these two figures against each other, we can infer that the rate of growth in population peaked in the Southwest as a whole between about 400 and 1100 C.E., when both birth rate and life expectancy at 15 years of age were at or near their peak (Kohler and Reese 2014). Birth rates decreased markedly after 1300 throughout the Southwest coincident with the depopulation of the north. They were still in decline at 1600, where our analysis ended. A surprising finding of this analysis is that, in general, upland portions of the Southwest where maize could be dry-farmed had much higher birth rates than where it had to be irrigated—as in the Hohokam area surrounding present-day Phoenix and Tucson. We are not sure if this is because of the greater labor requirements of irrigation, the likelihood that irrigation water brings pathogens, or the highly expandable nature of the land base for dry-farming, at least when climates were favorable. Probably all three contributed to this unexpected disparity.

Upland portions of the Southwest where maize could be dry-farmed had much higher birth rates than where it had to be irrigated.

Our two study areas indirectly reflect these Southwest-wide trends. Figure 3 shows that the

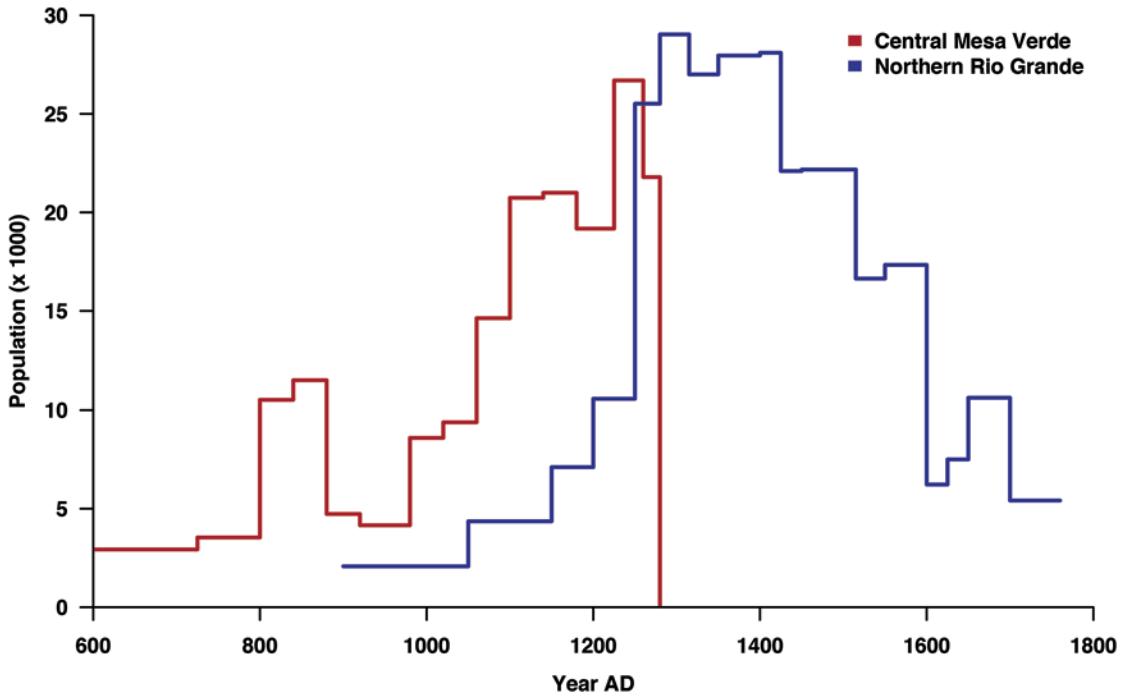


Figure 3. Population through time in the two VEP research areas, after Ortman (2014:Figure 6). Graphic by Kyle Bocinsky.

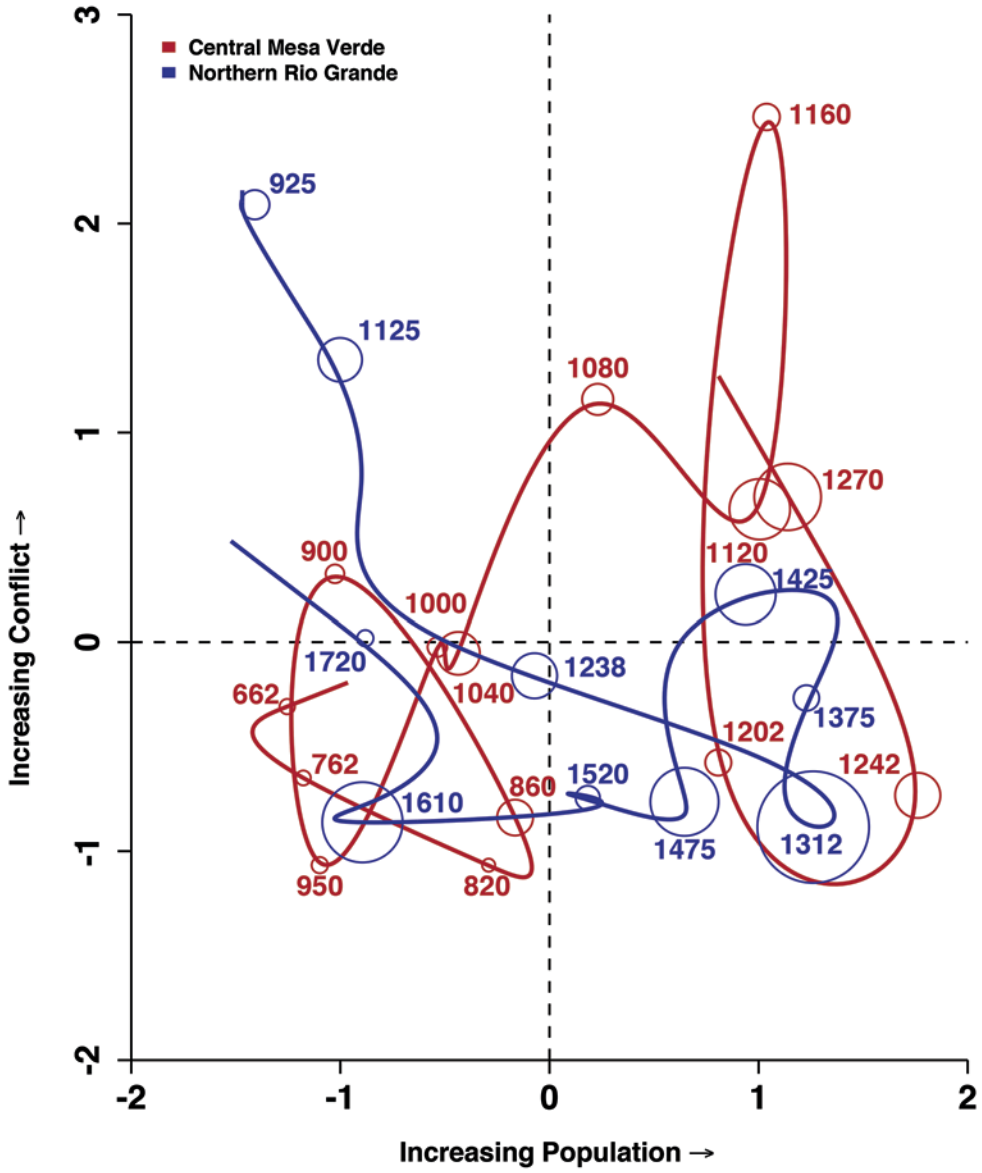


Figure 4. The relationship between amount of violence and population size through time in our two research areas. Circle size is proportional to the number of human remains in each period. Redrawn from Kohler et al. (2014:Figure 2) using more recent population estimates. Graphic by Kyle Bocinsky.

CMV—dry-farmed in prehistory and still supporting some productive unirrigated bean fields—was little used by farmers before 600 C.E. but grew rapidly thereafter, except for a decline in the 900s and the famous depopulation of the 1200s. The NRG exhibits a curious lag, with little use by farmers until around 900, followed in the 1100s by a rapid population buildup that dramatically accelerated in the 1200s. When population peaked in this area around 1300, there was a pervasive shift from dry-farming to water-managed farming (including small-scale irrigation) and increased aggregation into large towns, many near a major river. Population growth then stabilized and after 1400 reversed, a trend that intensified with the arrival of the Spaniards in 1540.

MAIZE PRODUCTION AND CONFLICT

Our modeling depends on spatially and temporally specific estimates of prehistoric maize production. The first person in the Southwest (and, so far as we know, in the world) to show how this could be done was Carla Van West (1994). We used Van West's estimates

in our first-generation computer simulations, getting the "proof of principle" results that we needed to gain funding from NSF's special Biocomplexity Competition in 2002. Van West's reconstructions depended on correlations between soil moisture computed from weather-station data and maize-production data from Montezuma County in southwestern Colorado for the years between 1931 and 1960. The VEP has since refined Van West's estimates and extended them back in time, but until recently we have continued to use the same general approach. Three years ago we published a comprehensive report on the first phase of VEP research, focusing on a 700-square-mile window in the northwest corner of the Colorado study area in Figure 1 (Kohler and Varien 2012).



Figure 5. The final three decades of occupation in Mesa Verde National Park focused on potentially defendable locations in alcoves, such as Balcony House, shown here as it was in the 1890s. Photograph by Thomas McKee.

The production estimates in that report shed light on many aspects of the occupation of southwestern Colorado, but here we focus on just one: how production, and its variability, relates to violence. For each of the 14 periods we distinguished in this area between 600 and 1280 C.E., we quantified the proportion of human remains exhibiting marks from violence, scanning dozens if not hundreds of published and unpublished reports to find information on burials that in many cases had already been repatriated. Recently we repeated this study for our NRG research area and compared the results in both areas with local estimates for annual maize production. For the NRG, these estimates were based on precipitation only. Figure 4 (from Kohler et al. 2014) shows the surprising result when we compare population size and conflict through time in these two areas.

In southwestern Colorado, violence had a weak tendency to increase as per-capita production declined. The tendency for violence to increase appeared stronger as *variance* in production increased. The expansion of the Chacoan system into this area in the late 1000s and its demise or reorganization in the 1100s also tended to increase violence. Another bout of conflict accompanied the final depopulation in the 1280s (Figure 5). Overall, the CMV was a very violent area; discussions of social processes that fail to take this into account miss an important reality. As farmers first spread into the NRG, that too was a violent place, but things took a different turn in the 1200s, when further increases in population accompanied *reduced* violence, possibly adding to the attraction of this area for immigration. None of the relationships discovered in the central Mesa Verde between decreasing per-capita production and increasing violence, or increased production variance associated with increased violence, are visible in the northern Rio Grande. This may be because farming emphasized water management, probably leading to lower variance in maize production from year to year. Much greater amounts of inter-pueblo trade in materials such as ceramics, obsidian, and textiles also fostered inter-pueblo harmony. In any case, this comparison contains information about violence, its causes, and how to avoid it that is of relevance to our world today.

WHY LEAVE THE NORTHERN SOUTHWEST IN THE 1200s C.E.?

It seems to be universally true that Native American societies developed and often still retain profound connections with their natural surroundings. These links extend far beyond the mere economic; topographic features embody history, recall mythology, and ground morality. It is inconceivable that farmers living in the northern Southwest for 700 years did not have these same deep connections to the CMV landscape and the mountains that surround it. It is equally hard to imagine a crisis so deep that it induced not just

some, or even many, but *every single inhabitant* to leave, many eventually finding their way to the NRG some 250 miles to the southeast. This is a two-week walk if you keep at it and do not have too many possessions. From roughly 27,000 people in 1245 to zero by 1285 implies an average annual loss of some 700 people, though it was probably more rapid toward the end. We estimate that roughly 22,000 people were still there in 1270, implying a loss rate over the next 15 years of about 1,500 people per year. Between about 1250 and 1280, the Tewa Basin in the NRG gained 15,000 people. Evidently, some emigrants went elsewhere. Sadly, others simply never made it out of the CMV. In recent years, the Crow Canyon Archaeological Center has excavated three large villages near Cortez, Colorado, occupied from 1250 to 1280. In each case, the occupation ended with the massacre of most or all of the remaining inhabitants (e.g., Kuckelman 2010).

Our first VEP impulse, of course, is to model the migration: What would our agents do, given the choice to leave or stay? Given the enormous dependence on maize, we predict that in general they would follow the maize. This model, though, is not yet complete. We do have good estimates for the proportion of each of our two areas in which maize could be dry-farmed (Bocinsky and Kohler 2014). The NRG was relatively more attractive for dry-farmers for the entire century beginning in 1150. Surprisingly, though, the bulk of the CMV population was lost when the relative advantages of the south for dry-farming were weaker or nonexistent, between 1250 and 1280. We have not yet modeled maize *production* (as opposed to niche size) in both areas, though we plan to do so over the next year, and we know from our work with violence that it is its production per capita that counts. A number of other factors that we can model could affect the decisions of agents in the model (or households in the real world) to make the move. For example, there is every reason to believe that the northern study area was depleted of deer and possibly forest. Starting in the late 1000s, the depressed condition of deer populations led people to raise turkey for protein, but as turkeys were fed maize, the economy wobbled on a stool with just one leg.

> Starting in the late 1000s, the depressed condition of deer populations led people to raise turkey for protein...

Even so, so long as *any* maize could be raised in the north, explaining the complete depopulation remains a problem. Glowacki (2015) analyzed patterns of settlement, public architecture, and pottery circulation in a broader study that includes the northern VEP study area but encompasses the entire northern San Juan region, including the prominent ceremonial and political center of Aztec. New forms of religious buildings, so-called multiwalled structures, which seem to replace the Chacoan great houses, appear at the largest Ancestral Puebloan villages in the early 1200s. These buildings, comprising one or more kivas surrounded by rows of rooms in a circular or D-shaped configuration, signal changes in religious organization and, possibly, the development of two factions—the circular forms appear to be associated with Aztec, and the D-shaped structures with large villages in the Mesa Verde core. These and other differences suggest that the mid-1200s saw increasing competition among the largest Ancestral Puebloan villages, which likely underlies the increasing levels of violence in the latter half of the 1200s described above. Religious and political factionalism thus exacerbated the problems facing these populations in an increasingly contentious social landscape. It is not hard to imagine that they ventured out from their large villages for hunting or gathering wild foods with great trepidation, narrowing even more their imbalanced subsistence options.

> Religious and political factionalism exacerbated the problems facing these populations in an increasingly contentious social landscape.

CLOSING THOUGHTS

A little over a century ago, a senior Southwest archaeologist (probably Edgar Lee Hewett) advised the young A. V. Kidder to look elsewhere for a career: "The Southwest is a sucked orange." Yes, we have known the grand outlines of its prehistory for a long time, ironically due more to Kidder than to Hewett. Yet we think recent research, by the VEP and other projects, demonstrates that more data leads to more—and more subtle and interesting—questions. The fruits of additional research here, we predict, will be abundant.

ACKNOWLEDGEMENTS

This article is based mainly on work supported by the National Science Foundation under grants BCS-0119981 and DEB-0816400. The Mesa Verde Community Center Survey was made possible by a National Geographic Society CRE grant (9100-12) and a research grant from the Institute for Scholarship in the Liberal Arts, College of Arts and Letters, University of Notre Dame. We thank our many colleagues in the VEP and elsewhere for the many-faceted assistance they have provided this project over the last dozen years.

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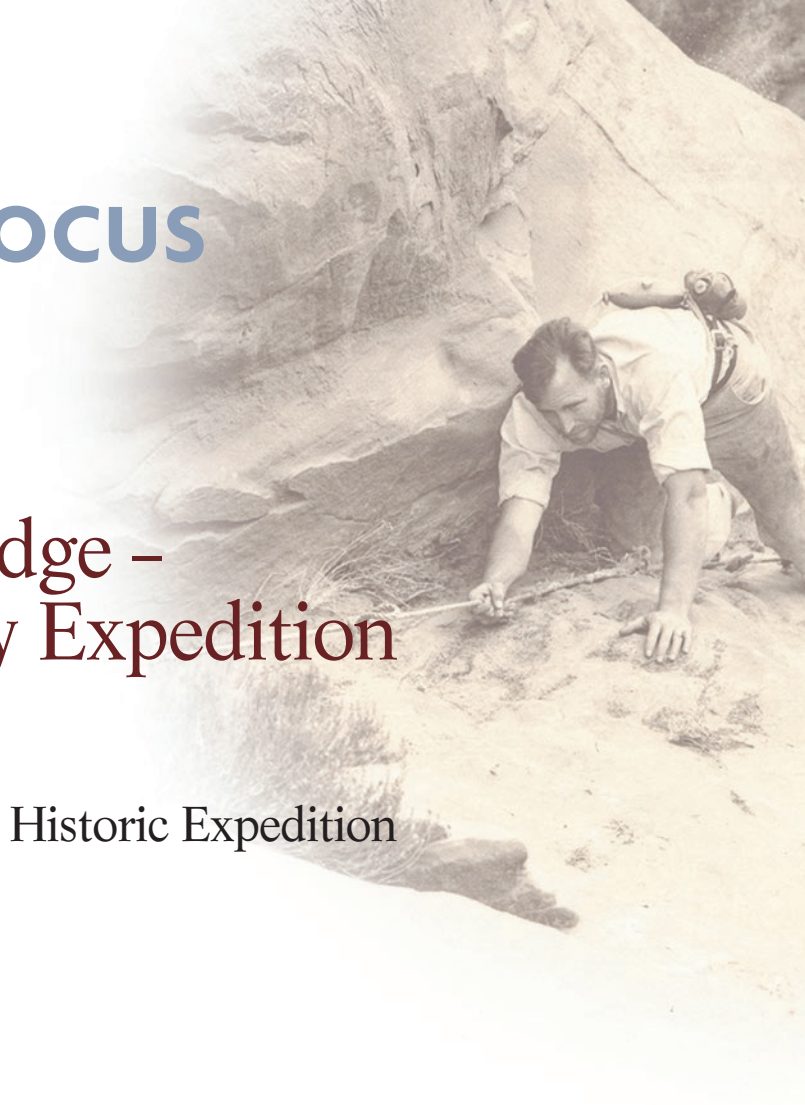
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The Rainbow Bridge – Monument Valley Expedition — ONWARD

Applying New Concepts to a Historic Expedition

by Elizabeth Kahn[1]

THE POWER OF THE VAST, evocative landscape and natural monuments around the Four Corners region is well-known. Densely layered stories of individuals who lived there—indigenous peoples, later settlers, and many others—unite to tell a history of the place. Together they represent the imprint of humanity on this landscape. In the 1930s, against the backdrop of the Great Depression, a group of archaeologists, scientists, ethnologists, artists, filmmakers, Navajo guides, trading post operators, federal agencies, and others collaborated on what would become known as the last of the great expeditions—a vast, multilayered study of this region's natural and human history—the Rainbow Bridge-Monument Valley Expedition (RBMVE). The expedition made a significant contribution to science and history and had an enduring impact on the lives of the participants. Today, utilizing the latest interactive and landscape visualization technologies, diverse stakeholders are pooling resources to create a series of virtual models to explore the multifaceted histories of this legendary land and its peoples. The deliverables will be the centerpiece for an interactive multimedia presentation designed to engage a variety of audiences in multiple venues.

THEN: A BRIEF HISTORY (1933–1938)

The Rainbow Bridge-Monument Valley Expedition was named after the largest natural bridge in the world. Rainbow Bridge spans a canyon that was a sacred destination for the ancient Pueblo people, the Anasazi; it remains a sacred destination. Monument Valley, named for the breathtaking sandstone "monuments" in the region, inspired the second half of the expedition's title. In 1931, as the Great Depression settled on the country, Ansel Hall, chief of the National Park Field Division for the Western Region, based in Berkeley, California, met with the famous explorer-turned-archaeologist John Wetherill. The two men traveled from the Wetherill Trading Post in Kayenta, Arizona, to the Goulding's Trading Post in Monument Valley and beyond to define an area of study. Both trading posts would soon be made famous by director John Ford, who filmed the classic John Wayne movie

1 RBMVE-Onward! and the J. Paul Getty Trust

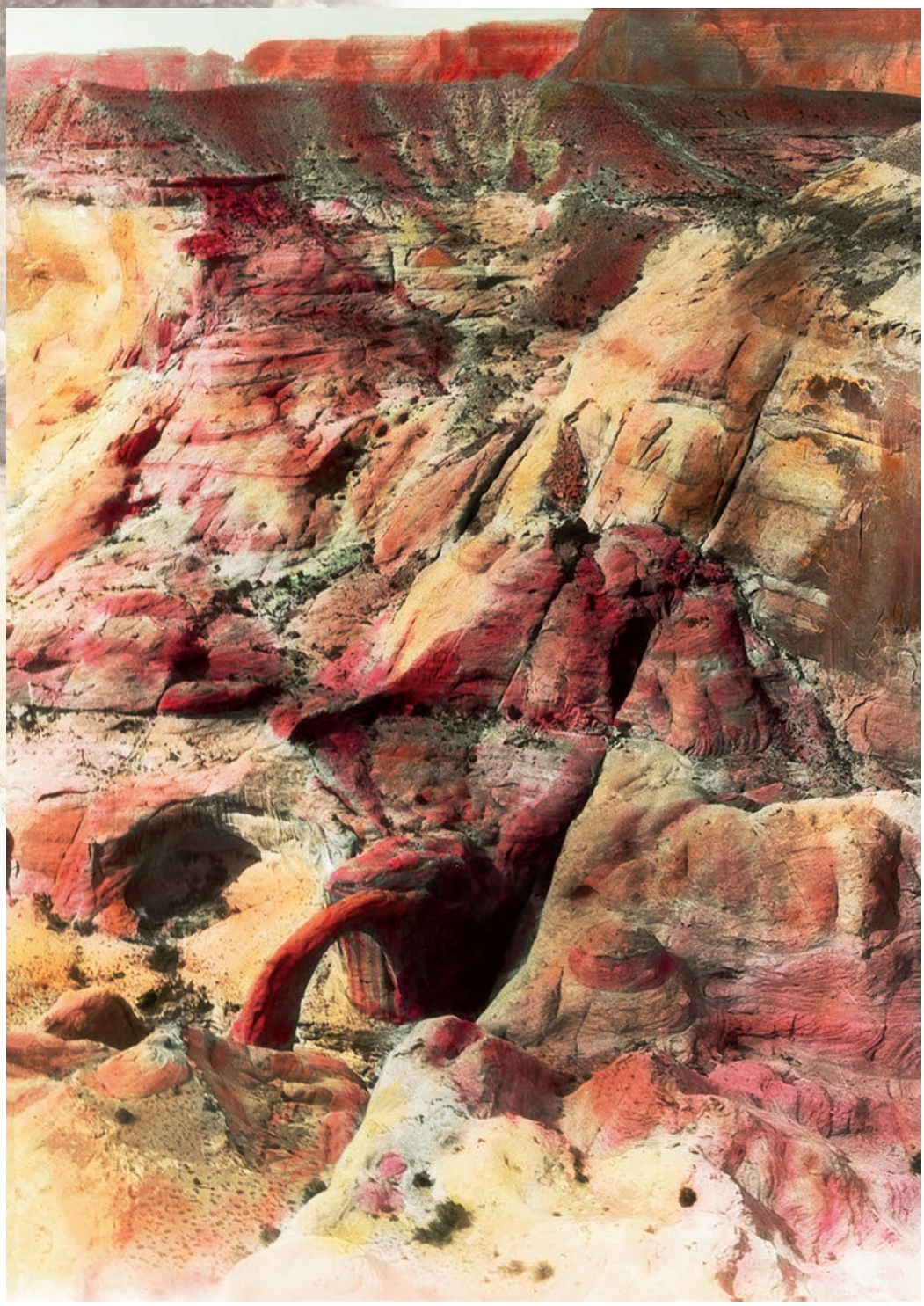


Figure 1. Hand-tinted glass-lantern slide, Rainbow Bridge. Courtesy of Jack Turner.

Stagecoach and other Westerns in the area, while East Coast explorer-millionaires met here to embark on their adventures on the Colorado Plateau.

Inspired by the idealism that characterized the formation of many national parks and monuments less than two decades before, Hall proposed to expand the designation "national monument," already assigned to the Pueblo cave sites Betatakin and Kiet Seel, to a large-scale national park on the order of Yosemite. Hall also saw great potential in undertaking an entirely new kind of study: a comprehensive multidisciplinary survey that would eclipse in scale past explorations of the late nineteenth and early twentieth century in order to understand more fully the context for the ancient history as well as the modern ecological and ethnographic makeup of the region. Two years after his initial exploration with Wetherill, Hall put out a call to universities around the country to assemble multidisciplinary teams of scientists and students who would fully explore on foot the canyon walls, floors, and mesas, methodically recording as many sites as possible while simultaneously undertaking large-scale



Figure 2. Hand-tinted glass-lantern slide, Three Navajo Riding in Kayenta Area. Courtesy of Jack Turner.

environmental studies and comprehensive aerial imaging. The RMBVE's study area grew to encompass a 3,000-square-mile region, bounded by Black Mesa on the south, the San Juan River on the north (including Rainbow Bridge), Monument Valley on the east, and the Colorado River on the west.

Hall designed the RBMVE to offer students academic field training and exploration while they earned university credit, working alongside scientific and archaeological researchers and environmentalists. Hall arranged corporate sponsorships, a new concept at the time, with Ford Motor Company as his strongest and most consistent backer. He tirelessly lobbied members of different federal agencies to gather permits. He then called upon his extensive network of connections, using hand-tinted glass-lantern slide shows to promote his project, attract funding, and approach high-profile government agencies within his wide network. Hall garnered further financial support from the esteemed Explorer's Club in New York and the Cosmos Club in Washington, D.C., where he held memberships. President Franklin D. Roosevelt was informed of the RBMVE, and he wrote a letter of hearty support.

Nationwide, from Hawaii to East Coast universities, scientists and their students were recruited for six consecutive field seasons by Hall's posters. Hall



Figure 3. Caravan of new Ford cars and trucks carrying participants for the 1935 season, converging in Kayenta, Arizona, from UC–Berkeley, the University of Chicago, and the Explorer's Club of New York.



Figure 4. Max Littlesalt, Navajo guide and interpreter. This was the sole photograph identified as Littlesalt in the UCLA collection. Lithuania Denetso has since collected seven binders holding documents and photographs related to his life and work.

engaged scientists from the established disciplines of archaeology, biology, ornithology, paleontology, and geology, along with those from the new sciences of ethnology, ecology, and dendrochronology. He was among the first to systematically employ aerial surveys in addition to mapping crews. Hall's skillful use of the media, with a steady stream of press releases offering updates, resulted in coverage in many popular magazines; numerous local newspapers touted the participation of their native sons.

During this time, the local Navajo were severely impacted by the federal livestock reduction policies of 1932, which eliminated their livelihood in the name of federal conservation efforts. Many Navajo men were hired by the RBMVE through the Wetherill Trading Post as provisioners, packers, guides, and interpreters, and Navajo women bartered rugs, pottery, and jewelry with the participants. The Navajo guides, like well-known interpreter Max Littlesalt and his family, were integral to guiding men to remote pathways and "fly camps" that were accessible only by mule or horse and were often part of designated herding grounds. The Navajo participants were crucial to the operation, as they had been for all earlier scientific endeavors and recreational explorations. After all, it was Navajo men who had introduced Wetherill

It was Navajo men who had introduced Wetherill to Rainbow Bridge and area sites when he had first moved to the Colorado Plateau.

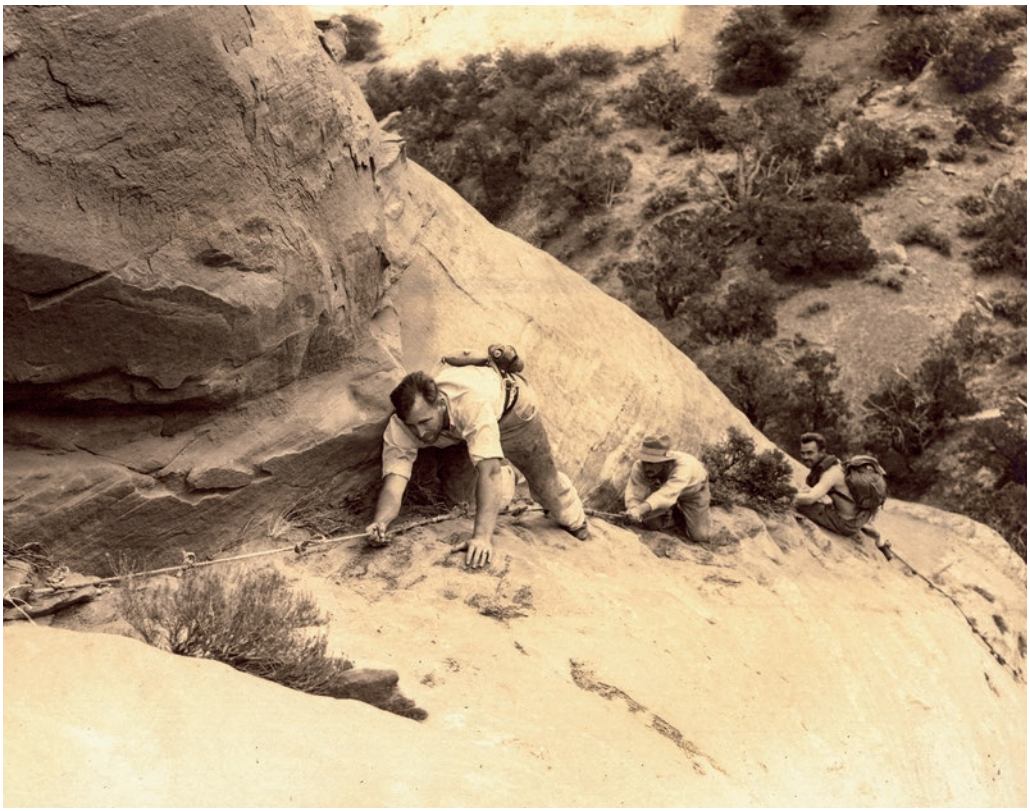


Figure 5. George Brainerd leading men from one of the outlying "fly camps" to sites deep inside the survey area.

Hall engaged scientists from the established disciplines of archaeology, biology, ornithology, paleontology, and geology, along with those from the new sciences of ethnology, ecology, and dendrochronology.

to Rainbow Bridge and area sites when he had first moved to the Colorado Plateau.

The Ford Motor Company used the project to advertise its new V-8 engine by contributing a fleet of brand-new cars and trucks for four years in a row. This meant that caravans of scientists and students could assemble independently in different parts of the country—Berkeley, New York, and Chicago—to converge in Kayenta, Arizona, at the Wetherill Trading Post. For the duration of the expedition, the vehicles were used in the field, greatly improving the range of movement for equipment and men on rudimentary roads and dirt trails, and to pull trailers with mules for accessing steep canyons. Hall negotiated for the RBMVE to become the centerpiece of a Ford advertising campaign, featured in long, lavishly illustrated photographic spreads in its magazine, *Ford News*, and other print outlets. For two consecutive years, Ford provided a filmmaker to capture the V-8 engines in action, aiming to inspire Americans to purchase a new Ford and to explore the wonders of America.

The archaeological and archival material gathered in the last four of the six field seasons (the summers of 1935–1938) was driven in one of the Ford trucks to UCLA in the summer of 1938 by Ralph Beals, who, undertaking the study of these vast archaeological materials, became the university's first professor of anthropology (residing in the Sociology Department), and George Brainerd, who soon joined the faculty as the second anthropology professor, with a joint appointment at the Southwest Museum at the invitation of Charles Amsden. With further financial support from Hall, Beals, Brainerd, and Watson Smith continued to work together for six additional years at UCLA, establishing a laboratory in the top floor of the newly built Powell Library, undertaking ceramic analysis and a conservation program for the unearthed pottery. They ultimately produced a volume still referenced today: *Archaeological Studies in Northeast Arizona*. They then mounted an exhibition, a precursor to a university museum at UCLA. Many other studies were published by the scientists who led their respective teams, and in the 1960s, Jeff Dean used the recovered tree-ring samples as part of his comprehensive and refined dating analysis for the region. He would later become director of the Tree Ring Laboratory at the University of Arizona–Tucson.

MATERIAL RESOURCES

Objects, organic samples, and artifacts collected by the RBMVE come from more than 600 sites, and the collective archives include thousands of feet of archival film, hand-tinted lantern slides, thousands

of stills, paintings, and reams of documents. Other resources index the time and history of the expedition, but much is not yet cataloged or resides in private collections. Material was transported to the institutions where participating scientists worked, thus splintering the survey collections to far-flung institutions, such as the American Museum of Natural History and the Explorer's Club in New York, the University of Michigan, and the Zoological Museum in Berkeley. The UCLA archival and image collections represent the major portion of the original data. This collection, owned by the Bureau of Indian Affairs, is housed at the Fowler Museum at UCLA under the curatorship of Wendy Giddens Teeter. Over the past 12 years, volunteers have assisted in curating and organizing these holdings, work that continues today. Along the way, they have made many serendipitous discoveries.

Documents by different members of the expedition show how the teams worked in the field. The Museum of Northern Arizona team was led for the first two seasons (1933–1934) by Lyndon Hargrave, a pioneer of the science of tree-ring dating. From 1935 to 1938, Wetherill, Brainerd, Beals, and Smith led the archeological teams, joined by Charles Amsden from the Southwest Museum in Los Angeles. Edward Pierpont Beckwith organized the aerial photography program from the Explorer's Club in New York. Later, in 1983, Andrew Christenson organized *Honoring the Dead: Anasazi Ceramics from the Rainbow Bridge-Monument Valley Expedition*. The exhibit was held in what is today the Fowler Museum at UCLA and was accompanied by a catalog of the same name edited by Marilyn Beaudry. As part of his curation for the exhibit, Christenson contacted participants from the expedition and had the rare opportunity to solicit what became an extensive collection of memoirs, diaries, and unpublished manuscripts, offering a detailed behind-the-scenes look at the daily routines and the far-reaching nature of this multipronged survey. Jack Turner, grandson of Ansel Hall, published *Landscapes on Glass*, with a foreword by President Bill Clinton, in celebration of the designation of the Kaiparowitz Plateau area (part of the RBMVE study area as the Grand Staircase-Escalante National Monument). The book



Figure 6. A 2014 documentation image looking into Tsegi Canyon from a remote side canyon. Photograph by Shawn Fehrenbach.

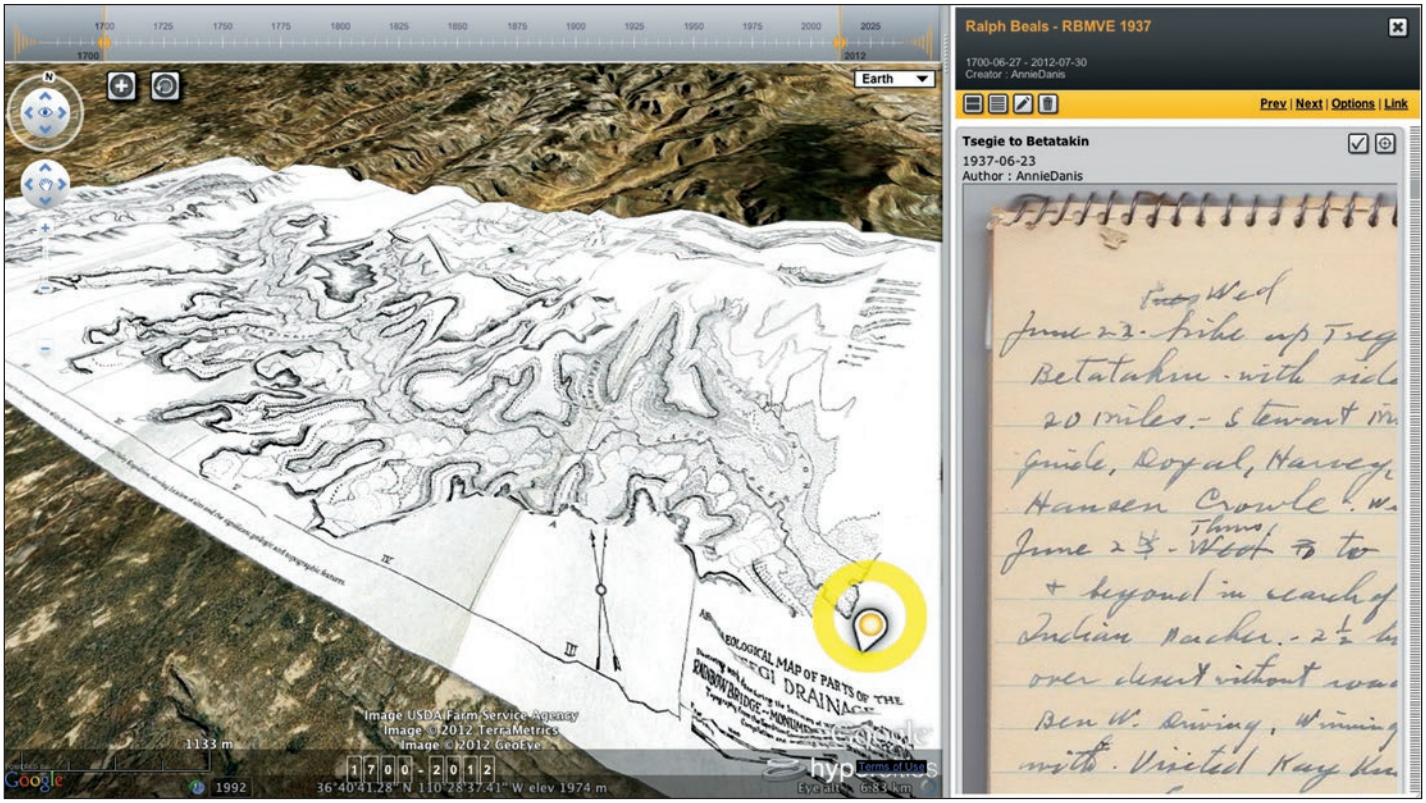


Figure 7: Screen shot of an early exploratory model created in Hypercities as part of an NEH Summer Seminar with ETC-UCLA. Image by Annie Danis.

focuses on the hand-tinted glass-lantern slides crucial to Hall's nationwide promotion of the expedition.

MISSING VOICES

Some of the thousands of photographs in the collection of the Museum of Northern Arizona are the partial result of a fledgling ethnographic study. Through the years, Navajo families have perused this collection and noted the names of their relatives on the versos. These photographs have the potential to lead to more descendants and more oral histories to give voice to viewpoints missing from the written record. Collaboration with the different native communities is critical to establishing the historic relationship between these community members and the expedition, as well as interpretations of sites and objects within the landscape. Several families, including the extended family of Max and Jerry Littlesalt and in particular his granddaughter Lithuania Denetso, have begun reassembling documents and collection stories related to relatives who participated in the RBMVE.

NOW: LANDSCAPE NARRATIVES ABOUT THIS HUMAN TERRAIN —A DIGITAL RETELLING

The tremendous breadth of material produced by the RBMVE, housed at museums and universities across the country, can be virtually synthesized into a single project. Rainbow Bridge-Monument Valley Expedition—ONWARD! Inc. is a nonprofit corporation formed in 2013 to create a groundbreaking multivenue exhibition program that at its core will utilize the latest visualization technologies to present layers of stories mapped on a virtual landscape. The project is a dynamic lens with which to explore the multifaceted history of this land, the people who inhabited it over time, and those who made this telling possible by taking part in the expedition itself. The landscape provides a context for history and for a continuing engagement with stories about specific places. New landscape visualization technologies allow for the combining of multiple didactic components to illustrate and interpret the many voices with the vast data collections in context with different perspectives and personal experiences regarding the place over time and to relate them directly to the land.

VIRTUAL MODELING

Rainbow Bridge-Monument Valley Expedition—ONWARD! is building on work we began several years ago with virtual mapping models created for a National Endowment for the Humanities grant, which were further refined during an NEH Summer Institute at UCLA by Annie Danis, now a Ph.D. candidate at the University of California–Berkeley. She explored the potential of Hypercities, an aggregating, geotemporal, digital mapping and learning platform developed by the UCLA Center for Experiential Tech-

nologies. Utilizing Google Earth, multiple daily events are linked to a specific date, time, and place. Danis and Elizabeth Kahn developed the idea of "mapping the archive," which involves gathering specific data from firsthand sources in the archive into multilayered storytelling on a 3-D terrain model. Today Rainbow Bridge-Monument Valley Expedition—ONWARD! is working with the latest 3-D modeling techniques, from the academic and commercial worlds, to push the boundaries of geotemporal 3-D representation and to create a model that offers the fullest potential for a meaningful interactive experience while maintaining site privacy.

The landscape provides a context for history and for a continuing engagement with stories about specific places.

Allison Fischer-Olson, M.A., American Indian Studies, UCLA, in collaboration with Rainbow Bridge-Monument Valley Expedition—ONWARD!, has refined a methodology to utilize the "archival mapping" concept, allowing for deeper drilling into the original source material and the extraction of details that can be used to visualize the network of relationships between people, locations, landscapes, and time. Data can be cross-linked and curated spatially, chronologically, and even via the stories of individual expedition participants to invoke and develop multivocal or multinarrative dimensions. Photographs, films, and paper archives flesh out the narratives and make them dynamic, while oral history accounts, diaries, journals, and stories from living descendants provide further context.

A major goal throughout the project has been to emphasize the relationship between the RBMVE and native communities. From the data that Fischer-Olson has extracted from the documents, many positive exchanges between these groups are evident. But closer examination of the archival materials and museum collections, combined with what is known about the history of archaeology and relations between the U.S. government and Native Americans in this era, also reveals tensions. Contextualizing the RBMVE is ongoing, in collaboration with gathering additional narratives from local communities and individuals. Not only are these differing viewpoints providing further historic context, but inclusion of the counternarratives ensures that they do not remain silent, as in the past. We continue to ask ourselves how we can expand awareness of this and related issues of environmental and cultural heritage preservation, and of natural and political events that impact population settlement and movements around the world as they do here.

INAUGURAL CONFERENCE

Through generous private donations, a conference was organized by Rainbow Bridge-Monument Valley Expedition—ONWARD! in the fall of 2014. The event was held at the Center for Southwest Studies, Fort Lewis College, in Durango, Colorado, home of the Ansel Hall archives. The gathering of 65 people offered unique perspectives informed by the many and varied interests and backgrounds of the original participants—with some contemporary additions. The aim of the meeting was to share collective resources related to the RBMVE, discuss the approach for a multivenue exhibition, and talk about the application of innovative and relevant new technologies for interactive and virtual didactic presentation and landscape modeling.

CONCLUSION

The collaboration envisioned by Rainbow Bridge-Monument Valley Expedition—ONWARD! echoes the spirit of large-scale cooperation that the original RBMVE represented. It will allow many fragmented and isolated segments of the expedition's output to be reunited into one robust and deep consideration of the history of the place, people, and events. We anticipate that the value of each individual collection will be greatly enhanced by the context provided by the collaboration. The digital components we are creating will have multiple educational applications and create new opportunities for scholarship far beyond the life of the multivenue exhibition program. We aim to provide an experiential journey through a significant piece of the history of the American Southwest through the narratives of the RBMVE.

The heritage of the southwestern landscape is intrinsic to American identity but is often obscured. We believe that the digital models being created by Rainbow Bridge-Monument Valley–ONWARD! to trace distinct pieces of individual and community histories across this landscape through time will bring



Figure 8. RBMVE–Onward! inaugural conference participants attend a show-and-tell session, 2014. Roger Hall, son of Ansel Hall, shares family documents. Photograph by Peter Kirby.



Figure 9. RBMVE–ONWARD! inaugural conference, 2014. Annie Danis talks with Jeanne Salt, Max Littlesalt's daughter. In the background is Lithuania Denetso, Littlesalt's granddaughter, with some of her research and a saddle blanket and saddlebags that belonged to Littlesalt. Photograph by Peter Kirby.



Figure 10. RBMVE–Onward! inaugural conference participants in Durango, Colorado, October 2014. Photograph by Peter Kirby.

this legacy, with all its divergent paths, into sharper focus. The project will serve as a model for future virtual presentations about fragile and sacred sites around the globe.

ACKNOWLEDGMENTS

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Flexibility and the Sustainability of Early Farming Practices in the American Southwest

by R. J. Sinensky[1]

ARCHAEOLOGISTS HAVE always been interested in origins. Academic publications and popular magazines are filled with pictures and detailed descriptions of the earliest anatomically modern humans, the first cities, and of course the first farmers. Over the last 30 years, genetic and archaeological research have revolutionized our understanding of the origins of agriculture. Today there is a broad consensus that people independently domesticated plants in at least 20 locations worldwide (Larson et al. 2014). Narratives focused solely on the Zagros Mountains and lowland Mesoamerica have given way to the recognition that distinct groups in a single region domesticated plants independently (Fuller et al. 2014). Although archaeologists have long focused their attention on primary locales of domestication, the overwhelming majority of humanity adopted domesticated plants in a secondary fashion. My research examines the variable ways that people in the American Southwest, a secondary locale of domestication, incorporated Mesoamerican cultigens into their foodways.

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It has become clear that different groups used maize in distinct ways, ranging from heavy reliance to casual use.

Recent research indicates that early farmers in both primary and secondary locales often relied on a mixed subsistence strategy prior to adopting a sedentary agricultural lifestyle (Smith 2001). Other than the European example (see Rowley-Conway 2011), archaeologists view a quick and rapid spread of the Neolithic package with skepticism. In Mesoamerica, the primary locale of maize domestication, and in the American Southwest, early farming groups relied on a mixed farming-foraging strategy for roughly 5,000 years and 2,500 years, respectively, before sedentary agriculture became widespread. In hinterland regions, located outside of population centers, farming-foraging foodways often persisted unabated. Instead of examining why agriculture and decreasing mobility

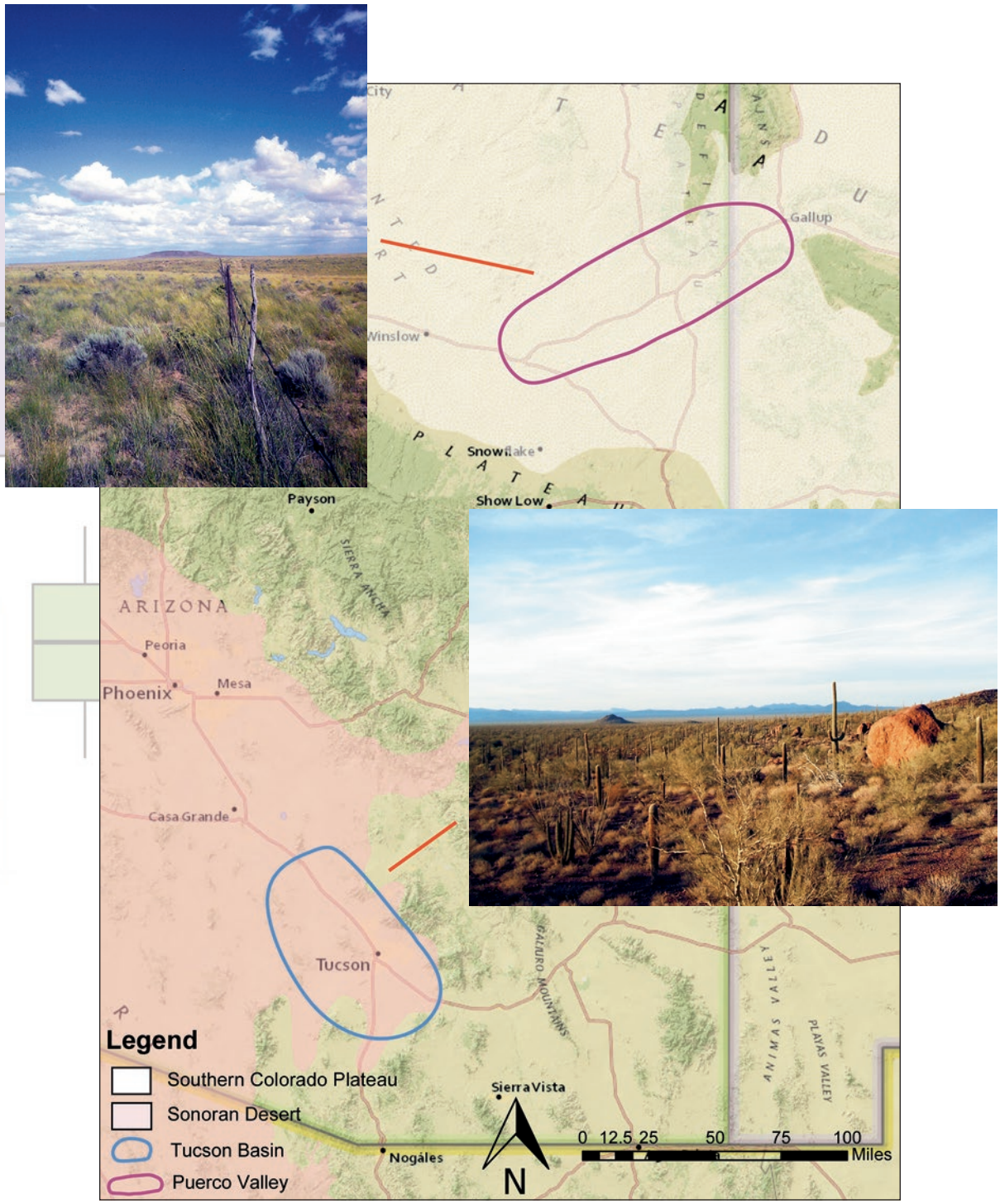


Figure 1. Location of the Tucson Basin in southeastern Arizona and the Puerco Valley in east-central Arizona and west-central New Mexico.

did or did not spread, my research investigates the factors that contributed to the sustainability of early and hinterland farming systems.

Southwestern archaeologists agree that ancient peoples relied on mixed farming-foraging strategies for an extended period of time, but they continue to debate whether maize was simply incorporated into the existing hunter-gatherer subsistence economy with minimal impact (Diehl and Waters 2006) or quickly became a dietary staple (Coltrain and Janetski 2013). With the benefit of transformative discoveries over the last 20 years, it has become clear that different groups used maize in distinct ways, ranging from heavy reliance to casual use (McBrinn 2010). Regional trajectories are influenced by a number of intertwined factors, including technological advancement, genetic

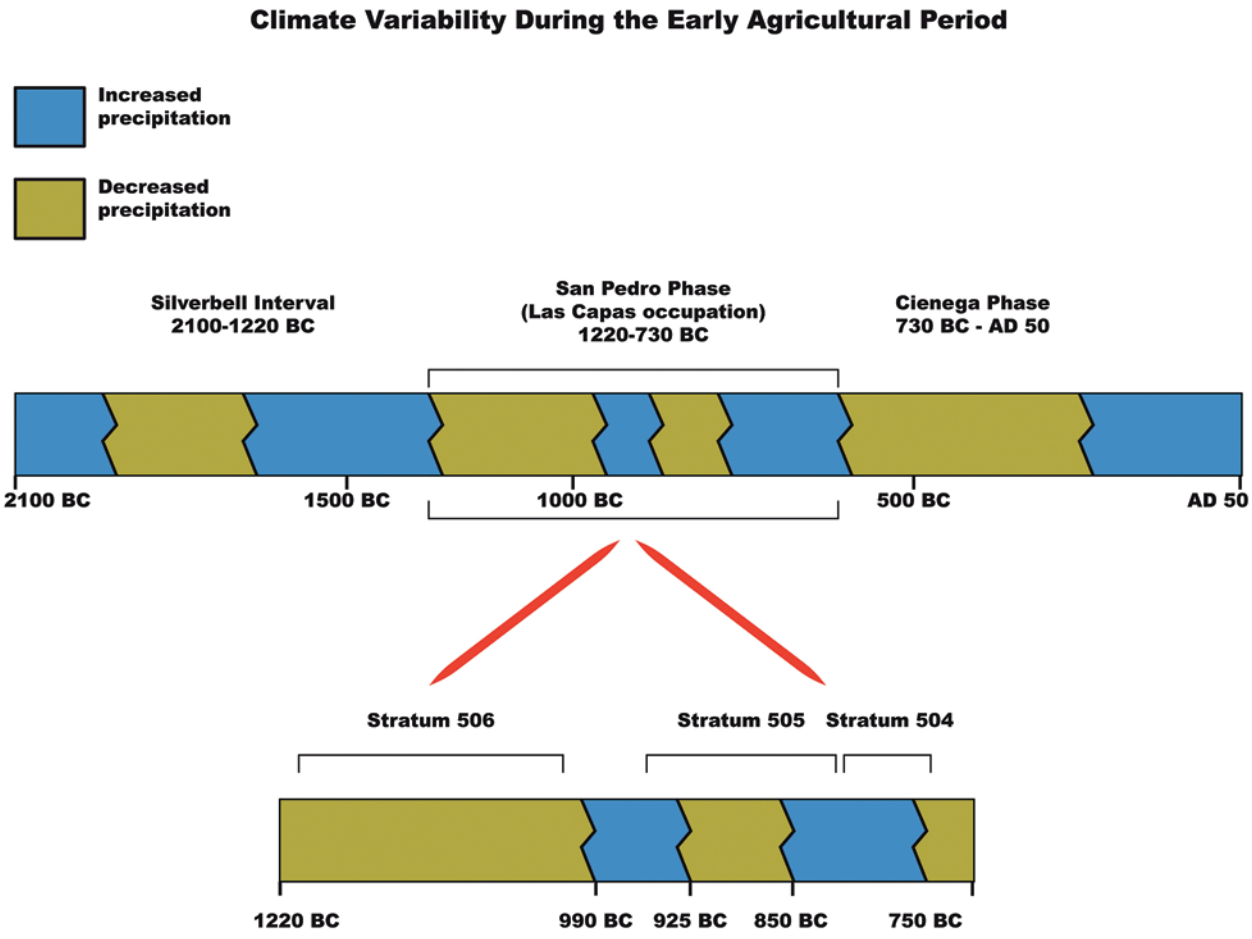


Figure 2. Climate variability during the Early Agricultural period (2100 B.C.E.–50 C.E.) and San Pedro phase.

development, shifting climate, demography, and social and political events (Kohler and Reese 2014).

This article examines two regions with unique agricultural trajectories: the Tucson Basin, located in southeastern Arizona, and the Puerco Valley, located in east-central Arizona and west-central New Mexico (Figure 1). In many respects, the environment and agricultural trajectories in these two regions are diametrically opposed. The Tucson Basin is located in the low-lying Sonoran Desert, which has abundant wild plant resources, a long growing season, and reliable water. The Puerco Valley, long considered a hinterland region, is located on the southern Colorado Plateau, which has a short growing season, contains limited wild plant resources, and lacks reliable perennial water sources. Following the development of increasingly sedentary agricultural villages, domesticated plants dominated foodways in the Tucson Basin, while Ancestral Puebloan groups in the Puerco Valley maintained flexible habitation and subsistence practices. This paper presents analysis of ancient plant remains from the San Pedro–phase (1220–730 B.C.E.) occupation of the Las Capas site, located in the Tucson Basin, and data from a broad temporal swath of archaeological sites in the Puerco Valley to examine how flexibility contributed to the sustainability of foodways in early farmer-forager and hinterland communities.

EARLY FARMER-FORAGERS IN THE TUCSON BASIN

The San Pedro–phase (1220–730 B.C.E.) site of Las Capas contains one of the earliest well-documented examples of increasing investment in maize cultivation in the American Southwest (Diehl 2005; Mabry 2008). A variety of geologic and hydrologic factors contributed to Las Capas being one of only several locations in the Tucson Basin with reliable perennial surface water (Nials et al. 2011:737). Early farmer-foragers constructed irrigation canals to increase crop yields but used maize and many wild plants in a flexible food-producing system. Tree-ring indices indicate that precipitation varied throughout the Early Agricultural period (2100 B.C.E.–50 C.E.) in southern Arizona but fluctuated most heavily during the San Pedro phase (Figure 2). While fluvial processes provided an attractive environment for irrigation

agriculture, the factors that contributed to persistent surface water also promoted vulnerability to erosion and flood events.

The alluvial stratigraphy at Las Capas affords a detailed chronology of the San Pedro–phase occupation. This research relies on stratum designations developed by Nials (2008), with the most recent stratum given the lowest numeric designation (Figure 3), and on chronology developed by Vint (2015). Stratum 506 consists of a stable floodplain deposit that dates between roughly 1220 and 1000 B.C.E. Stratum 505 (930–800 B.C.E.) is comprised of two distinct coarse alluvial deposits related to multiple high-intensity flood events (see Nials 2008:50). Stratum 504 (800–730 B.C.E.) dates to an interval of increased precipitation and contains the largest number of cultural features and the heaviest investment in irrigation infrastructure. Each stratum contains a similar suite of features, suggesting that similar activities took place. Stratum 503 marks the end of the San Pedro phase, with a large flood event that inundated the floodplain. This analysis examines how San Pedro–phase farmer-foragers mitigated the impacts of regional climate change and local environmental perturbations by assessing foodways in different strata.

Paleoethnobotanical analysis indicates that San Pedro–phase farmer-foragers were able to mitigate the impacts of local and regional environmental fluctuation due to the flexibility of their foodways and habitation strategies. Figure 4 details the relative importance of wild and cultivated plants by assessing the percentage of features that contain specific resources (ubiquity). The earliest San Pedro–phase farmer-foragers relied heavily on maize and a variety of wild plant foods. Maize and productive wild resources, including cactus fruit, mesquite, and productive crop weeds, dominated foodways between 1220 and 1000 B.C.E. In response to fluctuating climate and local flood events, people consumed less maize and relied on less productive crop weeds and wild grasses to make up for decreasing crop yields. The lower ubiquity of mesquite and cactus fruits between 930 and 800 B.C.E. indicates that farmer-foragers increased mobility in response to environmental instability. Instead of gathering cactus fruits and mesquite pods in logistical forays and returning to the floodplain village, people consumed these foods in seasonal camps. When conditions became ideal for irrigation agriculture between 800 and 730 B.C.E., people increased reliance on maize but continued to use a broad range and great quantity of wild plants. The commitment to diversity and the ability to increase and decrease mobility allowed early farmer-foragers to thrive in response to regional and local environmental instability. While flexibility contributed

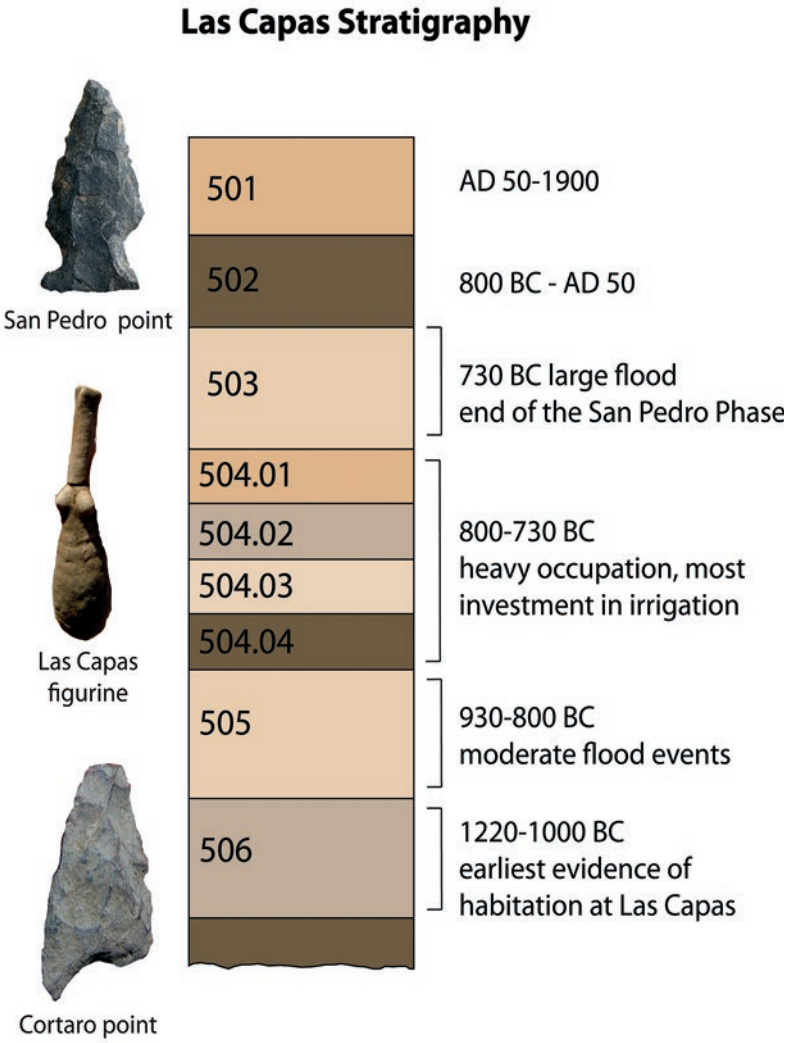
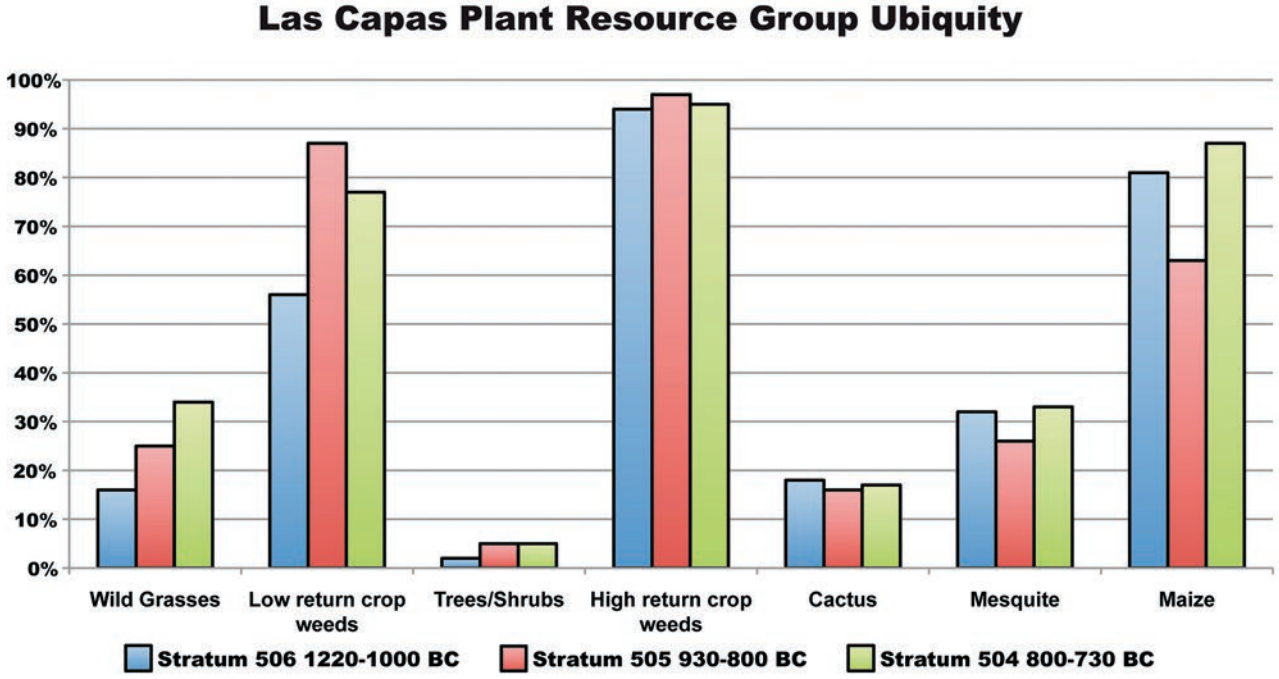
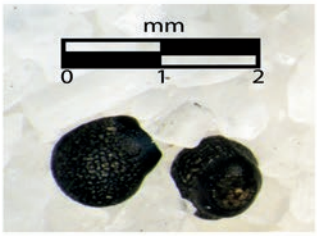


Figure 3. Alluvial floodplain stratigraphy and chronology at Las Capas.

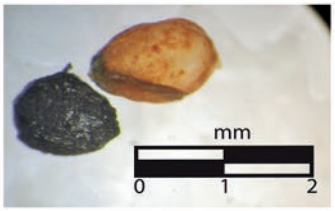



Cactus fruit provide a reliable resource



Charred ancient *Echinocerus* sp. seeds


Wild grasses growing along a riperian area



Charred and uncharred *Sporobolus* sp. seeds


Maize varieties from the American Southwest


Charred ancient *Zea mays* cupules


Mesquite pods are plentiful in the early summer

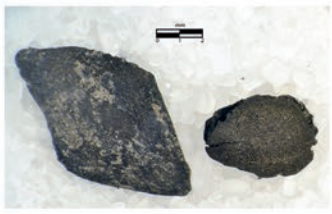

Charred ancient *Prosopis* sp. seeds

Figure 4. Reliance on wild plants and domesticates at Las Capas as indicated by the relative percentage of different plant groups in cultural features.

to the resiliency of preceramic farmer-forager foodways in the Tucson Basin, flexible social-environmental systems promoted stability well into the ceramic period in the Puerco Valley.

SEASONALITY AND SEDENTISM IN THE PUERCO VALLEY

For more than 100 years, archaeologists have noted the unusual diversity of material culture and architecture in the Puerco Valley (Hough 1903:323; Schachner et al. 2012). This analysis explores how flexibility in a hinterland region contributed to the sustainability of farmer-forager foodways. Flexibility in Puerco Valley communities is first discernable with the introduction and development of ceramics in the late Basketmaker II period (0–400 C.E.) and continues through the Pueblo III period (1125–1300 C.E.). Between 0 and 500 C.E., farmer-foragers began to live in larger groups than in any previous era in the region. Ongoing paleoethnobotanical analysis from pithouses at the Juniper Hill site, a preceramic Basketmaker II habitation site that dates to roughly 150 B.C.E., and at Sivuovi, a large early ceramic Basketmaker II site dating between 100 and 450 C.E., provides evidence that preceramic and early ceramic peoples relied on a mixed farming-foraging strategy and maintained a high degree of seasonal and residential mobility. During the Basketmaker III period (400–700 C.E.), farmer-foragers occupied large pithouse sites with hundreds of seasonally occupied structures and sites with more than 50 pithouses that were likely home to sedentary peoples (Gilpin et al. 2004). Unlike many cultural core regions in the American Southwest, where decreasing seasonal and residential mobility took root, variable habitation practices continued to be a hallmark of the Puerco Valley during the Pueblo I (700–900 C.E.), Pueblo II (900–1125 C.E.), and Pueblo III (1125–1300 C.E.) periods (but see Fowles

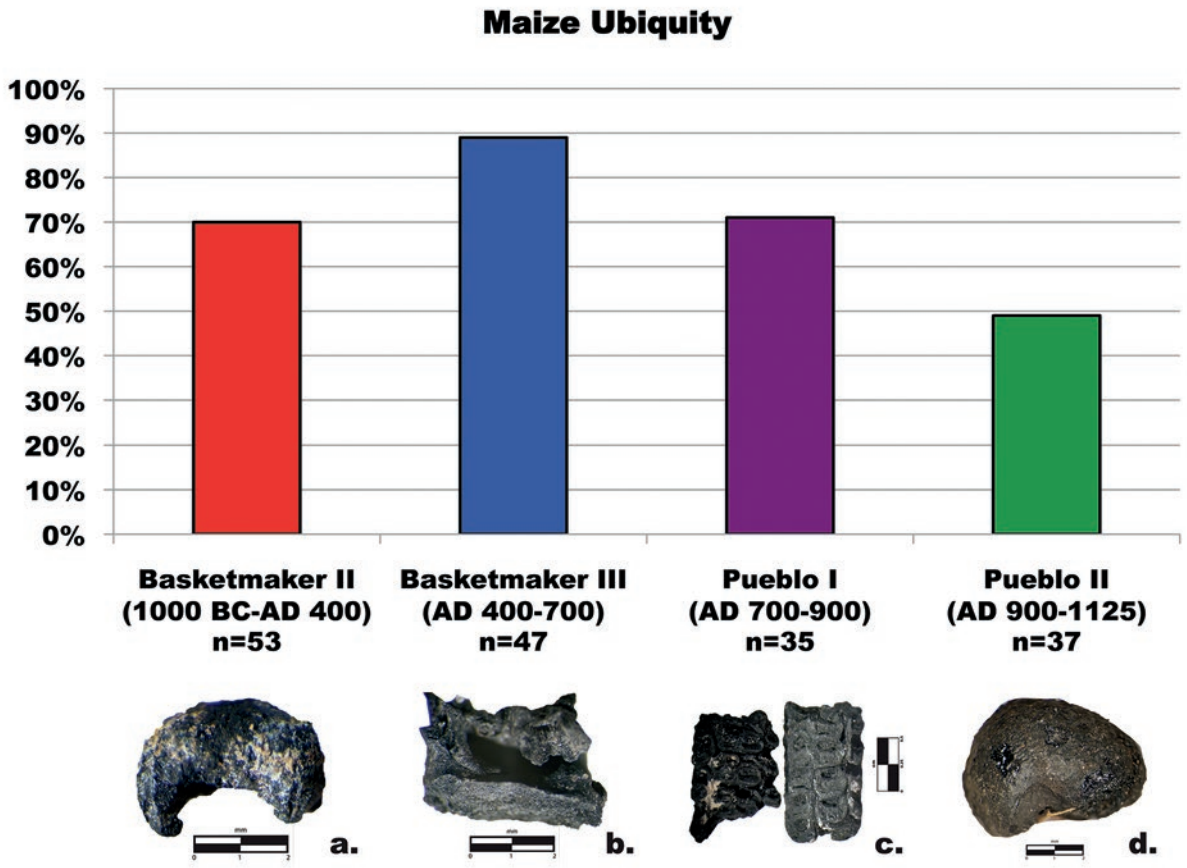


Figure 5. Percentage of cultural features that contain maize at habitation sites in the Puerco Valley during the Basketmaker and early Puebloan periods. Analysis indicates that ubiquity does not correlate with degree of mobility or sedentism. a) Maize kernel from an endosperm cap from Juniper Hill, a preceramic pithouse site. b) Maize cupules from Sivuovi, an early ceramic Basketmaker site. c) Maize cob segment from Twin Butte, a Pueblo I site. d) Maize kernel from a small Pueblo II site. Note the difference in kernel size between the Basketmaker II and Pueblo II periods.

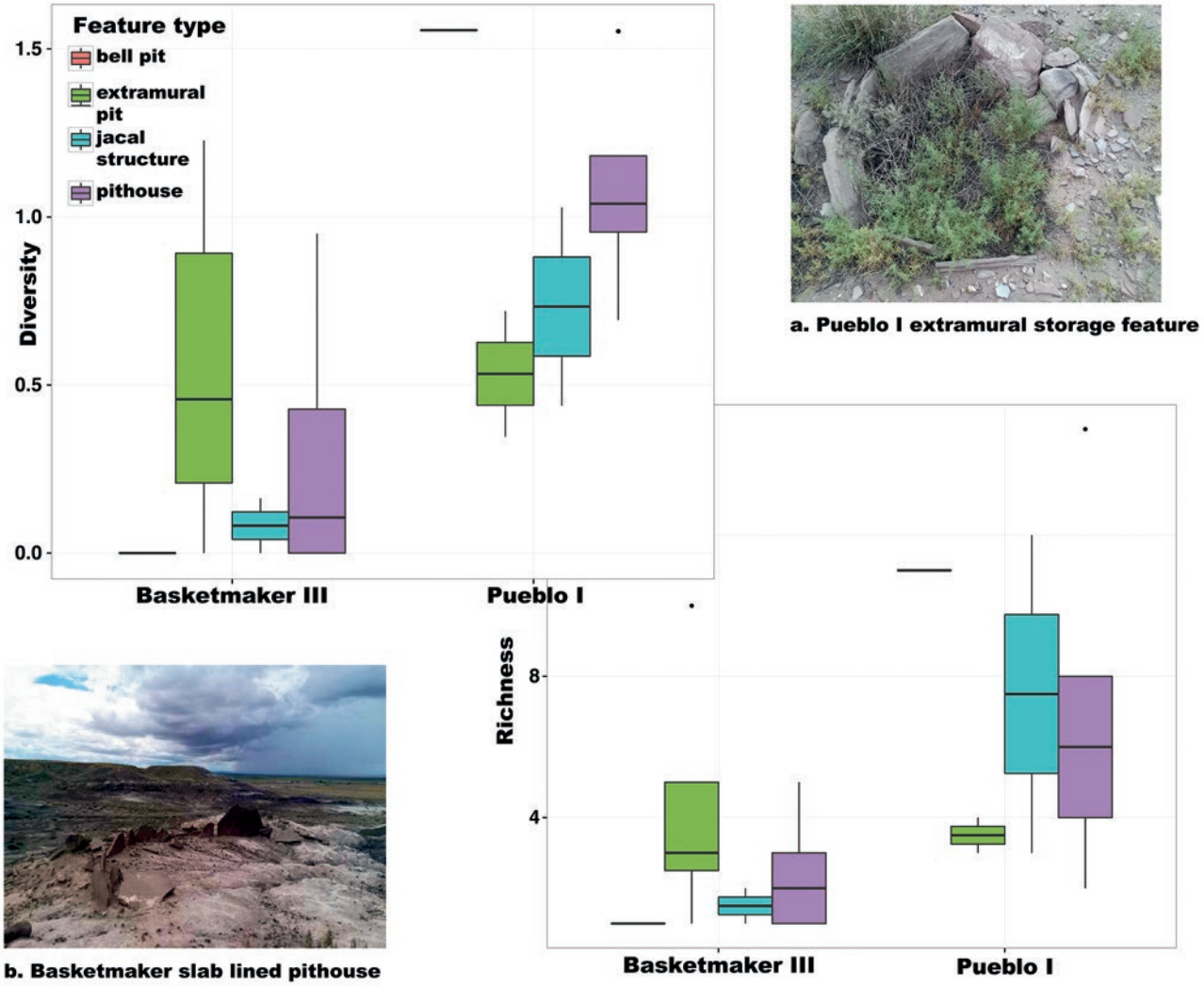


Figure 6. Diversity and richness of ancient plant remains across similar feature classes at a small sedentary Pueblo I site and a large seasonally occupied Basketmaker III site. a) A Pueblo I subsurface stone-lined storage feature. b) A stone-lined pithouse eroding off a mesa at the large pithouse site of Sivuovi, located in Petrified Forest National Park.

2011 and Schachner 2012 regarding residential mobility employed by Puebloan groups).

Paleoethnobotanical analysis from a broad temporal suite of archaeological sites indicates that maize was an important resource for well over one thousand years, but it did not increase in importance in a linear fashion over time (Figure 5). Maize ubiquity in cultural features was greater at early seasonally occupied sites compared to later Puebloan villages and hamlets. To investigate how foodways shifted at seasonal versus early sedentary sites, this analysis compared the paleoethnobotanical assemblages from AZ Q:8:47, a Pueblo I (700–900 C.E.) sedentary hamlet, and Cottonwood Seep, a large Basketmaker III (550–700 C.E.) site with ephemeral seasonally occupied structures (Gilpin et al. 2004; Merrick et al. 1993). I employed measures of richness and diversity to investigate similarities and differences in ancient foodways. Richness is the number of distinct taxa in an assemblage, while diversity accounts for the dominance or rarity of all identified resources. Diversity and richness are significantly greater across nearly all feature classes at the Pueblo I site (Figure 6), indicating that sedentary farmer-foragers increased logistical mobility, relying more on forays to gather resources while decreasing residential mobility. Instead of increased reliance on domesticates, early sedentary peoples remained heavily reliant on wild plants and retained a significant degree of mobility. Flexible habitation practices and subsistence strategies contributed to the long-term sustainability of Puerco Valley foodways.

CONCLUSION

This analysis investigated how flexibility contributed to the sustainability of ancient foodways in distinct regions of the American Southwest. The liberty to shift reliance on domesticates versus wild foods and to increase or decrease mobility in periphery and

incipient ancient societies allowed farmer-foragers to mitigate the impacts of environmental and social instability. The relative demographic stability of the Puerco Valley and the Early Agricultural–period occupation of the Tucson Basin contrasts sharply with regional depopulation events that plagued sedentary farmers in many cultural core regions later in southwestern prehistory. The resiliency of early farmer-forager and hinterland strategies can be linked directly to the flexibility inherent to mobile farmer-forager foodways. In 2015 we find ourselves in an era of unprecedented population growth and environmental volatility. Archaeology has the unparalleled ability to examine the long-term impacts of human behavior and attests to the benefit of maintaining flexibility in the face of dramatic challenges.

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Excavations at the Ancient Town of Talapada, India

by Monica L. Smith[1] and Rabindra Kumar Mohanty[2]

The trajectory toward urbanism started early in the eastern Indian subcontinent, with habitations at Sisupalgarh beginning in the seventh century B.C.

THE INDIAN SUBCONTINENT is home to several successive phases of urbanization, of which the most remarkable was during the Early Historic period (third century B.C. to fourth century A.D.). During this era, a number of simultaneous developments resulted in a well-connected trade and social environment within the subcontinent and beyond. These developments included the growth of Buddhism as a major religious tradition housed in monasteries and pilgrimage centers; the advent of writing, which enabled the codification of religious and political knowledge; and the emergence of cities as centers for population growth and economic activity.

UCLA–Deccan College collaborative research projects, directed by the authors, have demonstrated that this trajectory toward urbanism started early in the eastern Indian subcontinent, with habitations at the large city of Sisupalgarh beginning in the seventh century B.C. To understand the relationship of this large urban center to its hinterlands, in 2013 we began a research program at the smaller regional center of Talapada, located 40 km (25 miles) to the southwest of Sisupalgarh but sharing many of its attributes, including a formal rampart perimeter, as well as access to the same trade networks, as seen in identical types of pottery and other domestic goods. In 2014 we continued and expanded the research area to encompass both the ramparts and residential areas of the site.

In the 2015 season, we had several follow-up goals addressed through excavation. Our first goal was to determine whether Talapada's ramparts had been laid out over preexisting cultural deposits or whether it had been a town set in the landscape as an empty perimeter, much like a planned community to which residents were expected to come once the infrastruc-

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Figure 1. Talapada southern rampart excavations.



Figure 2. Professor P. P. Joglekar and student Elora Tribedy work in the southern rampart excavations.

ture was completed. To investigate this possibility, we cut a section across the southern rampart wall, and we found that the initial rampart had been built directly on natural soil, with no sign of prior cultural deposits. This discovery confirmed our understanding of Talapada as a planned community, although our investigations throughout have suggested that the town was never fully occupied (see *Backdirt* 2013).

We also returned to an enigmatic area of stone architecture in the central portion of the site that we had first investigated in 2014. In this area, currently used as the village cricket field, geophysical survey had suggested distinctive circular subsurface configurations similar to structures we had excavated on the exterior of the rampart walls at Sisupalgarh. Excava-



Figure 3. Post-mounted house on the shores of nearby Chilika Lake, with inset of a posthole excavated at Talapada.

tions at Talapada confirmed the presence of a portion of what could be a circular or partially ovoid structure that was not likely a residence or storeroom. This indicates that while the site may have been relatively underpopulated, it did have the same architectural types as its larger urban counterpart at Sisupalgarh. Another expansion of research was conducted in the eastern portion of the site, where we reopened a trench from 2014 and were thus able to confirm the presence of significant iron-working activities within the rampart walls.

We also conducted a deep sounding in the center of the site this season to evaluate the types of activities undertaken in what we surmised were the most heavily used portion of the ancient settlement. Deep soundings enable archaeologists to get a "slice" of the complete occupational sequence of a site and to examine changes over time in a single locale. In this case, we were able to reach natural soil about 2 m below the modern ground surface, which enabled an understanding of site growth from the beginning of the town to compare with the activities of the initial rampart.

As noted in previous seasons of research, evidence for durable domestic architecture in the center of Talapada was limited. We did have a rare glimpse of posthole architecture preserved in the packing of gravel patches, one of which showed a clear doughnut hole shape where a post had once stood but was now decomposed. Although the feature seems makeshift, architecture need not be very substantial to be effective, particularly in a warm, temperate environment such as the eastern coast of India. During our reconnaissance trips in the region, we often observed small



Figure 4. The authors with the 2015 excavation team in Talapada.

platform structures in fields and marketplaces that may have been quite similar to those made in ancient times.

Our research in the region will continue the analysis of Sisupalgarh and Talapada, integrated with new research carried out along the coast and in the hinterlands. In the past decade, we have seen an exciting growth of archaeological investigations in the region, providing us and future scholars with the opportunity to understand the way in which urban configurations emanated from robust local trade networks and flexible strategies of architecture and infrastructure. We would like to thank the Archaeological Survey of India for permission to work at the site, the National Science Foundation for the research funds that enabled this project to take place, and the Indian faculty colleagues and students from Deccan College Post-Graduate and Research Institute, Northeast Hill University, Ravenshaw College, and Vishwa Bharati– Santiniketan who participated in the fieldwork.

Architecture need not be very substantial to be effective, particularly in a warm, temperate environment such as the eastern coast of India.

The Ongoing Study of Coffin Reuse in 21st-Dynasty Egypt

by Marissa Stevens[1] and Kathlyn Cooney[2]

THE ENDURING NATURE OF the material record of ancient Egypt elicits a sense of wonder for those who experience the monuments along the Nile and the vast museum collections that house Egyptian artifacts. Everyone, from the casual museumgoer to the lifetime scholar of Egyptology, can appreciate the seemingly permanent, everlasting material culture that appears to have won the battle over time. With exhibition titles like the British Museum's *Eternal Egypt*, the National Gallery of Art's *Quest for Immortality*, and the Brooklyn Museum's *To Live Forever*, it is easy to stress the continuity, durability, and longevity of Egyptian culture, particularly in the realm of funerary goods.

It is shocking to think of the coffins, amulets, and offerings that fill museum collections worldwide as temporary products of ritual function. When I entered UCLA's Department of Near Eastern Languages and Cultures three years ago, imagine my surprise in learning that the research of my advisor, Dr. Kathlyn (Kara) Cooney, focused on coffin *reuse*. Indeed, the Egyptians perceived their funerary materials as commodities and at times chose to lessen the importance of material permanence in exchange for momentary ritual impact. By systematically studying the corpus of 21st-Dynasty coffins from Thebes (Figure 1), Kara has shown that in times of scarcity, funerary goods from earlier dynasties were recommodified and reused in order to perpetuate the elaborate burial rituals that the Theban elite had come to expect.

It is shocking to think of the coffins, amulets, and offerings that fill museum collections as temporary products of ritual function.

In my first year as Kara's student, I learned that her 21st Dynasty Coffins Project, as it is now known, was long in the making. During her graduate career, Kara noticed that there seemed to be many more coffins from the 21st Dynasty than from the 19th and 20th Dynasties. At its core, her current research question asks, "Where did all the Ramesside coffins go?" A study of 21st-Dynasty coffins revealed that a large number of them were described in the literature as "archaizing" to an earlier time period (Niwinski

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Figure 1: Kara Cooney studies a coffin in Ägyptisches Museum storage in Berlin in 2013.

1988). A study of the texts on some of the coffins revealed the names of multiple owners.

The time period itself warrants a closer look due to the unique social organization that defined the era. The 21st Dynasty (circa 1070 to 945 B.C.), which marked the beginning of the Third Intermediate period, was politically defined by the split rule of the weakened Tanite kings in the north and the consolidation of power by the High Priesthood of Amun in Thebes to the south (Trigger et al. 1983). With the absence of the pharaohs' influence in the south, the patriarchal lineage of the High Priesthood of Amun assumed control of the area. Economic hardship and political fragmentation characterized the 21st Dynasty, and the much-valued trade routes that allowed wood from the Levant to flow into Egypt shut down. In addition, the cultivation of native sycamore and acacia trees within Egypt was interrupted. As a result, all aspects of Egyptian life, including funerary culture, were affected, prompting reactionary measures by the Egyptian populace.

Kara realized that much more was happening during this time period than the occasional choice of an archaizing style. Unquestionably, one reaction to the economic hardship was both the (partially) sanctioned reuse of funerary equipment and, in extreme cases, tomb robbery (Cooney 2011). How much reuse was actually taking place, however? This question prompted a systematic study of coffin reuse from the 21st Dynasty and became Kara's next research goal, as well as my introduction into the realm of museum-based research projects.

RESEARCH METHODOLOGY

As Kara's project grew and more museum collections were added to the data set, I was tasked with being the registrar for the project. This was an excellent opportunity for a first-year graduate student, and I was certainly ready and willing to gain experience. Being able to work and study alongside Kara on an established project was absolutely the best way for me to learn how to plan, manage, and execute a research project on such a scale (Figure 2). Aside from the research goal of documenting coffin reuse, the main aim of the 21st Dynasty Coffins Project is to create a complete photographic record for each coffin to the extent that such is possible. Although sometimes restricted by museum display or storage conditions,



Figure 2: Kara and Marissa synchronize their work on digital photos in National Museums of Scotland storage in Edinburgh in 2014.



Figure 3: These are the "coffin sheets" on which photographs are organized as they are being taken. The tea and biscuits were courtesy of Lord and Lady Langford of Bodrhyddan Hall.

complete documentation should include the tops and undersides of all coffin lids and mummy boards, as well as the interiors, exteriors, and undersides of all coffin troughs. Sometimes museum conditions or the instability of a coffin prohibits complete documentation, which results in earlier photographic evidence becoming invaluable to the project. At other times, museum conditions include tea and biscuits (Figure 3). The photography and the organization of the photographic record in the database take place simultaneously; photos are uploaded to our dedicated computer server as they are taken, and I tag and organize the photographs with a view of the coffin being studied. This way, errors in documentation can be easily corrected, additional photos can be requested, and more detailed photos based on personal observations can be incorporated.

While the photographic record is being assembled, Kara studies each piece in detail (Figure 4), looking for telltale signs of reuse. She defines coffin reuse as the reappropriation of an ideologically charged object within the context of economic and social crisis, and she recognizes that such an action assumes priority of short-term ritual use over material longevity (Cooney 2012). With oftentimes nothing more than her own eyes, Kara documents this reuse within the framework of both a gradient of the type of reuse for each piece and a scale of her own confidence that the piece was reused.

> All aspects of Egyptian life, including funerary culture, were affected, prompting reactionary measures by the Egyptian populace.

The gradient of reuse is complicated by the fact that both ends of the spectrum leave no record to be documented. On one end, there is the simple reuse of a coffin for a new body with no modifications made to the coffin at all. Without knowing the full history of the coffin, there is no way to know how many times it was used if no changes were made to its appearance. On the other end of the spectrum is the situation where a coffin was completely dismantled for the wood and metals to be reused in the creation of another object. Again, we have no way of documenting this most intensive type of reuse. We can assess only what falls within the middle of the spectrum, and these types of reuse are many.

First, a coffin may show the reinscription of a name. Oftentimes this is visible because the new name is written in a different type of ink or paint that is quite obvious, the varnish or background paint is smudged around the new name, or the gender of the name does not match the gender of the titles or

pronouns used in the text on the coffin. Sometimes, multiple names are present, indicating that some names were changed or added; sometimes the original owner's name was either overlooked by the usurper or was allowed to remain on the coffin in order to ritually connect the two deceased individuals who used the coffin at different times.

Second, redecoration of part of the coffin, most often the lid, is often evident. Oftentimes this includes the erasure and rewriting of text, the use of different paints or pigments that do not quite match the rest of the decoration, or the overlapping of old and new decoration in a way that suggests multiple use phases. This redecoration can be very localized, focusing on just a particular text, image, or area of the coffin, such as the repainting of the pectoral (Figure 5), or it can be more extensive and spread throughout the decoration of both the lid and the case.

The third type of reuse, which we see quite frequently, is the complete replastering and repainting over old decoration. Here, multiple layers of decoration are preserved, and we can stratigraphically document the layers into different use phases. Sometimes the old decoration layers were not preserved but were scrubbed off, exposing the bare wood before the coffin was replastered and repainted. In this situation, it is difficult to address how many times a coffin was used. In other cases, however, we can still see parts of old decoration and plaster that remain after a not-so-thorough cleaning.



Figure 4: Team Kara checks the fit of a coffin lid and case in the Musée du Cinquantenaire in Brussels in 2014.

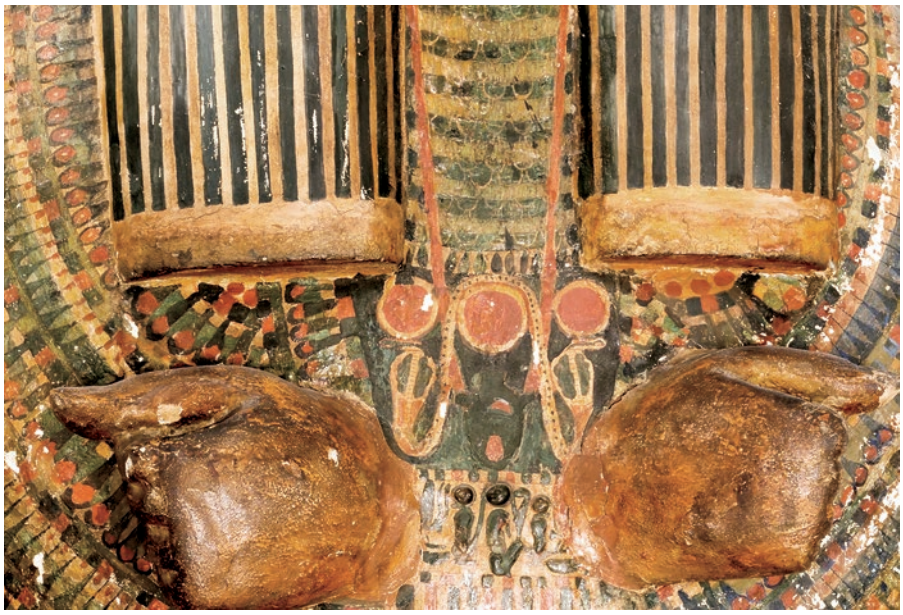


Figure 5: Detail of coffin AF 9593 in the Louvre, showing that the pectoral and collar were repainted after the breasts were removed and the hands were changed into those of a man. This resulted in darker, less detailed paint work that in places overlaps the paint on the hands.

Fourth, sometimes the coffin itself is remodeled. Most commonly, this involves the hands and face on the lid of the coffin. Traditionally, a male depiction on an anthropoid coffin has fisted hands. A woman will have flat hands, as well as earrings and breasts. In cases where a coffin was reused by a person of the opposite gender, new hands had to be affixed to the lid, and earrings and breasts had to be either added or removed. This almost always left damage marks on the



Figure 6: Sometimes Team Kara gets to study coffins in a palace. Kara, Marissa, and Cotsen graduate student Rose Campbell enjoy the surroundings of Bodrhyddan Hall, Wales, in 2014.

face and chest of the coffin, and there are frequently clear outlines of hands, earrings, or breasts that have been removed. This type of reuse also necessitated redecoration of the affected areas, and it is usually obvious where touchup paint has been applied. Such gender modifications must have been time-consuming and expensive, but they are quite common, suggesting that most reuse happened within the legal context of the family rather than via theft. It seems that a given family group was forced to modify its only coffin, or one of its limited number of coffins, when another family member died. If a family had acquired reused coffins at a (black) market instead, it likely would have purchased a coffin of the correct gender, and we wouldn't find as much gender modification.

PRELIMINARY ANALYSIS

To carry out this research, Kara, photographers, research assistants, myself as registrar, a babysitter, and Kara's preschool-age son travel on monthlong summer trips to museum collections worldwide. This group, affectionately dubbed Team Kara by fellow scholars and friends (Figure 6), has visited major collections in Italy, France, Germany, Great Britain, the Netherlands, Belgium, Austria, Poland, Sweden, Denmark, and the United States. At each museum we have been welcomed and supported by incredible museum staff, curators, and scholars, who have been more than willing to help us advance this project.

Reuse rates appear well over 50 percent for all coffins included in the study. That percentage, however, could certainly increase with the systematic incorporation of other analytical techniques. During the past research season, we experimented with several methods that will help both corroborate the visual evidence of reuse currently documented and expand identification of instances of reuse that currently cannot be seen with the naked eye. Two basic methods that show promising results are ultraviolet and infrared photography. The use of an infrared camera has revealed pigments that were mostly erased or covered by additional decoration. One example of a coffin set held in a private collection in Bodrhyddan Hall, Wales, revealed the name of the original owner of the coffin (Figure 7). This name was mostly erased, and a new name was added over the old text. We would have been unable to read this original name without the aid of infrared photography.

A second technology we are exploring is ultraviolet light. Using special UV flashlights, we have been able to distinguish ancient paint from modern restoration (when it is not already apparent) and document the use of orpiment in both paint and varnish layers. Also, a delightful result of the use of the UV flashlights was the discovery of many fingerprints left behind in the ancient varnish layers. We jokingly speculated about craftsmen who were in such a hurry to finish the decoration that they could not wait for the varnish to dry. Witnessing those fingerprints was also a reminder of the many people involved in the creation of these stunning pieces of funerary art.

FUTURE RESEARCH

As an accompaniment to infrared and ultraviolet photography, Kara intends to incorporate the use of a portable X-ray fluorescence (XRF) device, which allows for the detection of metals in paint layers. This would enable us to identify pigments such as orpiment, realgar, and huntite, which would provide valuable information regarding the production techniques and economic expense of these coffins. In addition to XRF analysis, Kara is interested in incorporating both terahertz imaging and wood sampling into the study. Using high-frequency electromagnetic waves, terahertz imaging allows one to detect and virtually isolate the thin layers of wood, plaster, paint, and varnish that compose the coffins. Wood sampling can provide a plethora of information, including the species of wood used in coffin construction and the age of the wood by radiocarbon dating.

Our next research trip will take us to the Egyptian

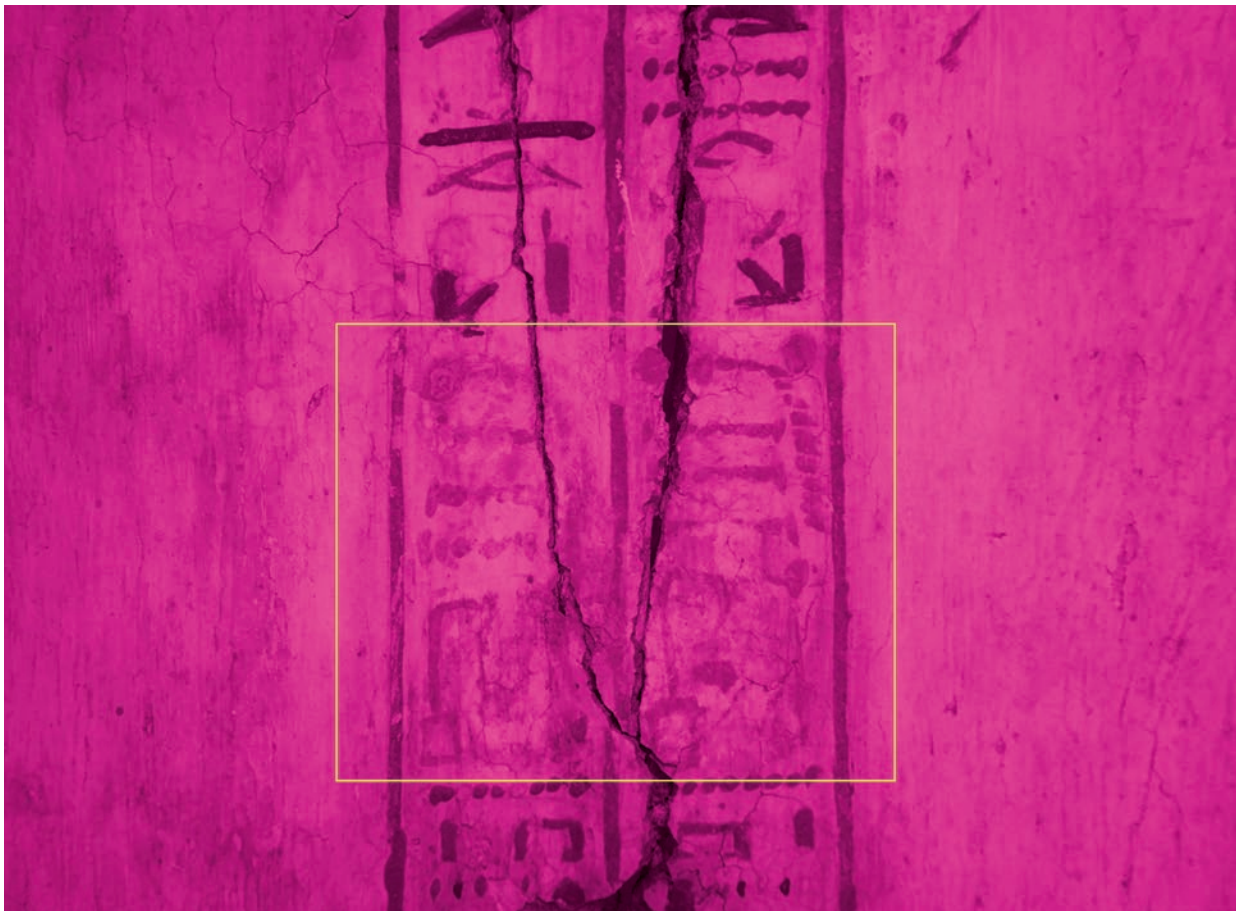


Figure 7: An infrared image showing writing under the current surface of decoration, highlighted in the yellow box. These two names reveal that this coffin, now in Bodrhyddan Hall, Wales, had at least two owners.

Museum in Cairo, where Kara plans to undertake the first systematic study and documentation of the Royal Cache coffins of the 21st Dynasty. These eleven coffin sets, published by M. Georges Daressy in the *Catalogue Géneral* in 1909 (Daressy 1909), have never been subject to an extensive photographic survey. This is the first time that Team Kara will study the famous collections of the Egyptian Museum. We hope it will be the first of many successful trips as we work our way through all the available 21st-Dynasty coffins on display and in storage. In the meantime, Kara is working on the publication of several articles that focus on the interesting history of several coffin sets studied during our last research meeting. "Coffin Reuse in the 21st Dynasty: A Case Study of Objects in the British Museum" will be published by the British Museum Press in a forthcoming volume edited by John Taylor, and "Reuse of Egyptian Coffins in the 21st Dynasty: Ritual Materialism in the Context of Scarcity" will be published by the Gregorian Museums, Vatican, in *The First Vatican Coffins Conference, 19–22 June, 2013 Conference Proceedings*, edited by Alessia Amenta.

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A Journey to Ethiopia

by Rachel Moy[1]

PALEOANTHROPOLOGISTS flock to Ethiopia in search of humanity's earliest ancestors, as the human remains and stone tools preserved there are among the oldest in the world (Semaw et al. 1997). As a result, the archaeology of later periods has been largely neglected. Though we have some knowledge of the Aksumite Empire (50 B.C.E.–900 C.E.), we have barely scratched the surface of how this empire came to power and how it declined. What happened in the millennia between is even more enigmatic. Aside from the need to outline a cultural history, this region has huge potential to address broader social, cultural, and economic questions.

Recognizing such possibilities, UCLA archaeologists Willeke Wendrich, Hans Barnard, and I traveled through northern Ethiopia in December 2014, in search of a promising place to begin a new project. Aksum is located in the highlands of Ethiopia's northernmost province, Tigray (Figure 1). Most historical archaeological research has taken place in this region. Currently, some projects work in the central and eastern highlands, but no research is done in the western highlands. A single survey was conducted by Niall Finneran and Jacke Phillips in 2002 and 2003 (Finneran 2005; Finneran et al. 2003). Although their findings were never fully published, Finneran and Phillips identified a number of ancient sites in the vicinity of the modern town of Indasilase, only about 30 miles west of the ancient capital. Equipped with their survey notes, which they had generously made available to us, we headed west. We had several goals in mind for our choice of research area. These included potential for survey and excavation, ethnoarchaeological research, field schools, and community archaeology. Besides these practical goals, we were guided by specific research interests, including agriculture and subsistence, craft specialization, the development of political complexity, and regional ceramic typology. Our challenge then lay in finding an area with the potential to illuminate all these varied topics.

Our preliminary investigations already show links between the major Red Sea powers, Egypt and Aksum

1 Cotsen Institute of Archaeology



Figure 1. The province of Tigray in northern Ethiopia. The UCLA research area is between the cities Indasilase and Askum.

We arrived in Indasilase, the capital of the Shire region, and began our search. On the first day of our informal survey, we visited the site of Mai Adrasha (Figure 2), located just off the paved road to Aksum. The site itself is an extensive tell of approximately 50 ha. From the ceramic remains on the surface, Finneran and Phillips date the majority of the site to the Proto-Aksumite and Aksumite periods (ca. 140 B.C.E.–850 C.E.). They also identified some Pre-Aksumite and Post-Aksumite (ca. 850 C.E.–1500 C.E.) remains (Finneran 2005). The site has not been formally excavated but has been extensively looted by the local population, who illegally pan for naturally occurring gold in the soil. Walking over the site, we saw Pre-Aksumite and Aksumite pottery scattered on the surface and identified what has been called a snake or lion head, a recognizably Aksumite architectural element (Figure 3). We had been warned of the large extent of the looting, and firsthand, the situation was worse than anticipated; villagers were actively looting the site when we arrived and were undaunted by our presence. Given the ongoing and intense destruction of the site, we decided to do something to preserve the largest site yet discovered in the western Ethiopian highlands. One way to stop the looting might be to discuss the value of cultural



Figure 2. The ancient site at Mai Adrasha is the current focus of the UCLA project.



Figure 3. Ethiopian archaeologist Guish Assefa with a stone lion or snake head, a common Aksumite architectural element (around 50 B.C.E.-900 C.E.).



Figure 4. Archaeological finds from Mai Adrasha stored in a municipal office in Indasilase.

heritage with the local community. While we were at the site, we heard a local man shouting at the looters to stop what they were doing. This gives us hope that some members of the community are against the looting and would be receptive to opening a dialogue with us concerning conservation of the site. Another suggestion is employing a strategy that was once successful at Karanis in northwestern Egypt. In the early twentieth century, this Greco-Roman site was being heavily looted by so-called *sebakheen*, who mined the site for organic remains to be used as fertilizer. A team from the University of Michigan was able to negotiate with them to excavate the site and hand over the backdirt after excavation (Boak and Peterson 1931). We might propose a similar solution at Mai Adrasha: excavate the site and give the backdirt to the villagers to pan. In conjunction with disseminating information to the community, this might result in preservation of the site.



Figure 5. A typical Ethiopian church in Maryam Ajenamra, a village just northwest of Mai Adrasha and Indasilase.

The next day, we paid a visit to a local administrative office that houses many finds from the site. These include figurines of women holding children and an impressive array of clearly Proto-Aksumite ceramics (Figure 4). Currently, there are only two published sites with a Proto-Aksumite component (Cossar 1945; Fattovich and Bard 2001). As the Proto-Aksumite period occurs directly before the Aksumite, learning more about the period will help describe the rise of the Aksumite state. Since few other Proto-Aksumite sites are known, Mai Adrasha will prove an invaluable resource. As Mai Adrasha is not solely a Proto-Aksumite site but dates from the Pre-Aksumite to the Post-Aksumite, excavation may provide an unbroken ceramic sequence from the Pre- to Post-Aksumite periods. Only one other site with a potentially continuous ceramic sequence has been the subject of comprehensive excavation, Matarā, which was excavated in arbitrary levels (Anfray and Annequin 1965). An eventual clarification of the ceramic sequence is of extreme importance for archaeological research across Ethiopia, not only in terms of dating but also for interpreting the cultural landscape.

The Ethiopian Authority for Research and Conservation of Cultural Heritage (ARCCH) allows foreign projects to claim 100-km² research areas. After choosing Mai Adrasha as a focus site, the challenge then lay in finding a research area that would support our other interests. While visiting a few more sites, we noticed that ancient habitation often coincided with modern churches (Figure 5). King Ezana of Aksum converted to Christianity in the second quarter of the fourth century C.E., and Ethiopia remains a majority Christian country, although Muslims and other religious groups now make up a large portion of the population. With this in mind, we concentrated our efforts on modern churches, as well as sites mentioned in the notes of Finneran and Phillips. One of these locations, Mezaber Adimenaber, seemed particularly promising. This village is located about 7 miles northeast of Mai Adrasha on a low mound surrounded by fields. As soon as we set foot on the first field, we found numerous pottery sherds, likely dating to the Aksumite period. The farmers appeared enthusiastic about our presence and alerted us to a number of



Figure 6. An Ayla-Axum amphora (fourth-fifth century C.E.), found by a farmer in the fields of Mezaber Adimenaber.

ancient architectural features, as well as a few almost complete vessels that they had recovered in the course of working their fields. One of these was a nearly complete Ayla-Aksum amphora (Figure 6), produced in modern Jordan, indicating ancient trade in the Red Sea basin. Exemplars of this pottery type were also excavated in the Greco-Roman harbor of Berenike, in southern Egypt (Sidebotham and Wendrich 2000). Our preliminary investigations already show links between the major Red Sea powers, Egypt and Aksum. Future study will permit further exploration of their trade relationship.

A basket maker and a vellum producer were living in the village of Mezaber Adimenaber. Both of them were happy to discuss their crafts with us (Figure 7). The ethnoarchaeological study of basketry in Ethiopia shows great potential for more than one reason. Unlike ceramics, which have been largely replaced by plastics, baskets are still very important to daily life in most of Ethiopia. They are used not only for daily tasks but also in ceremonies and rituals. For instance, in northern Ethiopia, specific



Figure 7. A scribe in Mezaber Adimenaber showing his parchment and calligraphy of the Bible.



Figure 8.
Winnowing tiff, a local cereal, in Mezaber Adimenaber.

Unlike ceramics, which have been largely replaced by plastics, baskets are still very important to daily life in Ethiopia.

baskets are made for weddings and used in traditional dances. While in Mezaber Adimenaber, we also talked to local farmers who used winnowing baskets (Figure 8). After such an interesting visit, we decided to include Mezaber Adimenaber in the research area that we proposed to the Ethiopian authorities.

The large area comfortably fits both of the sites we selected. The area between Mai Adrasha and Mezaber Adimenaber includes numerous other sites listed in the notes of Finneran and Phillips. We did not have enough time to visit all these sites but will definitely explore them in the near future. We are eager to start work in such an intellectually stimulating and welcoming country and have scheduled our first field season in November and December 2015. Stay tuned for updates!

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The Ifugao Archaeological Project

Stephen Acabado,[1] Marlon Martin,[2] and Adam Lauer[3]

THE IFUGAO ARE ONE OF several minority groups in the northern Philippines and one of the best documented. They are best known for their rice terraces (Figure 1), which are now a UNESCO World Heritage Site. In the early twentieth century, two prominent figures in Philippine anthropology conducted an intensive investigation of the Ifugao (Barton 1919, 1930; Beyer 1926, 1955). Both scholars proposed a 2,000- to 3,000-year-old origin for the Ifugao rice terraces based on their estimates of how long it would have taken to modify the rugged topography of the area. This "long history" has become received wisdom that found its way into textbooks and national histories (Jocano 2001; UNESCO 1995). Others have proposed a more recent origin of the terraces (Table 1). Using evidence from ethnohistoric documents and lexical research, these studies suggest that the terraced landscapes of the Ifugao are the end result of population expansion into the Cordillera highlands in response to Spanish colonization. Lowland–mountain contacts before and after the arrival of the Spanish may have facilitated the movement of lowland peoples into the highlands when the Spanish settled in their locales (Keesing 1962).

The Ifugao Archaeological Project (IAP) is a collaborative research program of the Save the Ifugao Terraces Movement (SITMo), the National Museum of the Philippines, the University of the Philippines, the National Commission on Indigenous Peoples–Ifugao, and UCLA. In 2012 and 2013, the IAP conducted two field seasons in Old Kiyyangan Village in Kiangan, Ifugao (Figure 2), aiming to better understand highland–lowland relationships. In 2015 the IAP returned to the area to complete the first phase of its research program. Old Kiyyangan Village is located near the junction of the Ibulao and the Ambangal rivers, southwest of Lagawe, the capital of Ifugao province (Figure 3). Old Kiyyangan Village is thought to be the first village settled by the Tuwali-Ifugao, an Ifugao ethnolinguistic group that later settled in the current town of Kiangan, about 4 km from the archaeological site. Old Kiyyangan Village is prominent in the Tuwali-Ifugao origin oral tradition, as it is considered the place where the Ifugaos first settled (Beyer 1955). The settlement is first mentioned in 1801 by Fray Molano in a letter to his superior, in which he states that the

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2 Save the Ifugao Terraces Movement
3 University of Hawaii



Figure 1. Rice terraces in Batad, a UNESCO World Heritage Site.

Table 1. Age Estimations Proposed for the Construction of the Ifugao Rice Terraces

AUTHOR	DATE	EVIDENCE
Barton (1919) and Beyer (1955)	2,000–3,000 YBP	Estimated how long it would have taken to construct the elaborate terrace systems that fill valley after valley of Ifugao country.
Keesing (1962) and Dozier (1966)	< 300 YBP	Movements to upper elevation of Cordillera peoples were associated with Spanish pressure.
Lambrecht (1967)	< 300 YBP	Concluded a recent origin of the terraces by using lexical and linguistic evidence from Ifugao romantic tales (hudhud) and by observing the short time necessary for terrace building.
Maher (1973:52–55)	205 ± 100 YBP 735 ± 105 YBP	Radiocarbon dates from a pond field and midden.
Acabado (2009:811)	post-1585 (expansion)	Bayesian modeling of radiocarbon dates obtained from the Bocos terrace system in Banaue, Ifugao, combined with paleoethnobotanical evidence from Old Kiyyangan Village and the Hapao Terrace Cluster.



Figure 2. The location of Ifugao, Philippines.

village comprised 183 houses—a large settlement by Ifugao standards. The letter also contains the first mention of rice terracing complexes in the region. The village was abandoned during the Spanish occupation, possibly after a Spanish expeditionary party burned the village in 1832 (Jenista 1987:5). When the Americans entered the region around 1899, Old Kiyyangan Village was abandoned (Figure 4); its inhabitants had relocated to the present town of Kiangan.

In Philippine history, the Ifugao are considered uncolonized, which has become one of the bases of Ifugao identity (Scott 1969). The dichotomy between highland and lowland Philippines is largely constructed within this framework, suggesting that the northern highland Philippines resisted Spanish domination. The Spanish cultural footprint is indeed limited in the province, owing to the failure of the colonial power to establish a permanent presence in the region (Scott 1970, 1982). Nevertheless, major economic and political shifts in the highlands coincided with the arrival of the Spanish in the northern Philippines. The Spanish colonization (*conquista*) and, following the reforms of 1573, the less hostile and more accommodating practices of the resettle-

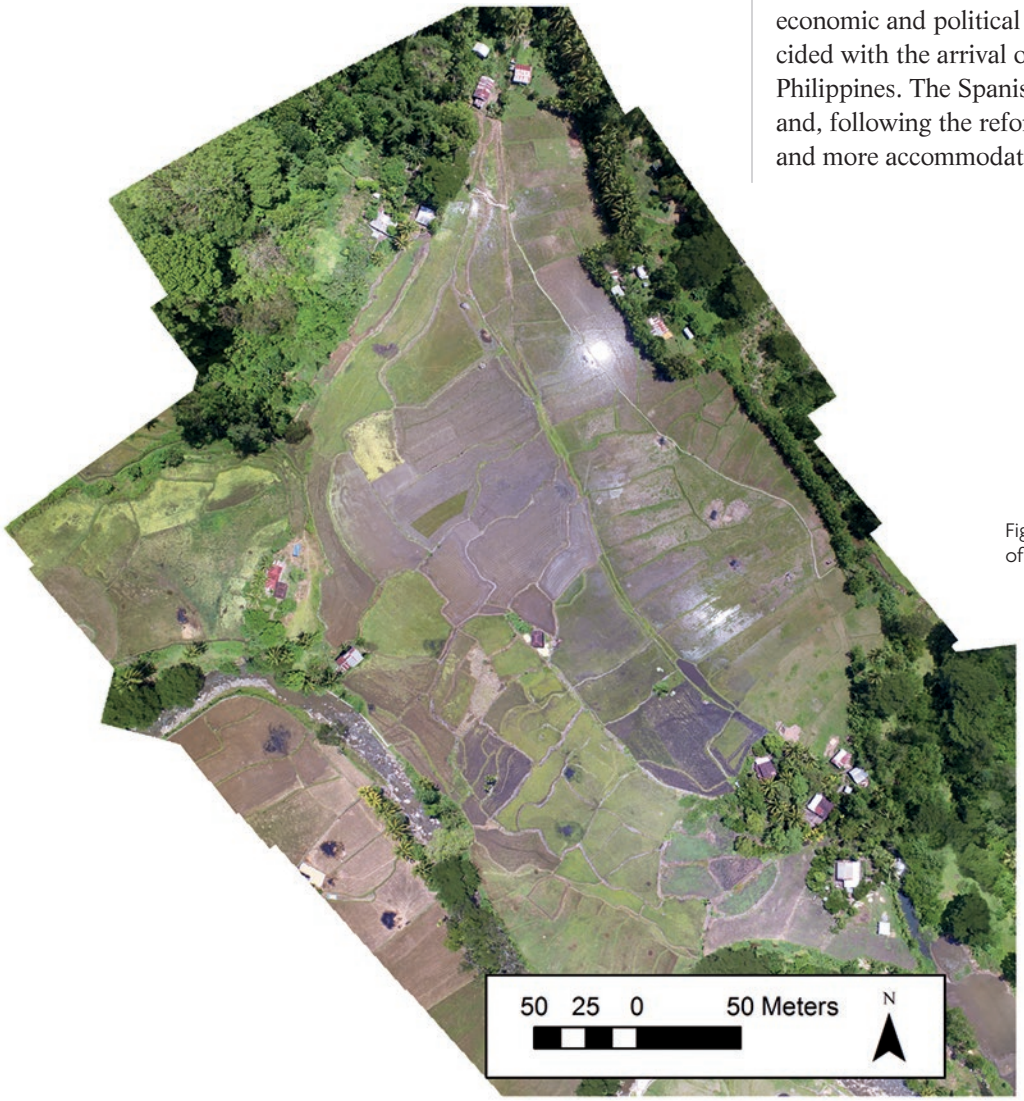


Figure 3. The location of Old Kiyyangan Village.



Figure 4. Buried irrigation ditch (*alak*), suggesting abandonment.

ment policy (*reduccion*) and the policy in which the Spanish Crown granted rights to control conquered lands (*encomiendo*) consolidated fragmented populations into a single political entity (Ileto 1997; Krippner-Martínez 2010; Rafael 2001). In the Philippine highlands, however, a different pattern emerged, with political consolidation happening outside the colonial setting.

PROJECT DESCRIPTION

Our research program aims to contribute to anthropological studies on colonialism by investigating how political and economic intensification mitigated the impacts of colonialism on populations in Ifugao. These populations are in the periphery of Spanish colonialism. Our research has demonstrated that the upland rice field systems in the region were a response to social and political pressure from Spanish colonization starting around 1600 and are thus not 2,000 to 3,000 years old (Acabado 2009, 2012a, 2012b; Acabado et al. 2012).

Aside from contributing to the body of knowledge in Philippine archaeology, our project also promotes community participation by actively involving descendant communities in the research process. The project emphasizes the role of indigenous populations in confronting the impacts of colonialism (Wolf 1997) and addresses wider issues in the anthropological studies of colonialism, such as resistance, identity formation, ethnogenesis, linking contemporary cultures with pre-Hispanic cultures, and community archaeology (Acabado et al. 2014). In addition, the research program utilizes practice theory to interpret material manifestation of highland responses to culture contact and colonialism.

The findings of the IAP indicate that landscape modification and terraced wet-rice cultivation intensified between 1600 and 1800, suggesting increased demand for food and a settlement pattern shift to more densely populated villages. Research in 2012 and 2013 showed that 70 percent of the protein requirement of Old Kiyyangan Village was based on hunted Philippine deer (*Rusa mariannus*) until right before the arrival of the Spanish, when a shift to domesticated pig as the primary source of protein occurred. Old Kiyyangan Village appears to have been settled before 1150, with its inhabitants subsisting on taro (*Colocasia esculenta*). The material remains from this time period suggest a hamlet-type settlement, with limited intra-group interaction. By 1650

wet-rice cultivation had emerged, and expansion of the village ensued. We argue that this subsistence shift and subsequent settlement expansion were a result of lowland groups evading the Spanish. Preliminary data indicate an increase of exotic goods, suggesting greater social differentiation (Acabado 2013). It can be hypothesized that the Ifugao responded to the imminent infiltration of the Spanish colonizers and their lowland mercenaries by consolidating political control and intensifying rice production. Our work provides evidence that indigenous populations on the fringes of the Spanish colonial reach had complex political systems that were meant to deal with community power relationships and other indigenous groups.

The IAP's discoveries support the idea that Old Kiyyangan Village predated the arrival of the Spanish in northern Luzon. Trench 3, a unit in what is believed to be an area where a house (*bale*) once stood, provided three occupational layers and three distinct pottery frequencies: cooking jars in the upper layers; cooking and water jars and tradeware ceramics in the middle occupational layers; and only water jars in the lower layers. The prevalence of cooking jar sherds in the upper levels suggests that the area was used as a rice field, with cooking jars used to hold cooked rice for the farmers, while the prevalence of water jars in the lower levels indicates that the area was once a house. The excavations also yielded thin earthenware (1 to 3 mm thick) and bowl-shaped pottery (Figure 5), types that were previously undocumented in the Philippines.

The complete absence of tradeware ceramics (stoneware and porcelain) in the lower levels indicates that earlier occupational layers predated the arrival of the Spanish in northern Luzon. Radiocarbon dates (Figure 6) support the pre-Hispanic origins of the settlement. Pollen, phytolith, and starch analysis confirms that taro was the primary crop cultivated in the region. GIS modeling suggests the manipulation of the river route for taro cultivation, initiating the agricultural system in Ifugao and facilitating the shift to rice production.

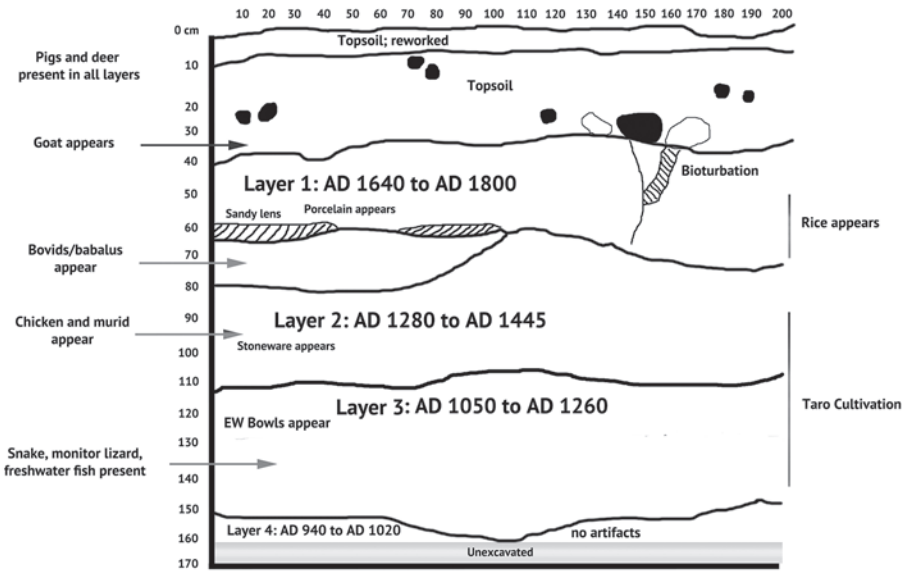
A MODEL FOR COMMUNITY ARCHAEOLOGY

UNESCO describes the Ifugao rice terraces as a living and dynamic cultural landscape (UNESCO 1995). The IAP's objectives were primarily born out of the need to date the Ifugao rice terraces, to once and for all settle divergent academic discourses on the antiquity of these cultural monuments. Unlike most archaeological projects, the IAP works in areas where descendant communities are still actively using the landscape. Since its inception, the IAP has



Figure 5. Bowl-shaped earthenware ceramic recovered from Old Kiyyangan Village.

Figure 6. South wall profile of Trench 3, with radiocarbon determination and soil analyses results.



solicited the participation of descendant communities in the research process and involved them in the identification of project objectives. Consultations with community members brought out several new issues that demanded inclusion in the research if the results were to be of any significance to the Ifugaos. Community archaeology entails a partnership between local people and trained archaeologists in archaeological investigations. The community's participation aims to make archaeology and the past meaningful to descendant communities. The collaboration also limits the control that "colonial archaeology" has over the interpretation of the material past. In the IAP, local stakeholders' participation serves as a catalyst for renewed interest in their nearly forgotten past and encourages them to play an active role in the conservation of their heritage.

Involving local people in the archaeological investigation included encouraging their participation in excavations. Site visits by local students and interested members of the community provided opportunities for on-site instruction in local history and provoked a deeper understanding of their heritage. Public education on the processes of archaeology and participatory analysis of resulting discoveries served to involve the local community as active partners and not merely as objects of research. Free access to the project site also considerably helped in dispelling the seemingly cursed reputation of archaeological digs as treasure quests.

> Participatory archaeology in the Ifugao rice terraces should give foremost advantage to local decision makers.

Community involvement can generate proactive measures, especially from local government units in Ifugao that contend with ambiguous and ill-informed guidelines on cultural resources management, complicated by the opposing forces of the need for heritage conservation, the demands of mass tourism, and the World Heritage status of the Ifugao rice terraces. Participatory archaeology in the Ifugao rice terraces should give foremost advantage to local decision makers in coming up with innovative and sustainable responses to this culturally evolving landscape and its dynamically changing social context.

Because the project's plans and subsequent implementation were conceptualized in collaboration with local government units, national conservation agencies, and SITMo, a grassroots conservation NGO, both legal and customary consent processes were obtained without significant opposition from local communities. Consultations with descendant communities and current project site inhabitants were conducted to get legal consent as mandated by the Free and Prior Informed Consent guidelines of the National Commission on Indigenous Peoples for research being done in indigenous peoples' ancestral domains.

Our commitment to the training of the next generation of archaeologists is also realized through the research project. Since 2012 an archaeological field school has been an integral part of the IAP (Figure 7). Several junior archaeologists from Vietnam, Cambodia, and Thailand have participated in the project to build capacity in the region. Student train-

ing combined with active community participation allows for engagement opportunities that enlighten and inform both students and community members. These interactions allow students to better grasp the tenets and ideas of anthropological archaeology. In 2014 and 2015 (Figure 8), we partnered with the Institute for Field Research, while the 2015 and 2016 field seasons are supported by National Science Foundation-Research Experiences for Undergraduates grant no. 1460665.

CONTRIBUTION TO ANTHROPOLOGICAL THEORY AND THE DISCIPLINE

Our research has the ability to make important contributions to anthropological theory and the discipline as a whole. Anthropological archaeology can expand colonialism research in anthropology by utilizing a combination of critical analysis of documentary sources, rigorous data gathering, and active involvement of descendant communities in the research process (Acabado et al. 2014; Martin and Acabado, in press). The focus on a highland group, which seems to have intensified social differentiation soon after contact with the Spanish, provides a unique contribution to the development of theories on colonialism. In addition, as most studies on culture contact and subsequent colonization focus on groups with intensive (and later permanent) interaction with the colonizers, this work expands the literature by investigating an "uncolonized" group. Furthermore, this is the first archaeological investigation that looks at the impact of Spanish colonialism in Asia and the western Pacific.



Figure 7. Field school participants and crew members at work.

This research project contributes to anthropology in two ways. First, the project provides empirical evidence that highlights the ability of indigenous populations to confront colonization on their own terms. We view the migration to the interior of the Philippine



Figure 8. The 2015 crew and field school participants.

Cordillera as an act of active resistance to Western power. The act was successful, as the Spanish failed to colonize the Ifugao. The successful resistance to Spanish colonialism had social consequences—namely, political consolidation, increased social differentiation, and agricultural intensification. More importantly, Ifugao descendant communities are actively involved in the whole research process of the IAP. From planning to fieldwork to academic and popular publications and presentations, the community partners of the IAP are actively engaged. This involvement contributes substantially to community-based conservation and educational programs that incorporate archaeological and ethnographic information obtained by the IAP. The community's involvement also resulted in the Ifugao taking ownership of their past and celebration of the younger, but rapid, construction of the terraces. The realization that the "long history" of the Ifugao terraces implies an unchanging culture for 2,000 years was an outcome of the community's participation and regular public presentations of the IAP.

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Agriculture on the Edge of Empire in Ancient Jordan

by Alan Farahani[1]

THROUGH MOVIES, BOOKS, and video games, empires have become iconic in popular imagination and culture. Their sheer size, diversity in people and languages, and often large, visible material traces have inspired fascination in many. As a result, when one thinks of ancient Southwest Asia (also referred to as the Middle East), one might be forgiven for conjuring images of chariot-bestriding monarchs whose exploits are etched for eternity in inscriptions, palaces, and temples. Yet in focusing on monumental buildings and courtly intrigues, we lose a very important component of empires: ordinary people. While armies, bureaucracies, and royal attire are associated with empires and the imperial elite, the latter could not exist, or maintain political legitimacy, without the many human beings who built and sustained them. In all empires in southwest Asia, one of the most pressing concerns was food. The quest for food united those who ran imperial bureaucracies with clay tablets and the potter of everyday kitchenware. Food maintained life through nourishment. It was a conduit of considerable power, a form of self-expression and community building,

While armies, bureaucracies, and royal attire are associated with empires and the imperial elite, the latter could not exist without the many human beings who build and sustain them.

and often a source of anxiety. Its production through agriculture was the work of many, if not the bulk of, "ordinary people."

Numerous empires in ancient Southwest Asia make reference in texts and images to the importance of agriculture and farming. But what is agriculture? Agriculture is a complex and interdependent process of climatological, geological, biological, and social factors in which human groups directly and intentionally manage plant (and by extension nonhuman animal) resources. Any field of barley, for instance, is dependent on such factors as the amount of rain that will fall (climate), the quality of the soil (geology), the water needs of the particular variety of barley that has been sown (biology), and the demand of human groups to supply this grain either as bread (social)

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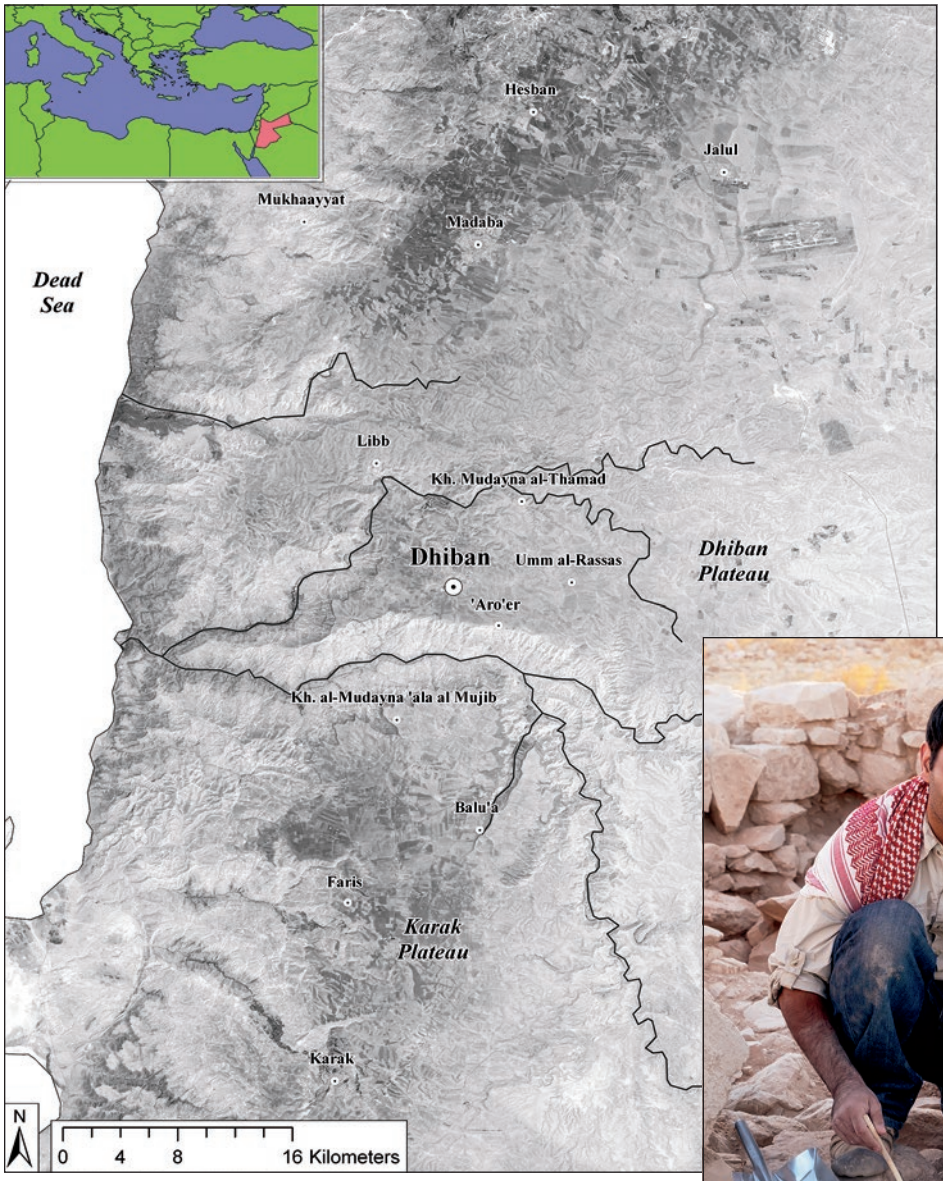


Figure 1. Map of the Dhiban Plateau, with the Mediterranean inset. Courtesy of DEDP, 2015.



Figure 2. The author collecting a flotation sample in the collapsed Byzantine storeroom. Photo by John Webley, 2013.

or as feed for livestock (animal). The social aspect of agriculture is key because cuisines, economies, and the organization of labor all influence which crops are grown, where, and for whom. Although some research has investigated the lives of everyday farming communities in ancient empires in Southwest Asia, many questions still remain. Given the territorial extent of many historical empires, how does the maintenance of desired plant foods differ in places where the local environment or climate may not be ideal? How did communities embedded in empires negotiate the need to feed themselves but also satisfy the demands of imperial elites? And finally, how did different empires affect local agricultural practices? One perspective that gives theoretical coherence to these questions is historical ecology. Originally proposed by archaeologist Carole Crumley, this perspective challenges researchers to identify the constant and mutually reinforcing relationships between people and their landscapes. Research in historical ecology seeks to understand the specific contributions of particular cultural and historical influences to a landscape (such as an agricultural one) through time (Balee 2006).

One area of Southwest Asia where the perspective of historical ecology has helped untangle imperial agricultural history is the territory that now includes the Hashemite Kingdom of Jordan (henceforth Jordan). For most of Jordan's recorded history, it was wedged between, or subsumed into, expansive

empires. The "imperial history" of Jordan became increasingly marked after the Iron Age, whose end dates to the mid-sixth century B.C.E. At that point the territory of Jordan was annexed by the Achaemenid Persian Empire, and Jordan would not exist as an independent political entity until 1946, when it gained autonomy from the British Crown. The territory of Jordan was not the political core of any of the empires that incorporated it; that is to say, it was often on the edge of these empires (Porter et al. 2007). Given the 9,000-year history of agriculture in Jordan, as well as the successive and unique empires that intervened in the lives of nonelite farming communities there, archaeological research was undertaken by the Dhiban Excavation and Development Project (DEDP) to investigate, in part, what plants were grown through time, for whom, and why.

THE DHIBAN EXCAVATION AND DEVELOPMENT PROJECT

The project chose for investigation the archaeological site of Dhiban, located 70 km south of the current capital of Amman and 20 km east of the Dead Sea in southwest-central Jordan (Figure 1). The site is famous for producing a historically important late-nineteenth-century inscription known as the Mesha Stele, which independently narrates events chronicled in the Hebrew Bible related to the polity of Moab yet from the perspective of the "king" of the Moabites, Mesha. The excitement surrounding the discovery of this stele led to excavations in 1950 by Fred Winnett and William Reed, lasting until 1953. Excavations were resumed by William Morton in 1955, 1956, and 1965, followed by a brief season by Bassam al-Mahameed in 2002. It was not until 2004 that sustained archaeological excavation resumed at Dhiban. In 2004 an international team of archaeologists, directed by Katherine Adelsberger and Danielle Steen Fatkin of Knox College, Benjamin Porter of the University of California–Berkeley, and Bruce Routledge of the University of Liverpool, renewed archaeological research at Dhiban to understand the nature of settlement at the site through time. Since 2009, I have been part of this international venture as an archaeologist and paleoethnobotanist.

The Dhiban Plateau is hemmed by large seasonal rivers (wadis) found at the bottom of canyons, to the north (Wadi al-Wala) and to the south (Wadi al-Mujib). In the past, Dhiban's physical geography made it less accessible than other sites in Jordan. The archaeological site is composed of a large 12.5-ha kidney-bean-shaped human-made mound (*tall)*, which was formed by continuous occupation. Today the *tall* is flanked by the contemporary Bani Hamida community. The Dhiban Plateau receives on average 250 mm of rain a year, or just over 10 inches, in the cool, wet winter months. Yet, as with most Mediterranean bioclimates, averages conceal significant variability: some years can have as much as 400 mm (20 inches) of rain, and some years as little as 100 mm (5 inches).

Table 1. Representative Radiocarbon Dates Associated with Each Cultural Period at Dhiban

PERIOD	UNCAL B.P.	ERROR	CALIBRATED DATE (2σ)	CORROBORATING DATES
Ottoman	306	23	1494–1649 C.E.	1
Mamluk (Middle Islamic II)	605	24	1298–1405 C.E.	4
Middle Islamic I	832	24	1165–1260 C.E.	2
Byzantine	1475	20	554–637 C.E.	6
Nabataean–Roman	1918	45	35 B.C.E.–219 C.E.	1
Iron Age II	2511 2690	30 20	791–540 B.C.E. 896–807 B.C.E.	1 1
Iron Age I	2905	20	1193–1013 B.C.E.	2

Note: All dates calibrated in Oxcal 4.2.3 using IntCal13.



Figure 3. Flotation samples in 1-x-1-m grids in the collapsed Byzantine storeroom. Photo by John Webley, 2013.

Paleoclimatic data provide compelling evidence that the range of variation of precipitation in the past 3,000 years in the area around the Dead Sea was roughly similar to that of the present (Bar-Matthews et al. 1997). Therefore, the farmers of Dhiban's recent past would have had to hedge against the risks associated with providing water to thirsty crops, animals, and people through rainfall alone.

Despite the environmental challenges facing ancient farmers, 36 AMS radiocarbon dates indicate that Dhiban was inhabited from at least about 1000 B.C.E. to 1600 C.E. (Table 1)—that is, from the early Iron Age to the Ottoman period. This nearly 3,000-year history of habitation at Dhiban overlaps in time with several large empires, with the Byzantine and Mamluk empires providing the most abundant archaeological evidence (Table 1). Dhiban's long occupation can address how local communities managed the demands of imperial elites via agricultural production and whether the latter was affected by the advent of these historical empires. The Iron Age contexts are particularly important, as they represent a period of relative autonomy, when Dhiban was the capital of an emerging polity, and they are useful as a contrast to the Byzantine and Mamluk imperial periods, when Dhiban was a node in a giant meshwork of communities. Each of these empires sought to increase agricultural production in the same place (Dhiban), yet under very different political and social circumstances.

THE PALEOETHNOBOTANY OF IMPERIAL AGRICULTURE

To identify the changes in agriculture that accompanied the arrival of these empires, it is necessary to examine the actual, physical residues of crops grown in the Iron Age, Byzantine, and Mamluk periods at Dhiban. Since 2009 I have overseen and directed the recovery of these remains using the techniques of the archaeological subdiscipline of paleoethnobotany. Paleoethnobotany is the study of past cultures through the examination of the interactions of human populations with the plant world (Popper and Hastorf 1988).

The first step was to collect archaeological sediment. At Dhiban I utilized the "blanket sampling" approach: multiple samples were taken systematically in every deposit of archaeological sediment through the course of excavation (Figure 3). The location of each sample was digitally recorded using a device called a total station. This archaeological sediment was then processed through a flotation device, which washes away most of the sediment while it is suspended on fine mesh in a water-filled barrel. Carbon-

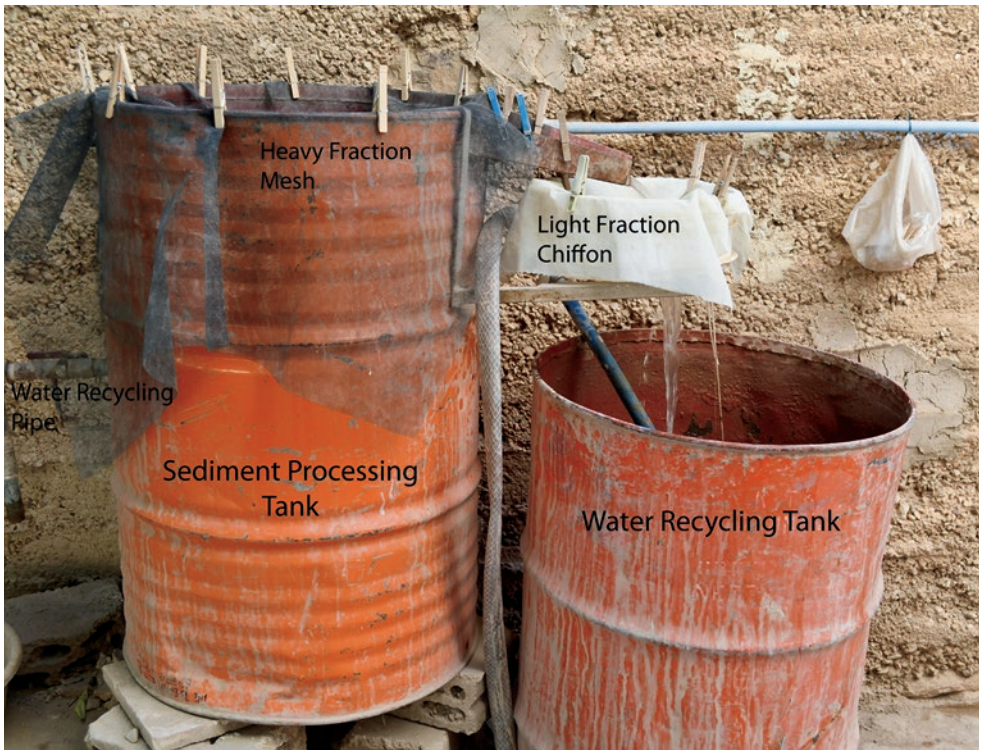


Figure 4. Flotation device with components mentioned in the text labeled. Photo by Martin Weber, 2012.

ized plant parts, such as seeds and charcoal, float to the top of the tank, travel out a spout, and are captured in very fine fabric (Figure 4). This material is called the light fraction. The material that has a specific gravity heavier than water and that sinks into the fine mesh is called the heavy fraction. The light fraction was shipped to and analyzed at the McCown Archaeobotany Laboratory at UC Berkeley, as well as at the Cotsen Institute of Archaeology at UCLA. From 2009 to 2013, more than 900 flotation samples were collected, for a total of more than 8,000 liters of archaeological sediment. Of these 900 samples, I analyzed a little over 230 in the laboratory. This work yielded more than 65,000 identifiable items, including crop seeds, shell, very small bones, dung fragments, and a large amount of wood charcoal. The analysis of the heavy fraction that corresponded to these light fraction samples produced more than 23,000 identified items, including ceramic sherds, bone, glass, and small artifacts such as beads and other jewelry.

AGRICULTURE AND EMPIRE IN DHIBAN, JORDAN

The 230 samples yielded plant seeds and wood charcoal that were clear evidence of both change and continuity in the kinds of crops people chose to grow through time at Dhiban. More than 90 percent of the roughly 2,800 identified domesticated crop seeds from all periods belonged to only five different cultigens: barley, wheat, fig, grape, and lentil. This suite of Mediterranean plant foods persisted virtually unchanged in its arrangement, and it does not appear that any other new crops dislodged its primary status. Indeed, the persistence of these particular plants highlights the meanings and importance they must have carried for each of these communities. What did change from period to period, however, was which economic crops were emphasized.

The 26 samples that dated to the Iron Age (ca. 750 B.C.E.) contained an almost equal proportion of barley and wheat grains. In turn, these two grains were found in almost a third of the samples examined. Nevertheless, the number and density of grains were quite low, probably because these samples were taken from surfaces that were swept relatively clean. While there were grape and lentil seeds, they occurred with less frequency than the grains. The emphasis in Iron Age Dhiban seems to have been on a form of cereal agriculture oriented to human consumption (wheat) and animal feed (barley), as well as a diversification of grain options should one crop fail. This agricultural system also coincides with the archaeological evidence of the construction of a large reservoir at Dhiban, which may have been created to provide enough water to people, animals, and crops in this precipitation-scarce environment. Therefore, these samples, though few in number, are crucial because they offer a glimpse of Dhiban's agricultural economy before its incorporation into later empires.

There is no archaeological evidence at Dhiban for any occupation over the next several hundred years, until the Nabataean and then Roman periods (ca. 100 B.C.E.–300 C.E.). The Nabataean–Roman archaeological evidence was too limited to reveal any change in agricultural practice due to these empires. Instead, excavations by the DEDP uncovered a collapsed structure dated through radiocarbon dating to the waning years of the Byzantine Empire, in the late sixth

century C.E. Thousands of storage-vessel fragments, whole burnt vessels, and huge floor slabs all pointed to a catastrophic end for what was likely a storeroom, entombing everything inside of it. This collapse provided the material needed to explain the influence of empires on local agriculture at Dhiban.

Eighty samples from the storeroom, dating to the time before and after its fiery collapse, were analyzed. The analysis revealed that agricultural production during the late Byzantine period at Dhiban was different from all periods before and after. Unlike the Iron Age samples, more than half of the storeroom samples were of cleaned, weed-free wheat grains, and fewer than a quarter contained barley. In contrast, more than half of the samples, from both before and after the structure collapsed, contained grape seeds. Alongside the seeds, grape pedicels (stems) and even pressed grape fruits with the seeds still embedded were found (Figures 5a and 5b). These probably represent the remains of the dregs of wine inside at least some of the storage vessels. The presence of wine, either as an import or an export, indicates that the Dhiban community was connected through trade to other communities via agricultural production.

The three main crop seeds found in the storeroom—grape, wheat, and a legume that is most likely pea—indicate an agricultural economy invested in wheat and grape growing, likely through the use of irrigation. This triad is also reported in papyri found at a nearby archaeological site in the Negev Desert (Nessana), which reports that farmers used peas (or a similar legume) in crop rotations as a nitrogen-fixing plant to restore nutrients to depleted soils. The heavy fraction yielded two completely reconstructable vessels, reassembled by UCLA undergraduates Francisca Bravo, Cassandra Dadat, and Kaitlyn Ireland under the supervision of Getty conservator Vanessa Muros (Figure 6). One of the reconstructed vessels is a cooking pot, which indicates that the storeroom may have been dual use—for storing agricultural products as well as cooking implements.

Finally, excavations by the DEDP uncovered several domestic structures dating to the period of the Mamluk Empire, which arose 600 years after the end of the Byzantine Empire. The samples collected from the surfaces, fills, and pits of these rooms furnished a completely different picture of agricultural production by the Dhiban community. In contrast to the Byzantine storeroom, over 90 percent of the 66 samples had at least one wheat or barley grain, with the two often occurring in conjunction. The number of samples with grape seeds was low in comparison. Moreover, the proportion of crop seeds in each sample was quite low. On average more than 75 percent of the plant remains in a Mamluk-period sample were seeds of arable field weeds or chaff. It is likely that grain was

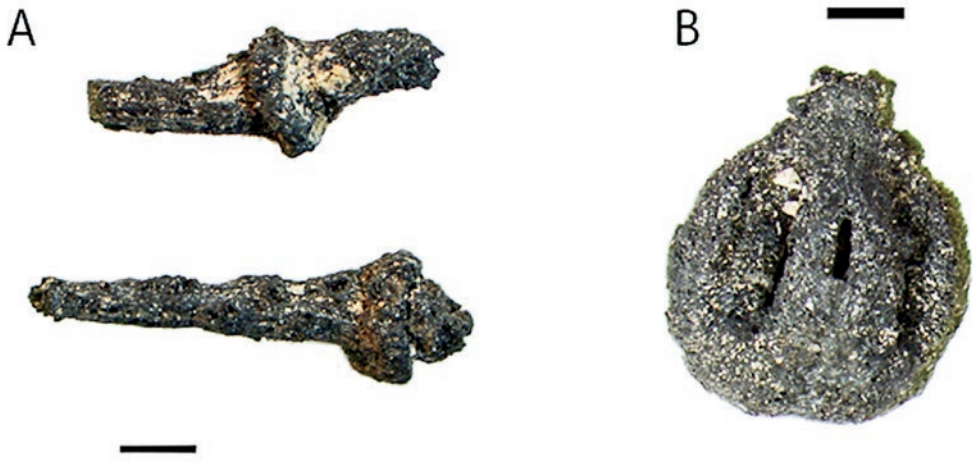


Figure 5. Images of paleoethnobotanical remains: (a) grape pedicels and (b) grape seeds, all dating to the Late Byzantine period. All black bars represent a 1mm scale. Photos by Alan Farahani and Rudi Vanzin, 2014.

processed on the site and burned as fuel, alongside animal dung. In many semiarid areas around the world, animal dung is often used as a preferred source of fuel, either because of a lack of woody plants or a preference for its burning conditions. The last meal of the animal, usually straw and fodder, thereby becomes burned and enters the archaeological record. The emphasis on cereal production, processing, and animal dung burning points to a much different use of space and agricultural production than during the Byzantine period, one oriented toward interlocked animal husbandry and grain production.

And yet the Mamluk-period samples also contained unexpected surprises. A pit of what might be a sour cherry or plum was recovered in at least two samples, and one sample yielded a sorghum seed. Although the latter is almost singular within the overall number of remains recovered, it is suggestive of new kinds of agricultural experimentation. Sorghum is a sub-Saharan plant that would have had to travel northward through trade. More evidence of trade routes comes from the heavy fraction, which yielded numerous fish vertebrae, scales, and even the pharyngeal grinding mills (toothy tubes used to consume coral) of parrotfish, probably from the Red Sea.

CONCLUSION: BACK TO THE FUTURE

What accounted for the shifts in agricultural production between each of these periods? One possibility is climate. Communities at Dhiban may have responded to changes in precipitation through the selection of more drought-resistant or salt-resistant crops, such as the greater emphasis on barley in the Mamluk period. Yet, as discussed earlier, the available paleoclimate evidence does not seem to support this hypothesis. Instead, answers can be sought in the specific social and political configurations of the community of Dhiban during each of these moments of empire. It is known through written documents, as well as inscriptions, that by the late sixth century, the Byzantine Empire granted considerable autonomy to individual villages in the southern Levant, called *komai,* provided that they pay their taxes (Hirschfeld 1997). It



Figure 6. A cooking pot reconstructed from heavy fraction fragments. The color is not original but is caused by burning, with scale to the right. Photo by Vanessa Muros, 2015.

is tempting to infer, then, that the range of crop seeds encountered in the collapsed late Byzantine period structure was evidence of relatively relaxed state control: the Dhiban community was free to invest in other ventures, such as wine production, while simultaneously paying the required wheat tax.

In contrast, evidence from documents shows that Mamluk elites closely oversaw agricultural production in their constituent territories, especially in the territory of Jordan. Control of grain was paramount for state power. By the fourteenth century C.E., Mamluk elites were appointing officials to directly intervene in agricultural production in Jordan (Walker 2011). It is precisely this time to which most of the Mamluk-period radiocarbon dates at Dhiban correspond.

The agricultural strategies of each period included a complex balance of local needs and external demands.

Therefore, the shift to wheat and barley production was probably the result of the direct payment of taxes-as-crops to nearby state authorities. But the community also found opportunities to supplement its dietary base with plant and animal foods that may have carried new kinds of meanings. This supplementation is represented by the fish remains, sour cherry pits, and even the small amount of grape seeds recovered through flotation.

The historical ecological postulate of the unique contributions of successive communities' impacts to a landscape is quite apparent at Dhiban: each of the communities that lived there reacted to imperial intervention in different and specific ways. Far from "timeless" and tireless peasant toil under the yoke of imperial oppression, the agricultural strategies of each period included a complex balance of local needs and external demands. As agroecologist James Vandermeer notes, "Agriculture is not planting a seed and harvesting a crop. Agriculture is making a contract among people to provide for one another, using seeds and harvests to do so" (Vandermeer 2011:26). My research at Dhiban has illustrated how important the human social contract is in terms of agricultural decision making. Continued research is still needed at Dhiban, as well as at other archaeological sites in Southwest Asia with similar time depths. The latter will help delineate how communities in different environments and ecologies responded to imperial pressure. As always, there is still much fertile ground for research to bear fruit.

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The Strange Site of Monte Sierpe ("Band of Holes") in the Pisco Valley, Peru

by Charles Stanish[1] and Henry Tantaleán[2]

A COUPLE OF YEARS AGO, we started receiving e-mails and phone calls from around the world about a site in Peru popularly called Band of Holes, located in the upper Pisco Valley of the south coast (Figures 1 and 2). Apparently, an "ancient alien" show claimed that this site, which we call by its proper name—Monte Sierpe—(Silva Santisteban 2005), was some wholly mysterious phenomenon that archaeology could not explain. We had never heard of the site before, even though we were working in the neighboring valley in Chincha, just 15 km away. We went to Google Earth, and to our surprise, it indeed looked like a legitimate archaeological site, albeit a very odd one. Google Earth showed the site to be a very long and narrow band of holes in the ground, arranged in what appeared to be segmented blocks. These holes started at the edge of the Pisco Valley and worked their way up a hill for about 1.5 km. We could see that the band varied from about 14 to 21 m wide, with an average width of about 19 m. We were intrigued.

Our first thoughts were that this was the remains of mining operations. These are common in the far south of Peru, where copper mines screen soil to find the perfect grain size for their operations. We also thought that this could be a defensive feature, given that the major Inca site of Tambo Colorado was just 5 km up valley from Monte Sierpe. Other ideas included this being a marker for a trail leading to the north, some very odd storage units, or possibly a new style of geoglyph in the tradition of the Nasca/Palpa area nearby.

At that point, we did what any archaeologist would do. First we did a literature search and learned what we could. Then we took the first opportunity to visit the area during our regularly scheduled field season. We found that the first reference to the site was in a 1933 *National Geographic* article by Robert Shippee. The famous aviator provided an outstanding aerial photograph of the site in his article. The celebrated archaeologist Dwight Wallace correctly described the site as composed of segmented blocks of holes built on a hill slope. He visited the site and noted that there were no artifacts or bones on the surface. Archaeologist Frederic Engel likewise noted the band and drew reconstructions of some of the holes. Finally, John Hyslop (1984:289) recorded the site and suggested that the holes were used for storage during

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Figure 1. Map of the Chincha–Pisco region of Peru.



Figure 2.
The full length of the Monte Sierpe band of holes running up the mountainside.



Figure 3. A low-altitude aerial view of a section of the holes. Photo courtesy Luis Jaime Castillo.

the Inca period (ca. 1450–1532). He noted that Monte Sierpe was strategically located between the huge Inca administrative sites of Tambo Colorado and Lima La Vieja. Silva Santisteban (2005) likewise mentioned the site in his revision of Nasca line theories. Based upon this previous work, we concluded that Monte Sierpe was indeed a prehistoric site of unknown function.

We started our fieldwork in the neighboring valley of Chincha in June 2015. Once our Chincha project was set up, we drove to Monte Sierpe. We noted that all of the small amount of diagnostic pottery in the area was Late Horizon. This would be the time period of Inca control of the region. This made sense given the large number of Inca sites in the immediate area. Furthermore, the construction techniques of some of the structures associated with the holes were similar to what we see throughout the Peruvian coast for the later prehistoric periods. The holes were about 1 m in diameter and varied between 50 and 100 cm deep. We also noted segments of an Inca-style roadbed in the *quebrada* (gully) that paralleled the band. Likewise, buildings near the band were almost certainly classic Inca storage buildings known as *colcas*.

The alternative science websites suggest that the construction of Monte Sierpe was a difficult undertaking. This is simply not true. There are three kinds of "holes," all quite easy to build for an entity like the Inca Empire. They are not dug into volcanic rock as implied in some of the alternative science arguments. The sides of the hole segments were elevated, with removed soil giving them volume above the surface (Figure 3). A second kind of "hole" was actually dug into an artificial low mound scraped from the sides of the hill. The other "holes" were actually small rock structures (that looked virtually identical to informal storage structures in contemporary sites in the region).

We estimate that there are between 5,000 and 6,000 holes. With a pre-Hispanic technology of stone picks and foot plows, one young man could dig or construct one of these holes easily in about two or three hours on average. Digging holes into the mounded surfaces would have gone even faster. Given time to lay out the grid, a very conservative estimate is that one worker could easily dig or construct two



Figure 4. A closer view of the band, showing the segmented nature of the holes.

holes per day. Working in groups, laborers would have been even more efficient. The Inca had a decimal system of labor recruitment. Teams worked in groups of 10, 50, 100, and 500 for local projects such as these. A simple calculation reveals that 10 workers could have made this entire band in 300 days; 50 workers in 60; and 100 workers in a month. Five hundred workers, properly managed, could have knocked this out in a couple of weeks.

Our alumnus Dr. Luis Jaime Castillo kindly brought his drone to the site and ran a few photo lines for us. This closer look at the holes showed some interesting patterns. First, there were many areas of flat, soft ground that were not used for holes. The architects were therefore more interested in following a line up the hill. Where the lines crossed low or hard bedrock, they built aboveground structures.

We also find that the entire line is segmented. Figure 4 shows very clear breaks in the line up and down the hill. Figure 5 is a close-up. The letters differentiate segments. As seen in Figure 5, each of the minor segments differs in varying degrees from the others. Segments B, C, and F have diagonal rows of holes. Other segments have regular rows that are more or less perpendicular to the ridge running east–west, while Segment E is hourglass shaped.

Perhaps the most fascinating observation is that there appears to be patterning in the number of holes in each of the small segments. Figure 6 illustrates just a few of these patterns. In at least two instances, we can see diagonal lines with a 1-3-5-7-9-11-11 pattern of holes. In other sections, with east–west lines of holes, there is consistency in the number of the holes. Three rows of seven holes each can be seen three times in just this small section of the entire line. The section in Figure 6, with perpendicular rows of 6-6-7-7-8-8, illustrates clearly that the rows with six holes were intentionally shorter than the other rows to maintain this numerical sequence. Throughout the entire site area, there are clear instances where holes were added, sometimes in a haphazard manner, to a row or column in an apparent effort to keep some kind of numerical balance.

SO WHAT IS GOING ON HERE?

In an upcoming article, Professor Gary Urton and Dr. Alejandro Chu (in press) discuss a fascinating find in the Cañete Valley in a major Inca administrative site called Inkawasi. Here, Chu discovered remains

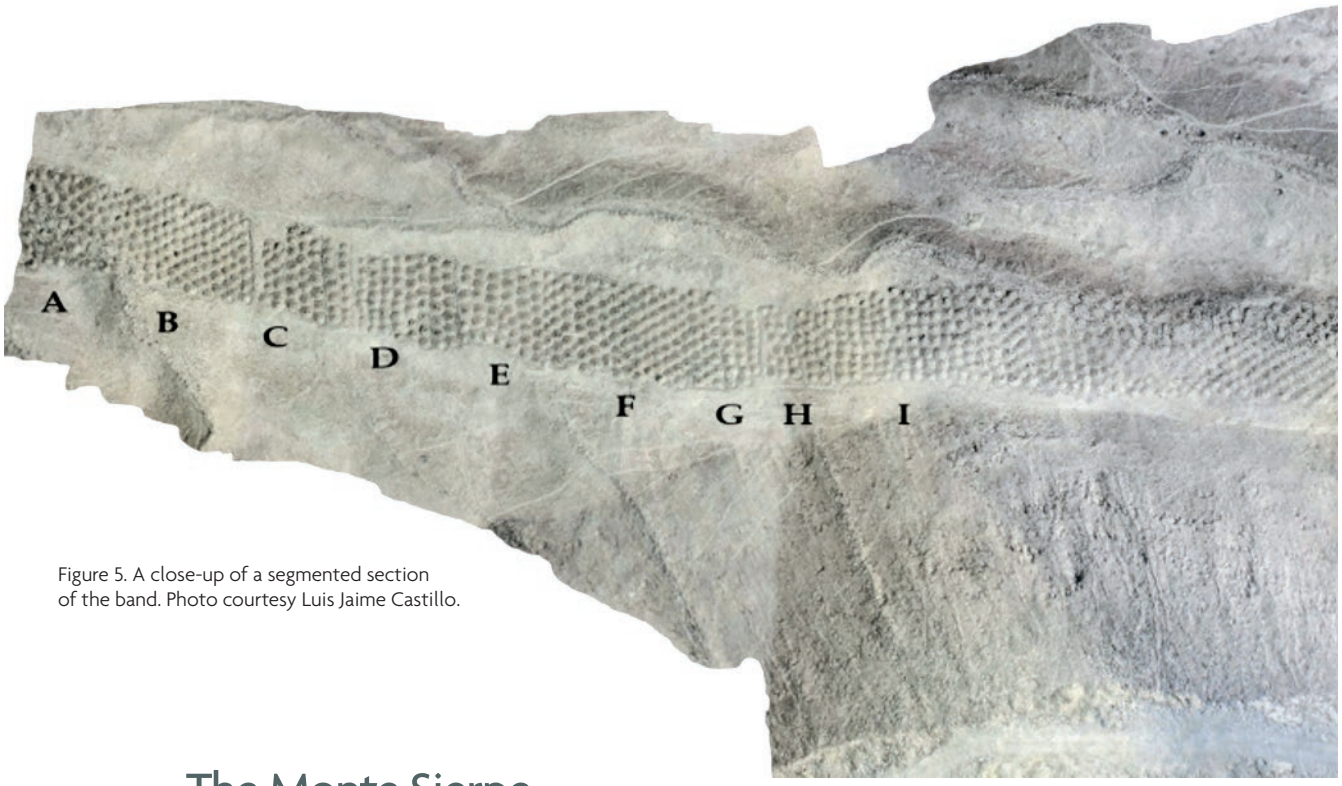


Figure 5. A close-up of a segmented section of the band. Photo courtesy Luis Jaime Castillo.

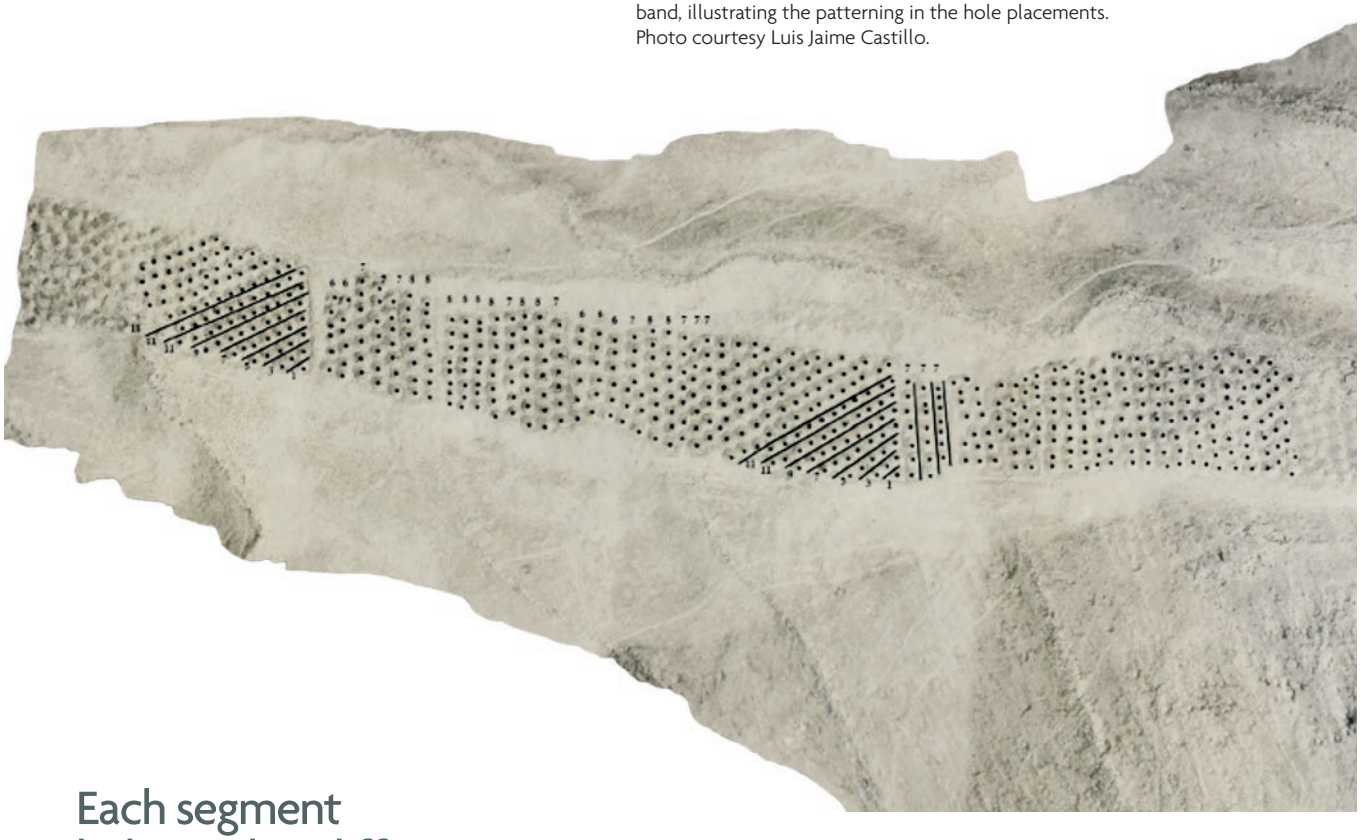
The Monte Sierpe line of storage holes is ideally suited for tribute payers to bring their goods to the Inca authorities.

of products like beans and peppers in squares like a checkerboard traced in a floor of a large open area. As at most major Inca administrative sites, many quipus, or string accounting devices, were found at the site as well. Urton and Chu interpret the Inkawasi location to be a place where people left tribute for the Inca state. Inca accountants, known as the keepers of the quipu, or *quipucamayoc,* received the tribute payers at this administrative center. It appears that one of the most effective ways to keep track of the large quantity of goods that came to the site was to physically separate them on this floor. In this way, the accountants could mark their quipus by counting the number of squares filled with the appropriate products.

This discovery in Cañete, just 120 km to the north, provides what we believe is the answer to the mysterious Monte Sierpe line. It is not a coincidence that the site of Tambo Colorado is just 5 km to the east and a few kilometers from Lima La Vieja (Figure 1). Tambo Colorado is one of the most important Inca administrative sites on the Peruvian coast. It was a center that controlled the lands and people in the Pisco Valley below. It is likewise at about the same elevation as Incawasi in the Cañete. Lima La Vieja was another major Inca site, now largely gone, that was part of the Inca infrastructure in the valley. The major agricultural lands and the main local population during Inca times were located in the lower valley. The Monte Sierpe line of storage holes is ideally suited for tribute payers to bring their goods to the Inca authorities—it is located where the river constricts in the only sufficiently flat area prior to Tambo Colorado. The holes were built in an area immediately above the agricultural fields, and they start directly on the main east–west Inca road. Numerous other Inca sites are on the road between Monte Sierpe and Tambo Colorado; many of them have the characteristics of storage units.

The curious nature of the different kinds of construction of the holes is now understandable as a means of accounting for different groups and possibly different kinds of goods. Each segment, we suggest, belonged to different tax-paying groups, most likely kin and territorial groups called *ayllu.* Alternatively,

Figure 6. A close-up of a segmented section of the band, illustrating the patterning in the hole placements. Photo courtesy Luis Jaime Castillo.



Each segment belonged to different tax-paying groups, most likely kin and territorial groups called *ayllu*.

these units could have been for distinct villages or some combination of a village and social group. In either regard, the line of holes at Monte Sierpe would have provided an ideal place to deposit tribute, where it could be easily recorded by the accountants of the Inca state (*quipucamayoc*) on site and then transported to Tambo Colorado or wherever the Inca authorities desired.

This remains a hypothesis to be tested, of course. We hope that a more in-depth analysis will help us unlock the secrets of this site. For us, at least, the enigmatic "Band of Holes" seems a little less mysterious—but substantially more interesting.

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Research at the Ancient Neo-Punic City of Zita, Tunisia

Brett Kaufman,[1] Ali Drine,[2] Hans Barnard,[3] and Rayed Khedher[4]

FIRST DESCRIBED BY French scholars in the 1880s, the ruins of Zita, locally referred to as Hanšīr Zīān, were left as remote horticultural land until dramatic looting prompted the Tunisian Ministry of Culture and Institut National du Patrimoine to preserve the mound as a cultural heritage site. The site is an urban mound of at least 35 ha located in southern Tunisia and situated along an ancient trade route from Carthage to Tripoli (Figure 1). It is perched on a limestone outcropping that is one of the highest points on the Zarzis Peninsula. This peninsula juts into the Mediterranean Sea toward the island of Djerba, often identified with the island of Calypso of the Lotus-Eaters in Homer's *Odyssey* (Mattingly 1994). Scholars from Brown University, the Institut National du Patrimoine, and UCLA have been collaborating since 2013 to undertake survey, excavation, and digital mapping of the urban mound and its hinterlands across the Zarzis Peninsula. In addition to joint research interests, our students and staff are the first U.S.–Tunisian archaeology and ethnography partnership since the Arab Spring.

Zita means "olive place" or, more accurately, "Olive City" in the Northwest Semitic Punic language. That this is an apt name is evident from the dozens of burnt olive pits recovered during excavations, in addition to the fact that the semiarid landscape is still one of abundant olive production (Figure 2). The name Zita is known from inscriptions recovered in the nineteenth century, as well as one historical reference in the Antonine Itinerary (Cagnat et al. 1923:CIL VIII 1–8, ILAfr 12). These Latin epigraphic finds recount some of the pivotal events in Zita's cultural history, indicating construction and renovations of the Roman forum between 40 and 57 C.E., with the latest inscription attributed to the reign of Marcus Aurelius from 161 until 180 C.E. (Reinach and Babelon 1886). Two other Neo-Punic inscriptions recall the Phoenician character of the site, with one referring to the Carthaginian goddess Tanit in her Latinized name (Juno) Calaestis and the other tantalizingly mentioning a "house of Dagon," which suggests the import of this ancient Mesopotamian god to Zita and North Africa (Berger 1905; Chabot 1907:RES 558). But the major

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4 Department of Anthropology, UCLA

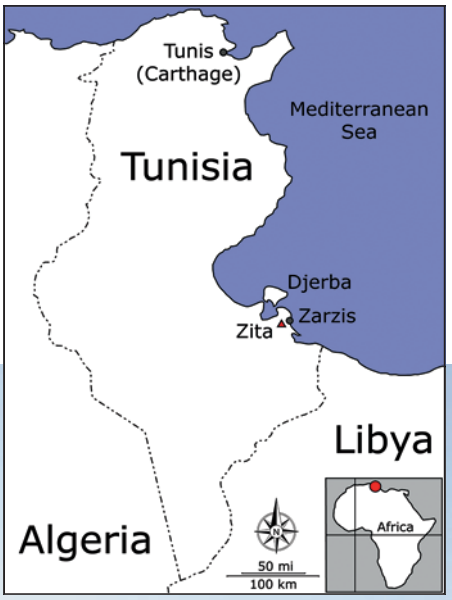


Figure 1.
Location of Zita.

Figure 2. Early morning fog over olive orchards as seen from the eastern corner of the Roman forum at Zita.

monument of Phoenician-Punic culture is the tophet, a sacrificial precinct that finds parallels famously in Carthage but also at several other locales across the central Mediterranean. We identified the sacred zone from around 600 votive stelae found on the surface of an almond grove just southeast of the residential area (Drine 1991).

Zita is a large site with dense material culture still visible on the surface and with satellite sites radiating to the coast in all directions. The abandonment horizon is still visible on the surface of the site and into the bordering privately owned orchards, and is threatened by the increasing prevalence of mechanized agriculture. In addition to the forum and tophet, this horizon is characterized by several industrial installations, such as ceramic kilns and metallurgical workshops. Due to the diversity of material culture on the surface alone (political, religious, domestic,



Figure 3. Survey and surface collection of the urban area and immediate environs of Zita.

industrial), it was clear that as a first step we had to establish the chronologies of the major and minor features of the site through intensive survey and targeted excavations in order to link their occupation horizons. Survey of the urban area involved laying out a grid and systematically collecting surface finds (Figure 3). The horizontal chronology of the site turned out to be around 500 B.C.E. to 300 C.E., placing occupation well within both the Carthaginian and Roman imperial phases.

Since the summer of 2013 until the most recent season in 2015, we have cleaned and excavated parts of the forum—the portico and capitol—to document construction and abandonment phases and to see how these align with the inscriptions. We also worked in the tophet, which below the plowed topsoil appeared to be in an excellent state of preservation and has yielded dozens of sacrificial urns, stelae, and other offerings in the two trenches that we opened (Figure 4). Since excavating a 3 x 3–m trench in one of the metallurgical zones, we now estimate that there are possibly dozens of kilograms of slag per square meter buried throughout the area. Zita's team of archaeologists comes with an array of technical specialties, and we are studying the material culture assemblages using archaeometric methods of residue analysis, ceramic provenience, radiology of the tophet urns, and archaeometallurgy.



Figure 4. Excavations in the tophet.



Figure 5. The instruction of Tunisian and American students on a total station on the urban mound.

The National Geographic Society Committee for Research and Exploration has funded an ecological project to measure the extent of ancient pollution induced by the industrialization preceding abandonment of the city around 300 C.E. Undergraduate students from across the United States have joined us through the Institute of Field Research to collaborate with their Tunisian peers and help us carry out our research (Figure 5).

Zita is a prototypical site through which to study colonial interactions, as Punic people settled in a region previously inhabited by Berber groups and were subsequently absorbed into the Roman Republic and Empire following the destruction of Carthage in 146 B.C.E. Industrial surplus generation of metals, olive oil, amphorae, salt, and perhaps fish paste (*garum*) provides an excellent opportunity to reconstruct the urban ecology and environmental constraints at the ancient site. There is obviously much work left to be done. We are working to identify the dates and nature of the earliest settlement, but all pre-Roman layers so far uncovered have turned out to be domestic and agricultural in nature. The urn contents are awaiting analysis by bioarchaeologists. The ancient layers are not all that interest us—a team of ethnographers documents traditional crafts, including olive production, fishing, basket making, and metalsmithing, as well as local lore surrounding the site.

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Report from the Chair(s)

Sarah Morris

DURING THE PAST YEAR, John Papadopoulos was on leave to serve as Getty Consortium Professor at the Getty Research Institute. In his absence, the archaeology program was chaired by Charles Stanish in the fall of 2014 and Sarah Morris during the winter and spring of 2015. It proved a busy year for all of us at the Cotsen Institute, with many milestones passed.

Last year brought us the eight-year Academic Senate (Graduate Council) review of the archaeology program, conducted during a two-day site visit in February. Two UCLA colleagues and two outside experts (Michael Dietler of the University of Chicago and Susan Alcock, director of the Joukowsky Institute at Brown University) delivered high praise for our students, faculty, and program, as well as valuable suggestions on how to make our top-ranked program even better. We look forward to the challenge of preparing our response to the report and developing fresh strategies to capitalize on our strengths and to continue attracting, training, and graduating the best students in archaeology.

This year the Cotsen Institute welcomes three outstanding new students from Italy, Greece, and Massachusetts (introduced elsewhere in this issue), specializing in Egyptology, Mediterranean prehistory, and material science, respectively, as well as a student from Egypt postponing his first year in our Ph.D. program until 2016. A record number of Ph.D. degrees in archaeology were achieved at UCLA. These included six in Egyptology (please see page 6 in this issue), one in Asian archaeology (Jack Davey), and one in Near Eastern archaeology (Seppi Lehner). Five students had advanced to candidacy for the Ph.D. by June, and five more in early fall, with five students awarded dissertation-year fellowships to complete their theses next year.

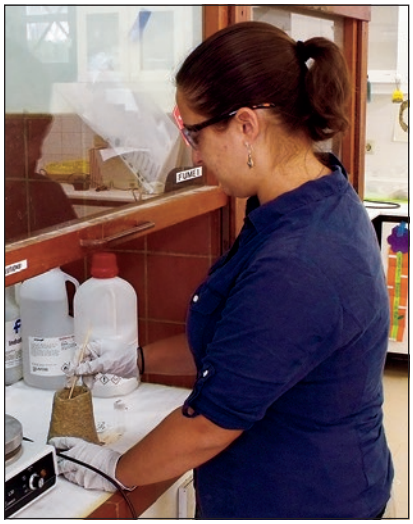
Current students in the program continue to win awards and fellowships at UCLA and elsewhere. **Ellen Hsieh**, holder of a national fellowship from her native Taiwan, has spent several quarters on research in Southeast and East Asia, most recently with the support of a Lenart Fellowship in the Humanities and a Hiroshi Wagatsuma Fellowship from UCLA's Asia Institute, followed by a prestigious dissertation fellowship from the Chiang Ching-kuo Foundation for International Scholarly Exchange. Her research examines early modern material culture and its consumption in Southeast Asia and the Philippines by focusing on power relations between the Spanish, Chinese, and indigenous Tagalog. **Evan Carlson** received a *bourse d'excellence* from the Belgian government to work in Louvain and Ghent on remote sensing and geomorphology of Khuzistan (southern Mesopotamia, in modern Iran) relevant to his doctoral dissertation.

In promoting and publicizing their research, our graduate students have not only produced significant publications but have also organized, for the fifth year, a highly successful graduate student conference (both discussed in more detail elsewhere in this issue). They have also shared their work informally during the so-called Pizza Talks at the Cotsen Institute, as well as more formally at national conferences, in particular at conferences of the Archaeological Institute of America in January, the Society for American Archaeology last April, the American Schools of Oriental Research last fall, and the American Research Center in Egypt last spring.

This year we revived an occasional Cotsen Institute practice from the past: faculty, postdoctoral scholars, and students convened several professional workshops, for a lively session on how to publish one's first article (led by Professor Monica Smith) and another introducing the perils and pitfalls of the academic job market (co-convened by Professor John Papadopoulos and Dr. Alan Farahani, Cotsen postdoctoral fellow). The opportunity to host visiting scholars, both Alan Farahani as a specialist in environmental archaeology and paleoethnobotany and Dr. Andrea Ricci from the German Archaeological Institute, has greatly enriched our public programs, with extra lectures and enhanced graduate training with specialist seminars and informal mentorships.

Last but not least, on the staff side, in February 2015 we bid farewell to our excellent student affairs officer Erika Santoyo, who left us for a position in a department closer to her own M.A. field (art history), and we welcomed Matthew Swanson as our new SAO in March. In a very short time, Matthew mastered the complexities of an interdepartmental graduate program; became skilled in supporting and advising a diverse group of students working in different cultures, countries, and disciplines; and made himself essential to all of us in the Cotsen Institute. We look forward to another wonderful year!

Incoming Students in the Cotsen Interdepartmental Graduate Program



ALISON CRANDALL

is originally from western Massachusetts. She earned a B.A. in chemistry and classical studies ('13) as well as an M.A. in ancient Greek and Roman studies ('15) at Brandeis University. At Brandeis, Alison learned to combine her experience to pursue a career in archaeological science, with a specialization in organic residue analysis. Recently, she has studied additives used in wine for flavor and preservation, the adulteration of purple dye (from shellfish), and Levantine tree resins. She has excavated at the site of Petras in Crete and at Tel Kabri in Israel, and she works as assistant director of the ARCHEM Project. Her research with this team has led to an interest in ancient technology, commodity production, and associated trade networks in the eastern Mediterranean. Additionally, Alison studies Roman domestic life, particularly as reflected in the structure and decoration of the *domus*. Her M.A. thesis explored Roman wall structures and pigment use in the Bay of Naples, with a case study of several fragments in private collections. This work renewed her interest in the materials sciences, which Alison will pursue at UCLA with Drs. Ioanna Kakoulli and Sarah Morris. In her spare time, Alison enjoys writing fiction, exploring wooded areas, and researching alternative energies, organometallic catalysts, and nanomaterials.



GAZMEND ELEZI

was born and raised in Albania and has lived in Greece for the last 15 years. He studied archaeology and the history of art at Aristotle University of Thessaloniki in Greece, and he received his M.A. in Aegean and Balkan prehistory from the same university. Gazmend is primarily interested in Balkan and Aegean Neolithic communities and is focused mostly on the macroscopic and microscopic analysis of pottery. In his master's thesis, he examined pottery from the Neolithic settlement Thermi in northern Greece and investigated the relation between the use of space and the spread of ceramic sherds. Gazmend has conducted fieldwork in Greece and Albania since he was a student. He has also participated in two research projects of Aristotle University of Thessaloniki to analyze pottery from a dozen Neolithic sites in northern Greece. At UCLA Gazmend will study the production technology and use of Neolithic pottery in Albania and the role of pottery in the exchange networks connecting northern Greece with Albania during the Neolithic period.



VERA RONDANO

is originally from Italy. Her undergraduate degree is in classics and Oriental studies from Oxford University, where she also obtained a master's degree in Egyptology. Her thesis focused on a collection of provenanced mummy-nets, currently kept by the Egyptian Museum in Turin, Italy. During her research, she reconstructed several mummy-nets and cataloged scarabs, amulets, and *shabtis.* Vera has collaborated with curators at the Ashmolean Museum in Oxford and the British Museum in London. She is currently interested in investigating issues related to spatial theory in the ancient world, particularly the evolution of liminal spaces in the Late and Graeco-Roman periods in Egypt. She aims to contextualize museum objects visually and spatially in ways that make ancient notions of sacred spaces more accessible and evocative to a modern, nonspecialist audience. In addition, she intends to look at how women were allowed to affect the religious and political spheres in Roman society.

Report from the Lore and Gerald Cunard Chair of the UCLA/Getty Conservation Interdepartmental Program

Ioanna Kakoulli



Conservation IDP students Tom McClintock and Lesley Day, joined by Xiao Ma, a student in the Materials Science and Engineering Department, practice conservation treatments on mock-up wall paintings in the UCLA/Getty Training Laboratories at the Getty Villa.

FOR 10 YEARS, the UCLA/Getty Conservation Interdepartmental Program (IDP) on the Conservation of Archaeological and Ethnographic Materials has been educating and training students to the highest standard of conservation practice, research, and decision making. The students' master's degrees prepare them for leading careers in the preservation of archaeological and other cultural heritage materials. Indeed, the Conservation IDP has already contributed to the field of highly skilled conservators, with graduates of the program being offered permanent positions at prestigious institutions such as the Natural History Museum in Los Angeles, the National Air and Space Museum (Smithsonian Institution), the Royal Museum for Central African Art in Brussels, and the Fowler Museum at UCLA.

In 2015 the Conservation IDP received two gifts of $500,000, successfully completing a $1 million match challenge presented by the Andrew W. Mellon Foundation in 2011. A gift from the Kahn Trust, administered by attorney-trustee James Keir, will support the Kahn Graduate Fellows in the program, while alumnus Jeffrey Cunard's donation established the Lore and Gerald Cunard Chair in the UCLA/Getty Conservation Program. We are deeply indebted to the generosity of the Mellon Foundation, Jeffrey Cunard, the Kahn Trust and the support of the Getty Conservation Institute and the Division of Social Sciences at UCLA. The completion of the match challenge provides a competitive edge to our program, and we are now in a stronger position to increase the much-needed flow of conservation professionals with the specialist knowledge and skills necessary to preserve cultural heritage materials.

This year, the Conservation IDP welcomes six new talented and highly promising students, in alphabetical order: Morgan Burgess, Mari Hagemeyer, Marci Jefcoat, Hayley Monroe, Lindsay Ocal, and Michaela Paulson (introduced elsewhere in this issue). Our students (Class of 2016) have successfully completed the first two years of coursework and have embarked on their summer and third-year internships around the world: Elizabeth (Betsy) Burr in the Alaska State Museum and the Arizona State Museum; Lesley Day in the Hibulb Cultural Center and the American Museum of Natural History; Colette Khanaferov in the Shangri La Center for Islamic Arts and Cultures in Hawaii and the Benaki Museum in Athens; Thomas (Tom) McClintock at Stepwise Heritage and Tourism in Canberra, Australia, and Conservation d'Angkor with the École Française d'Extrême-Orient; William Shelley at the Gordion Archaeological Project in Turkey and the Laboratory of Archaeometry at the University of Peloponnese in Greece; and Heather White in the Nelson-Atkins Museum of Art in Kansas City and the British Museum in London.

Please join us as we celebrate the past, present, and future of the Conservation IDP (www.conservation.ucla.edu) and follow us on Facebook @UCLAGettyProgram and on Twitter: #UCLAGettyCons.

Incoming Students for the UCLA/Getty Conservation Program



MORGAN BURGESS
graduated from Franklin and Marshall College in 2012 with a B.A. in classical archaeology and a minor in studio art. Her first conservation experiences were as an undergraduate student at the Mugello Valley Archaeological Project and the Poggio Colla Field School in Vicchio, Italy. After graduating, Morgan began a two-year postbaccalaureate study in chemistry at Rutgers University and a preprogram internship at the University of Pennsylvania Museum of Archaeology and Anthropology. After two years of chemistry and about a year and a half in the museum, she moved to Austin, Texas, for an internship at the Harry Ransom Center at the University of Texas, volunteering in the books conservation laboratory. Her professional interests include material science; ancient production techniques; and the relationship between conservation, art insurance, and forged art.



MARI HAGEMEYER
graduated from the University of Maryland in 2013, receiving a B.S. in materials science and engineering with a minor in French. The following August, she started working as an intern with the U.S. Navy's Naval History and Heritage Command in the Underwater Archaeology Branch. She spent nine months working with the Underwater Archaeology Branch on a diverse set of projects, ranging from collections management to historical research. Next, Mari worked as an intern with the Colonial Williamsburg Foundation's archaeological conservation laboratory and with the Los Angeles County Museum of Art's objects laboratory. The focus of her undergraduate program was soft materials, and she hopes to explore this subject further into the conservation of historical polymeric materials while studying with the UCLA/Getty Conservation Program. Mari is also interested in conservation ethics and in the interplay between anthropological studies and modern-day peoples.



MARCI JEFCOAT
graduated from California State University–Sacramento with a B.A. in forensic chemistry with an art history minor. Marci's introduction to art conservation was during an art history lecture about the restoration of the bronze Riace Warrior sculptures from fifth-century B.C.E. Greece. Recognizing that the conservation process required techniques similar to those used in chemistry and studio art, she knew that she wanted to pursue this path. Marci's preprogram experience consists of research into polymeric materials and the treatment of ethnographic, painted, textile, paper, photographic, and technological objects. She has interned with laboratories of private conservators in San Francisco, as well as with laboratories of the Smithsonian Institution's Museum Conservation Institute, National Air and Space Museum, and National Museum of the American Indian. In the summer of 2014, Marci was the Andrew W. Mellon Conservation Intern at the Huntington Library in Pasadena. While at the National Museum of the American Indian, Marci researched and treated various objects and textiles selected for the exhibition *Nation to Nation: Treaties between the United States and American Indian Nations.* This experience inspired Marci to pursue archaeological and ethnographic objects conservation. Marci is eager to expand her foundation of material cultural heritage preservation through the curriculum of the UCLA/Getty Conservation Program, including nondestructive material analysis, methods of preservation for indigenous collections, and research into environmental effects for ethnographic and archaeological collections.

continued next page

Incoming Students for the UCLA/Getty Conservation Program

continued



HAYLEY MONROE
received a B.A. in classics from Mount Holyoke College in 2008. After graduation she attended the Poggio Civitate Archaeological Field School in Italy, where she became interested in conservation. After a couple of seasons, she joined the Ziyaret Tepe Archaeological Project near Diyarbakir in southeastern Turkey. There she was a member of a small field conservation team and worked mostly on ceramics and metals. While in Turkey, she and her colleagues worked closely with the conservation department at the Diyarbakir Museum. Hayley also volunteered with the Giza Archive Project under Dr. Peter der Manuelian and interned in the conservation laboratory of the Rhode Island School of Design Museum with Ingrid Neuman. There she worked on pieces ranging from nineteenth-century gilded frames to polychrome Egyptian statuary and an eleventh-century wooden Buddha from Japan. Most recently she has been working with a museum mount maker, working on installations at the Rhode Island School of Design Museum; Brown University's Haffenreffer Museum of Anthropology; Rough Point Mansion in Newport, Rhode Island; and the Wadsworth Atheneum in Hartford, Connecticut. In addition to continuing to pursue archaeological site conservation, she is interested in working with metals and organic materials.



LINDSAY OCAL
received her B.A., with majors in history and archaeology and minors in art history and biblical languages, from Lycoming College in 2007. She earned an M.A. in art history with a concentration in Egyptian art and archaeology from the University of Memphis in 2011. Before being introduced to conservation, she worked on archaeological projects in Egypt and Israel, was an intern at the Egyptian Museum in Cairo, and studied Arabic at the American University in Cairo. While working as an assistant for the American Research Center in Egypt on conservation of the Akhenaten Talatat with the Karnak Temple Project, she fell in love with conservation and decided to pursue it as a career. She spent two years working on archaeological conservation and documentation projects at Karnak Temple. She also participated in a workshop on preventive conservation at a historic house on Ossabaw Island, Georgia, and spent 15 months as an intern in the textile conservation laboratory at the Fine Arts Museums of San Francisco.



MICHAELA PAULSON
received a B.A. in archaeology (magna cum laude) with a minor in art history from Tufts University in 2012. As an undergraduate, she worked with Rhode Island School of Design conservator Ingrid Neuman, learning conservation basics and hands-on techniques while cleaning a sculptural, mixed-media topographical map. She gained further experience during her year abroad at University College London, where she took courses in the Institute of Archaeology, learning about the importance of first aid for archaeological finds. A later field school in West Dean, Sussex, solidified her interest in conservation on archaeological sites. After graduating from the School of the Museum of Fine Arts in Boston, she spent three years immersed in studio art and the technical processes behind modern artistic creations, especially for metals and ceramics. Simultaneously, she was the preprogram intern in the objects conservation laboratory at the Museum of Fine Arts in Boston, working on a wide range of materials. In June 2015 she completed a course in the conservation of archaeological ceramics with the San Gemini Preservation Studies Program in Umbria, Italy. As she begins her graduate work at UCLA, Michaela is interested in increasing her knowledge of treating inorganic materials. She also wants to delve into issues surrounding outreach and the promotion of the field, with the goal of increasing the number of archaeological excavations with professional conservators.

The Fifth Annual Graduate Research Conference

Change has been a constant feature of human history: empires have emerged, dynasties dissolved, and civilizations collapsed. The Fifth Annual Cotsen Institute of Archaeology Graduate Research Conference, "Adaptation, Transformation, and Continuity: The Archaeology of Transitions," asked graduate students to confront the processes involved in ancient transitions and to consider their reverberations across a range of spatial and temporal scales. Continuing a now well-established tradition, the conference planning committee (the authors of this report) sought to attract high-quality domestic and international graduate students working in various fields, including archaeology, anthropology, Near Eastern language and cultures, and history.

The conference, held January 30–31, 2015, opened on Friday evening with a keynote lecture by Dr. Michael Blake (University of British Columbia) entitled "Space-Time Archaeology: Scalar Categories and the Perception of Process." Dr. Blake argued that the reduction of cultures to manageable frameworks, such as timelines and maps, eliminates the dynamism characteristic of the behaviors, thoughts, and actions that produced specific events and settlement locations. These "space-time categorizations" hinder our ability to perceive the targets of our interest: change, transformation, and continuity at every scale. In his lecture, Dr. Blake laid out the means by which we can appreciate the dynamism of the past in a modern, technological era.

On Saturday, 12 students presented papers in four panels organized around the themes of death, politics, style, and subsistence and economy. Jeremy A. Beller (University of Victoria), Pinar Durgan (Brown University), and Sara E. Cole (Yale University) demonstrated how individuals and groups in the Near East, Anatolia, and Egypt, respectively, use the mortuary sphere as a means to assert themselves in the face of changed and changing political circumstances. Nikhil Pandhi (University of Oxford) and Ross Wade (University of Wyoming) argued that aspects of identity in India and Armenia are not only unstable and contingent but also carry an ethical weight when identities are used and manipulated in the political sphere. Katelyn Bishop (UCLA Anthropology) used access to birds and their feathers as an indicator of inequality in the Early Formative period in Mexico. Danielle Candelora (UCLA NELC), Caroline Arbuckle (UCLA Archaeology), Michael Moore (UCLA NELC), and Richard Ehrich (UCLA Archaeology) considered issues of artistic style in light of issues of chronology, value, control, and identity. R. Sinensky (UCLA Anthropology) argued that flexibility was the key to understanding the transition to agriculture in the American Southwest, and Adam DiBattista (UCLA Archaeology) presented an isotopic approach to understanding subsistence strategies in Anatolia. Dr. Li Min ended the conference with a challenge to students to consider not just how changes occur once they have started but also how change begins in the first place.



Kate Bishop during her presentation on bird exploitation in Paso de la Amada, Mexico, during the Early Formative period.

This conference was generously funded by the Cotsen Institute of Archaeology, the dean of humanities at UCLA, and Associated Students UCLA. The conference grows each year, and we all look forward to next year's conference on identity and personhood.

— *Caroline Arbuckle, C. Myles Chykerda, Jacob Damm, Maryann Kontonicolas, and Debby Sneed*

Friday Seminars in 2014–2015

The 2014 Friday Seminar series featured a variety of speakers and subjects representing cutting-edge archaeological research around the globe. Fall-quarter speakers were invited by Jacob Bongers and Ellen Hsieh, winter-quarter speakers by Kristine Olshanky and Amy Karoll, and spring-quarter speakers by Richard Ehrich and Rose Campbell.

In the fall of 2014, the Friday Seminar series featured five lectures. Dr. Cameron Monroe (UC Santa Cruz) started the series with a lecture titled "Unsettling Cities: Landscapes of Power and Ambivalence in Dahomey, West Africa." Monroe summarized the Abomey Plateau Archaeological Project in Benin, which has revealed a dynamic regional landscape in the pre-Atlantic past. Dr. Christina Conlee (Texas State University) gave the second lecture, titled "Collapse, Abandonment, and Repopulation of Nasca, Peru." In this talk, Conlee discussed social innovations and developments that took place in the Nasca region between about 650 and 1450 C.E. Next came "The Southern Levantine EB IV: Some Insights from Recent Researches," delivered by Dr. Marta D'Andrea (La Sapienza University of Rome). D'Andrea offered new field data and proposed novel interpretations of socioeconomic dynamics taking place between the early and late Early Bronze Age IV phases. The fourth talk, titled "Human Sacrifice on the North Coast of Peru: Recent Discoveries Pose New Questions," was given by Dr. John Verano (Tulane University). Verano presented archaeological data collected in northern coastal Peru from what is likely the largest single context for child sacrifice ever found in the New World. Finally, Dr. Matthew J. Liebmann (Harvard University) presented his lecture "Where Lightning Meets the Ground: From Landscapes of Meaning to Landscapes of Signification in the Pueblo Southwest." In this talk, he outlined the development and contributions of the Wavema Archaeological Research Project and how it has expanded the subfields of collaborative archaeology and the study of archaeological landscapes.

Winter quarter featured four scholars with diverse research interests covering both the New and Old Worlds. Michael Blake (University of British Columbia) presented the inaugural talk of the quarter, which coincided with the opening day of the Graduate Student Conference. Blake presented his lecture, "Spacetime Archaeology: Scalar Categories and the Perception of Process," on January 30. He discussed how archaeologists can approach multiscalar questions using "big data" through dynamic databases. The second lecture of the quarter was given by Dr. Lars Fehren-Schmitz (UC San Diego). In his presentation, "Human Palaeogenomics and Molecular Anthropology," Fehren-Schmitz discussed palaeogenetic methods and the analysis of DNA from Peruvian populations covering long time periods. His analysis allows the monitoring of the evolution of human genetic diversity, population relationships, and the genetic consequences of exposure to environmental stressors. Next, Kim Shelton (UC Berkeley) spoke about the Late Bronze Age religious centers of Ancient Greece. In her talk, "The Tsountas House Shrine: Early Greek Religion and Cult Center at Mycenae," she detailed the results of excavations at the Tsountas House and how religious space was created, utilized, and reused during various phases of sacred activity at the site. Dr. Patricia Wattenmaker (University of Virginia) concluded the winter quarter series. Drawing from her many years of research and excavations in southeastern Turkey and northern Syria, Wattenmaker's talk, titled "Peer-Polity Dynamics, Statecraft, and the Urban Process in Third-Millennium Mesopotamia," explored the cosmological underpinnings and ritual dynamics that shaped urban processes in Upper Mesopotamia during the Bronze Age. She detailed the various strategies employed by elites to legitimize inequality and to mobilize labor to support participation in interpolity dynamics and exchange.

The spring-quarter Friday Seminars boasted a packed schedule and featured research perspectives across cultures and continents. Particularly, speakers focused on the contributions and perspectives that archaeology can provide to problems of modern society. Two of the seminars reflected these trends in the field of bioarchaeology: Dr. Lynne Schepartz (University of the Witwatersrand, South Africa) advocated "Integrative Bioarchaeology: Putting All Your Eggs in One Basket" by showcasing her extensive research in Greece, Albania, and China. Dr. Danielle Kurin (UC Santa Barbara) used the example of "Allies, Captives, and Refugees:

Biocultural Isoscapes and Life Histories in the Peruvian Andes" to illustrate the relationship between physical health, conflict, and mobility, taking examples from modern wartime populations. The study of human remains also played a key role in the presentation by Dr. Yannis Galanakis (Cambridge University), titled "Revisiting the Grave: Post-Funeral Performances in Late Bronze Age Aegean Tombs." Next, Dr. Kelly Dixon (University of Montana) dealt with an explicitly cross-continental subject: "Overseas Chinese Archaeology in Jīnshān/Gām Saan: Transnational Narratives from the North American West." Dixon pointed out that the fate of Chinese railroad workers in the nineteenth-century United States is currently receiving increased attention in China as well the United States. The seminar closest to pressing modern-day issues was "Water Uncertainty: A Primal Organizing Principle in both the Wet and the Dry" by Dr. Vernon Scarborough (University of Cincinnati). He emphasized water-management models derived from study of the ancient American Southwest and the Maya settlement of the Yucatan Peninsula as relevant to the current discourse on water-management issues. Staying in the American Southwest, Dr. Carolyn Heitman (University of Nebraska) demonstrated the opportunities and challenges of "Heritage Collection in the Digital Age: Archaeological Cases and Contexts from Chaco Canyon, New Mexico, and Ohio Hopewell." Finally, Dr. Michael Love (CSU Northridge) encouraged us to rethink traditional notions of how early urbanism might have looked in his talk, "Early Mesoamerican Cities: Urbanism and Urbanization in Formative Period Mesoamerica."

— *J. Bongers, R. Campbell, R. Ehrich, E. Hsieh, A. Karoll, and K. Olshansky*

The 2014–2015 Pizza Talks

During the academic year, graduate students at the Cotsen Institute of Archaeology host a weekly noon lecture series known as the Pizza Talks. These talks provide the opportunity for students, faculty, and visiting scholars to gather and discuss ongoing research projects and be inspired by research from outside their areas of study. This year's 28 speakers presented on a wide array of geographical regions and topics, ranging from new methods for pigment analysis to archaeological surveying to 3-D reconstructions of ancient sites. During the fall quarter, Andrew Apter (professor, UCLA History) gave a talk entitled "History in the Dungeon: Atlantic Slavery and the Spirit of Capitalism in Cape Coast Castle, Ghana," while Chris Hallett (professor, UC Berkley Art History, and Getty research scholar) spoke about "Retrospective Styles in Hellenistic and Roman Art." Marie-Louise Nosch (professor, University of Copenhagen and Getty research scholar) presented her fascinating research on "Bronze Age Textiles and Clothing in Northern and Southern Europe." Alan Farahani (postdoctoral scholar, UCLA Archaeology IDP) presented research from his award-winning dissertation "Agriculture and Empire, Nature and Culture: Rethinking and Identifying Long-Term Shifts in Plant Production and Practice, a Case Study from Central Jordan, 1000 B.C.E.–1400 C.E." Our own Monica Smith (professor, UCLA Archaeology IDP and Anthropology) talked to us about "Selective Simulacra in Ancient Urban Hinterlands:



The "Pizza Talks" provide a weekly platform for an exchange of ideas between archaeologists, the academic community, and the general public.

Pizza Talks (continued)

Excavations and Survey at Talapada, India 2014." Frank Matero (professor, University of Pennsylvania School of Design) spoke about "Making Sites: Conservation of an Excavated Past: A Survey of General Principles of Archaeological Site Conservation and an In-depth Look at Recent Work at the Phrygian Citadel of Gordion in Central Turkey." Moving west, Greg Schachner (associate professor, UCLA Anthropology) discussed "Rethinking the Local and Regional Mobility of Ancient Farmers in the Petrified Forest of Arizona." Graduate student Ellen Hsieh (UCLA Archaeology IDP) shared her work "The Making of Manila: a Multiethnic Project," and Kate Craig (graduate student, UCLA History) finished off the quarter with her talk "Bringing out the Saints: Portable Relics, Landscape, and Dissent in Tenth- to Twelfth-Century France."

In the winter quarter, Xiao Ma (Ph.D. student, UCLA School of Materials Science and Engineering) welcomed us back with "Studies of the Excavated Lacquer-Ware from Luozhuang Han Tomb, China: A Technological Approach." We benefited from a talk by Alexander Mazarakis-Ainan (professor, University of Thessaly Classics), this year's Kress Lecturer for the Archaeological Institute of America, who presented "Euboean Mobility and the Role of Kephala (Skiathos Island) in the Greek Expansion in the North Aegean during the Early Iron Age." Elsbeth Geldhof (conservator, Vatican Coffins Project) then shared her current work in "In Search of Ancient Paint: Testing Terahertz for Identifying Redecorated Mummy Coffins." A lively presentation by Willeke Wendrich (professor, UCLA Archaeology IDP) and Rachel Moy (Ph.D. candidate, UCLA Archaeology IDP), "Ethiopian Explorations," introduced us to the vibrant communities and personalities present during their preliminary survey work in Ethiopia, reminding us all about the importance of local participation in site management. Diane Favro (professor, UCLA Architecture and Urban Design) then showed us the practical side of digital reconstructions in "3-D Urban Experiments in Augustan Rome." Carol Meyers (professor, Duke University) discussed "Holy Land Archaeology: Where the Past Meets the Present," and Maxim Korolkov (Ph.D. student, Columbia University) presented "Between Command and Market: Credit, Labor, and Accounting in the Qin Empire (221–209 B.C.)." Using examples from across the world, David Scott (professor, UCLA Archaeology IDP and Art History) included serious and lighthearted anecdotes in his talk "From Getty Kouros to Manitou Springs: Consequences and Consolations of Disputed Archaeologies." Lan Ding (professor, South-Central University for Nationalities, China Archaeology) presented "A Comparative Analysis on 'Tomb-Guarding Beasts' of Chu Style." Finally, Matthew Robb (curator, de Young Museum and Getty research scholar) gave an update of his research, "The Stone Masks of Teotihuacan: Understanding the Corpus."

During spring term, Aaron Burke (professor, UCLA Near Eastern Archaeology) started us off with "Ioppa Maritima: In Search of the 'Solomonic' Harbor in Jaffa," showing the captivating history of research on an aspect of his site in Israel. Two graduate students, Myles Chykerda (Ph.D. candidate, UCLA Archaeology IDP) and Maryann Kontonicolas (Ph.D. student, UCLA Archaeology IDP), then discussed the status of their survey work in "Methone: An Intensive Archaeological Surface Survey of a City and Landscape." Visiting scholar Andrea Ricci (AIA/DAI Study in the U.S. Fellowship) presented "(Im)mobility: Late Neolithic Cultural Landscapes in the Southern Caucasus (Azerbaijan-Georgia)." Danny Zborover (visiting scholar, UC San Diego) presented "From Mobile Communities to Stable Isotopes: Exploring the Links between Mobility, Settlement, and Colonialism in Historical Mexico." Sara Cole (Ph.D. candidate, Yale University Ancient History) shared her research in "The Architecture and Interior Decoration of Elite Homes in Ptolemaic Egypt: A Comparative Approach." Then we heard from Ceren Abi (Ph.D. candidate, UCLA History) on "Archaeology (and Related Activities) in Wartime and Occupied Lands in the Ottoman Empire (1914–1922)." Lothar von Falkenhausen (professor, UCLA Art History) presented "A Sinologist Visits Iran: Some Preliminary Impressions." Robert Simpkins (professor, Porterville College Anthropology) gave an animated talk on "The Royal Road of Golconda: Using Archaeology, Geography, and History to Understand the Forgotten Milestones of India's Golconda Kingdom." Kate Brunson (Ph.D. candidate, UCLA Anthropology) finished off the year with an excellent overview of her doctoral research in her talk "Animal Management in Northern China during the Late Third Millennium B.C.: Zooarchaeological and Genetic Patterns."

— Caroline Arbuckle

Undergraduate Club: Cotsen Archaeology Association

Founded almost two years ago, the Cotsen Archaeology Association (CAA) is dedicated to helping launch the careers of future archaeologists. The mission of CAA is to provide undergraduate students opportunities to volunteer, conduct research, network with professional archaeologists, and participate in hands-on archaeological learning. This is accomplished by working closely with faculty and graduate students of the Cotsen Institute.

From the beginning to the end of the academic year, CAA organizes activities to fulfill its goals. At weekly CAA meetings, archaeology professors and graduate students deliver presentations on topics such as surveying, ceramic drawing, field schools, and research currently being conducted. This year, Professors Li Min, Hans Barnard, Monica Smith, and Tom Wake **p**resented on topics ranging from Chinese archaeology to zooarchaeology in Panama. Club members also give presentations on topics such as fieldwork they have participated in, the emerging field of digital humanities and its use in archaeology, careers in archaeology, and potential for undergraduate research at UCLA. Former president of the club Amy Cromartie presented her research on the ethnoarchaeology of garage sales.

The undergraduate club also volunteers in numerous outreach programs throughout the year. At the beginning of fall quarter, former members meet new students and introduce incoming undergraduates to archaeology at the Enormous Activities Fair. Undergraduates are made familiar with the Cotsen Institute and many of its laboratories in a tour hosted by a member of the faculty. In the late winter and spring, the club participates in Bruin Day for potential incoming freshman and in the Cotsen Open House, where club members volunteer in archaeological laboratories. By connecting with Cotsen faculty, many club members have been able to work in archaeological laboratories, including the Rock Art Laboratory and the Zooarchaeological Laboratory, and on paleoethnobotany with Dr. Alan Farahani, the current Cotsen postdoctoral scholar.

This year, the association emphasized hands-on archaeological learning. Throughout the year, students participated in ethnoarchaeology, including atlatl throwing; pottery construction, destruction, and reconstruction;



Members of the Cotsen Archaeology Association exploring the service tunnels below UCLA campus.

and excavating small boxed dirt units. Halfway through each quarter, the association holds a movie night, featuring a documentary on an archaeological subject or a fictional film (such as *Indiana Jones*.) Students test



Members of the Cotsen Archaeology Association presenting their organization at UCLA's Enormous Activities Fair.

their knowledge in archaeology at the end of each quarter with an interactive game such as Jeopardy or a scavenger hunt. In previous years, the club has engaged in flint knapping and surveying, activities that will be continued in the fall of 2015. The club also attends archaeology-related museum exhibitions, such as the Pompeii exhibit at the California Science Center. In May 2015, the group toured the underground service tunnels of UCLA, spending an hour and a half wandering through the guts of the university.

Despite its youth, the Cotsen Archaeology Association has expanded rapidly as a student organization thanks to the guidance and assistance of the Cotsen faculty and staff. We would like to thank the professors and graduate students for their generous support, and we look forward to another year of undergraduate archaeology.

— *Amy Chan and Kaitlyn Ireland*

The Friends of Archaeology Dinner Lectures

On October 28, 2014, Professor Stephen Acabado (Department of Anthropology, UCLA) lectured on the history and longevity of the Ifugao rice terraces in the Philippines, a UNESCO World Heritage Site. With the aid of ethnohistoric, ethnographic, archaeological, and paleoenvironmental data, the technological and cultural sophistication of the Ifugao is reimagined. Within 200 years they modified their landscape and filled valley after valley with terraced rice fields. The differences between highland inhabitants and lowland populations seen today appear a product of colonialism rather than adaptation to diverse environments.

On February 10, 2015, Professor Sarah Morris (Steinmetz Professor of Classical Archaeology and Material Culture, Department of Classics and Cotsen Institute of Archaeology, UCLA) presented ancient Methone, an important harbor site in northern Greece, known as a colony of Eretria and a major trading partner of Classical Athens. Excavations since 2003 by the Greek Archaeological Service have uncovered a Neolithic settlement, a Bronze Age cemetery, Iron Age houses, and public spaces dating to the Archaic and Classical periods. Since 2012, the Cotsen Institute of Archaeology has been conducting a collaborative project to study and publish these important discoveries and to continue field research at the site. Together with Professor John Papadopoulos, Professor Morris discussed the results of recent field seasons at Methone, including surface survey, geophysical and geomorphological analysis, and excavations.



Cotsen Institute graduate students Richard Ehrich, Terrah Jones, and Debby Sneed just before their presentations on April 7, 2015.

The third and final dinner lecture took place on April 7, 2015. Cotsen Institute graduate students Terrah Jones, Richard Ehrich, and Debby Sneed presented their work on the mortuary and domestic landscapes of the mid-Chincha Valley (Peru), on pottery as a tool to study social groups in prehistoric China, and on current evidence for living with disability in ancient Greece, respectively.

— Helle Girey and Jill Silton



Some of the survey work across the Mil Plain (southern Azerbaijan) appeared best done on horseback.

Kura in Motion

On May 26, 2015, Dr. Andrea Ricci presented the latest results of the interdisciplinary project Kura in Motion. This is a German–Azerbaijani project that since 2010 has investigated early sedentism in the Kura Valley in the Mil Plain (southern Azerbaijan). In his presentation Dr. Ricci focused on what he identified as a landscape of survival and on the enigmatic late Neolithic (sixth millennium B.C.E.) structures that were studied in detail by intensive regional survey, as well as stratigraphic excavations. Andrea Ricci was the 2015 Archaeological Institute of America, Deutsches Archäologisches Institut Fellow at the Cotsen Institute.

— Helle Girey



Open House 2015

Hallway outside the Rock Art Archive



On Saturday, May 2, the narrow corridors and the laboratories of the Cotsen Institute of Archaeology once again filled with curious visitors for the 2015 Open House. One popular feature, the Rock Art Archive, is a depository of prehistoric rock art recordings from California, the Southwest, the Pacific Islands, Australia, and Baja California. The archive records and protects thousands of petroglyphs and pictographs for future archaeologists to study. Interpretation of the evocative figures found on rock walls across California is a work in progress. (Figure 1)



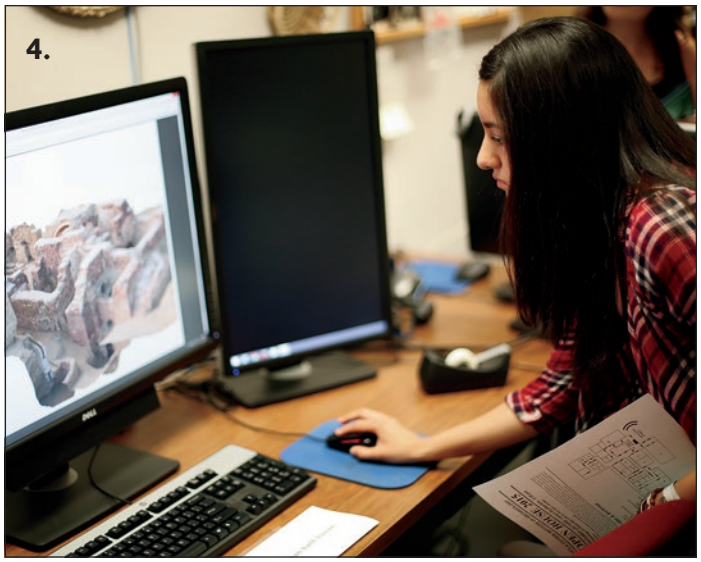
Old Stone Age Laboratory

The Old Stone Age Laboratory contains stone artifacts from one of the richest and deepest Upper Paleolithic sites in Southwest France. The site of Solvieux is dated between 35,000 and 9000 B.C.E. More than 100,000 artifacts were cataloged at this site, and some of these made their way to Los Angeles. (Figure 2)

The Zooarchaeology Laboratory is always popular with both young and old. Comparative collections are prepared and used to identify bones from archaeological sites. These data can then be used to determine animal food sources, as well as population sizes, elite versus common households, and the seasonality of site use. The Egyptian Laboratory lets visitors imagine what it would feel like to wear a pharaoh's headdress or to visit the Roman bathhouse excavated in Karanis in

Egyptian Laboratory





northwestern Egypt by exploring a 3-D photographic model. Regular visits to the bath served, and in many places still serve, not only a hygienic but also a social function. (Figures 3 and 4)

In the Armenian Laboratory, obsidian tools from the Neolithic site of Masis Blur are studied. The glasslike obsidian flakes well and forms extremely sharp edges. For these reasons, it was widely used for arrowheads and blades in every culture with access to the raw material, which was widely traded. As sources of obsidian can potentially be established through X-ray florescence, obsidian artifacts often serve as an indicator for the flow of trade items between ancient groups of people. The Paleoethnobotany Laboratory studies botanical materials, including seeds and other plant remains, from various parts in the world. Excavations in Dhiban, in modern Jordan, produced a large number of potsherds that could be reconstructed into several vessels. These were likely once used to hold agricultural goods such as wheat or peas. (Figure 5)



Armenian Laboratory

The Mesopotamian Laboratory provides a glimpse of the history and culture of areas that are now war-torn countries. For 20 years, sites such as Tell Mozan in northeastern Syria were lovingly excavated and reconstructed; their future is very much in question now. The Classics Laboratory demonstrates how Greek pots obtained their circular designs through the use of human hair for brushes. Currently, the ancient site of Methone, once an important harbor in northern Greece, is the main subject of study. (Figures 6 and 7)

The Channel Island Laboratory demonstrates the production of shell beads and shell fishhooks, using chert from Santa Cruz Island for drills. Excavations have recovered thousands of shell artifacts in various stages of production. Beads were used to trade for materials



6.

Mesopotamian Laboratory

Classics Laboratory



7.

from the mainland. In the Southwestern Laboratory, the differences and similarities between indigenous groups in the ancient American Southwest are explained, as well as the importance of prehistoric ceramics from the Rio Grande area of New Mexico and northern Arizona. Over the years, archaeologists have expanded their work from the Pajarito Plateau (the eastern Pueblos) to the western Pueblos of the Hopi and Zuni peoples in northern Arizona. The children's activity room saw some enthusiastic young and not so young children trying their hand at writing Egyptian and Maya hieroglyphs. Copies of the Mixtec *Codex Zouche-Nuttall* were available for skilled hands to bring this pre-Columbian pictographic document to life. (Figures 8 and 9)



8.

Southwestern Laboratory



9.

Commons Room

The 2015 Open House also included a special public lecture by Dr. Alan Farahani, visiting scholar at the Cotsen Institute, on the archaeology of everyday life in ancient Jordan. At the end of the next academic year, we will again present new finds and new interpretations from archaeological sites around the world. We hope to see you in 2016!

— *Helle Girey*

IN MEMORIAM

Marija Gimbutas: Old Europe, Goddesses and Gods, and the Transformation of Culture

by Ernestine S. Elster[1]

IN THE FALL OF 1965, UCLA Extension offered a lecture course called "The Ancient World before the Greeks," with an optional field trip to Greece, Turkey, and Israel. Marija Gimbutas, a new professor in the Department of Indo-European Studies, was very much involved. I took that class and it rearranged my life. On our last night on Crete, after visiting dozens of sites, the field trip participants formed the Friends of Archaeology, at the suggestion of Marija and surely encouraged by the plentiful ouzo. With much enthusiasm, the group elected Sandy, my late husband, as president of what is now UCLA's oldest active support group, although he clearly announced that he could be only a figurehead.

During the trip, Marija had asked me, "Why are you in the School of Education when you are so interested in archaeology?" Only tangentially influenced by the women's movement—remember it was 1965—I answered, "But how could I be an archaeologist?" Marija, drawing herself up to her full height, challenged with, "And why not? I am an archaeologist!" Why not indeed? So I transferred to Marija's department. As I was married, with three children, it took some time to finish my graduate degree. Sandy and I became friends with Marija. We entertained one another other, traveled together, laughed, broke bread, and drank wine. She and I worked like the devil, agreed and disagreed. I think of her as a warm and encouraging mentor but also as a formidable opponent when her interpretations were challenged. She was not easy to argue with or question, especially on the subject of her pantheon of prehistoric goddesses and gods of Old Europe.

In addition to Marija's contributions to Old World archaeology (four excavation monographs and the fifth forthcoming in 2016, plus 20 volumes and hundreds of articles), there is her legacy at UCLA. Marija established the Old World Archaeology Laboratory in Haines Hall as part of the Museum and Laboratories of Ethnic Arts and Technology, now the Fowler Museum, where students had an unprecedented opportunity to handle and study artifacts from Europe, Egypt, and the Near East, most from the Wellcome Collection and private gifts. Here Rose Lowenstein trained a group of docents to present a program on archaeology for middle schools that was only recently discontinued. The Fowler continues to store the artifacts in the care of Wendy Teeter. Together with other faculty, Marija was instrumental in creating the Interdepartmental Graduate Program in Archaeology. When I transferred to Indo-European Studies in 1966, Marija explained that this program was not yet official but would be approved by the time I was ready to take exams. Subsequently, she worked with Giorgio Buccellati and others on the founding of the Institute of Archaeology, with Buccellati as its first director. Years later, Lloyd Cotsen's generous endowment was announced (Figure 1). Marija and Lloyd were longtime friends; he admired her energy and supported her commitment to the institute's goals. In 1973 Marija and an international group of colleagues inaugurated the *Journal of Indo-European Studies*, which publishes four issues yearly. Finally, with the support of

1 Cotsen Institute of Archaeology

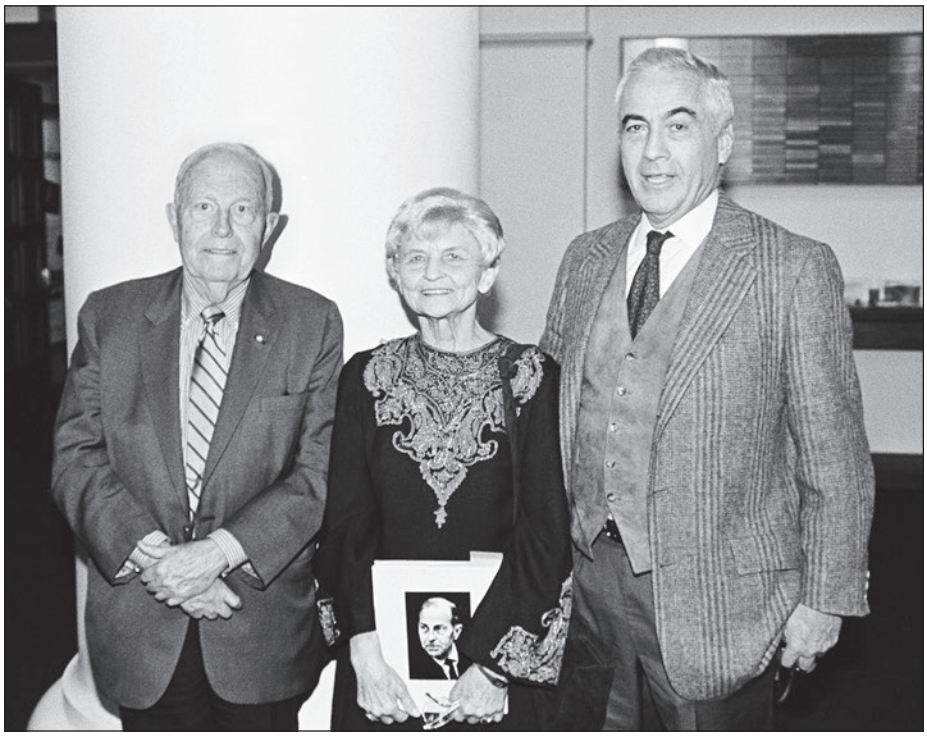


Figure 1. Marija Gimbutas with Franklin Murphy (left) and Lloyd Cotsen (right) at a celebration honoring these two key supporters of the Cotsen Institute of Archaeology. Cotsen Institute Photographic Archive.

Chancellor Franklin D. Murphy and with sponsorship from Lithuanian UCLA alumni, the talented Lithuanian Vladas Vildžiūnas was commissioned to create *The Bird Goddess* (1977) in bronze for the Franklin D. Murphy Sculpture Garden (Figure 2). As Murphy wished, it was inspired by Marija's interpretation of birds as of great importance among the sacred animals in her pantheon of Old Europe.

FROM VILNIUS TO HARVARD

Marija Birutė Alseikaitė was born in 1921 in Vilnius, a few years after Lithuania was granted independence as part of the World War I armistice. Lithuanian independence had long been threatened by powerful neighbors and nationalism; hope for self-rule and democratic promise were all part of Marija's heritage. At 17 she graduated from the gymnasium and entered Kaunas University. From there she participated in excavations of prehistoric burials, eventually transferring to the University of Vilnius. Surrounded by World War II Marija pushed to graduate in 1941, married in 1942, and a daughter was born the next year. The family fled west, eventually settling in Tübingen, where the university reopened soon after the end of the war. Marija enrolled in the university, and in March 1946 she defended her thesis on the prehistory of Lithuania. In 1949 the family—with a new baby daughter—received approval to travel to the United States.

Marija's first appointment was at Harvard as a Peabody Museum research fellow (1950–1963). She was later a lecturer in the Department of Anthropology (1962–1963) and a fellow of the Center for



Figure 2. The Bird Goddess, bronze sculpture by Vladas Vildžiūnas, 1977, in UCLA's Franklin D. Murphy Sculpture Garden. Photograph retrieved from the UCLA website.

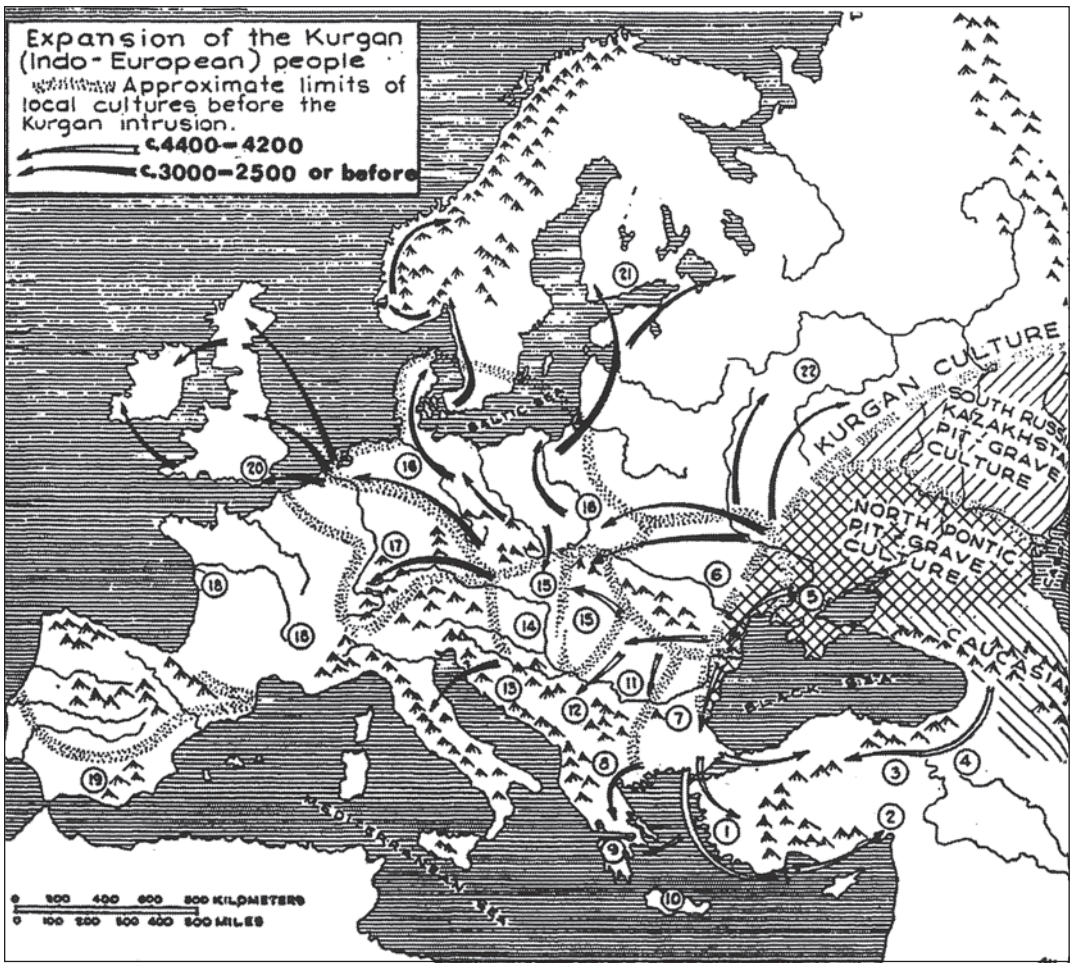


Figure 3. Map by Marija Gimbutas illustrating the movements of the Proto-Indo-European-speaking Kurgan peoples from the eastern steppes into western Europe. Adapted from Elster 2007.

Advanced Study at Stanford (1961–1962). Entering American academia in the Ivy League, she swiftly established a network of colleagues and friends. She was an active researcher in the archaeology of the Baltic countries, eastern Europe, and the former Soviet Union. Her Lithuanian heritage left her with the conviction that the combined study of historic folk culture, mythology, and ethnology; comparative and historic linguistics; and iconography, symbolism, and archaeology would provide a key for the interpretation of both material culture and prehistoric religion. She believed that while other languages in the Indo-European family had lost their archaic elements, they survived in Lithuanian because the country was far from the crossroads of migrations. These ideas coalesced in her well-received study *The Balts*. Subsequently, she applied this multifaceted approach to understanding the symbolism represented by figurines, pottery marks, and painted or incised designs on ceramics from Neolithic and Chalcolithic sites in the Balkans and Greece.

THE MOVE TO CALIFORNIA

Marija became known as the author of a dynamic model proscribing the homeland, social structure, and archaeology of Proto-Indo-European (PIE) speakers. (For a comprehensive bibliography, see Elster 2007.) Her first American article, in *American Anthropologist*, introduced these ideas and the Kurgan culture. (The term *kurgan* is originally Russian and describes a burial under a mound.) The region where kurgans are numerous, north of the Black Sea and eastward, corresponded, Marija believed, to the homeland of the not yet fully identified language of PIE speakers. A long article in the *Proceedings of the Prehistoric Society* presented her analyses of the archaeology, with maps full of arrows illustrating the Kurgan people's movements to the west (Figure 3). Proposals identifying the PIE homeland, including Marija's, were and still are under constant reevaluation. One of her admirers, the distinguished Harvard linguist Roman Jakobson, considered Marija to be underappreciated at Harvard and encouraged one of his colleagues at UCLA, Dean

Worth, to recruit her. Marija's marriage dissolved in 1963, and in 1964 she moved to Los Angeles to continue her career at UCLA.

Marija flourished in the relative informality of the UCLA academic community, which she spoke of as more accessible and lively compared to Harvard. As professor of European archaeology and Indo-European studies and, starting in 1966, curator of Old World archaeology for the Museum and Laboratories of Ethnic Arts and Technology, she regularly offered lecture courses and graduate seminars in Neolithic and Bronze Age Europe and in Baltic and Slavic folklore and mythology. A charismatic person—popular with students, full of charm, generous, and hospitable—she settled in the Santa Monica Mountains community of Topanga with her daughters, Živilė and Julie. She hosted (often at home) visiting scholars and student seminars; served on countless committees and editorial boards; taught; published hundreds of book reviews and articles and dozens of books; lectured widely; accepted fellowships, awards, and honors; participated in and organized conferences; and traveled annually to Europe and countries behind the Iron Curtain.

OBRE, SITAGROI, AND ANZA

Around the time of her arrival at UCLA, counterpart funds, administered by the Smithsonian Institution, became available. After organizing meetings with Alojz Benac during an earlier trip, Marija received counterpart funds for a joint project with Benac and the Zemaljski Museum in Sarajevo to start excavations at Obre, Bosnia, in the summer of 1967. Because the UCLA team wished to recover a quantitative sample and Benac was unused to the kind of strategy that this required (such as sieving and flotation), the codirectors decided to open two adjacent areas, separate but equal. It is interesting to compare the reports. Both are thorough and present a tremendous amount of data. Benac's large team opened a wide area, revealing impressive structural remains, which provided an important picture of village layout. The UCLA team focused on a smaller excavation and on maintaining a carefully controlled stratigraphy. Samples were taken for radiocarbon analysis as well as for the quantitative study of pottery, lithics, bone tools, ground and polished stone, and both zoological and botanical remains. The American approach literally fills in the economic picture: what the villagers ate, planted, herded, hunted, gathered, and traded and the crafts they practiced and how these changed over time. With Eugene Sterud in charge in the field and his quantitative recovery, Marija could focus on the kind of reporting that she did so well: a descriptive, thorough, and confident synthesis.



Figure 4. Ernestine Elster, Colin Renfrew, and Marija Gimbutas (from left to right) in 1986 at the publication celebration for the first volume of the Sitagroi excavations. Personal archive of the author.

Marija and Colin Renfrew planned excavations at Sitagroi, Greece, during his visiting professorship at UCLA in 1967, before Marija left for Obre to conduct the first field season. She had earlier visited Saliagos, in the Cycladic Islands, which Renfrew and John Evans were excavating. Marija and Colin were a good pair: there was mutual respect and they admired each other's knowledge and energy. In July 1968, Colin opened the first of three seasons at Sitagroi, in which I was much involved (Figure 4), with a permit from the British School of Archaeology and funding from the NSF and British sources. Marija was still involved at Obre but traveled to Sitagroi for part of each season (Figure 5). Both Marija and Renfrew had as one goal to obtain as many samples as possible from clear archaeological contexts for radiocarbon dating. The 29 dates were many more than heretofore had been obtained from any other site in Europe and resulted in a reevaluation of Greek and Balkan chronology vis-à-vis Troy and the ancient Near East, which caused a mini revolution of controversy and reassessment. Marija's long interest in the ubiquitous figurines from Neolithic and Chalcolithic sites in Greece and the Balkans was particularly excited by Sitagroi's remarkable corpus. Renfrew and she organized a Sitagroi seminar, to which Jean Deshayes, director of the French excavation at Dikili Tash (a chronologically compa-

rable nearby site; Treuil et al. 2004), was invited, along with his crew. Marija spoke about the figurines and her interpretation (Figure 6). Deshayes and his students were thoughtful, the Sitagroi team had many questions, and Renfrew was clearly skeptical. However, Marija was certain of her interpretations and elated by the richness and variability in the assemblage. Work at Sitagroi closed after the study season



Figure 5. Marija Gimbutas (left) in 1968, overseeing an excavation unit at Sitagroi. Personal archive of the author.

of 1970, leaving Marija with an impressive corpus of more than 200 figurines, which she published in the first Sitagroi monograph. They formed an important part of her thesis on an Old Europe pantheon of gods and goddesses.

The radiocarbon measurements indicated that Middle Neolithic occupation at Sitagroi and Obre partly overlapped, but the Early Neolithic was not well represented. Marija hoped to rectify this with another excavation, and by the time the second season at Sitagroi was under way, in 1969, Marija and Milutin and Draga Garašanin (in cooperation with the Stip Museum) were awaiting a permit to open an Early Neolithic site south of Skopje. Eugene and Anna Sterud, veterans of Obre, worked at Sitagroi for a few weeks, until a telegram with the permit arrived. All lodged in the hamlet of Anza; Sterud set up the fieldwork, as he had done at Obre, and directed the first season. The Yugoslav team, under the Garašanins, established a separate but equal dig. Eugene Sterud's responsibility to the Obre publication was considerable, and he chose not to continue as field director during the second season, in 1970, which exposed Early Neolithic levels. Its corpus of figurines and pottery was of particular interest to Marija. She found a subsistence pattern based on the domestication of plants and animals at all three sites, with specialist crafters, trade or exchange of raw materials, and only limited hunting and gathering. Many classes of pottery and figurines of humans and animals, both natural and schematic, were recovered at all three sites and were ubiquitous at two. These sites underlined the meaning of Old Europe, only to be strengthened once the earth was moved at Achilleion in Thessaly, which turned out to be Marija's dream excavation.

ACHILLEION AND SCALORIA CAVE

Achilleion is a low mound in the eastern plain of Thessaly near the town of Farsala in Greece. It had been explored by Dimitrios Theochares, who reported evidence of aceramic levels. This intrigued Marija, because such a finding suggested that the lowest levels of the mound would contain a prepottery settlement. In none of the excavation squares was this expectation fulfilled, however. Marija wrote frankly in the excavation monograph that the earliest levels represented a "full-fledged Neolithic culture with proto-Sesklo pottery." In synergasia with Theochares at Achilleion work began in the summer of 1973 and continued in 1974, although the Greek political situation truncated both seasons. Nevertheless, excavations revealed a rich sequence of Sesklo painted pottery from the Early to Middle Neolithic, plus an extensive database of floral and faunal remains, significant evidence of architecture, and the ubiquitous tools of bone and stone. The obsidian indicated trade exchange down the line with with those who controlled this resource on the Cycladic island of Melos. Also recovered were hundreds of figurines in context, which Marija published fully in the excavation monograph. Marija had long been persuaded that the nonrealistic shape and modeling of the so-called Vinca figurine heads represented facemasks. Among the Achilleion finds were several that fit this category, including a tiny mask set on a stand (Figure 7). Because of these hundreds of figurines, the economic data, and considerable comparanda from her own and other chronologically analogous sites, she believed that her ideas on the existence of an Old Europe and its prehistoric cult had incontrovertible support.



Figure 6. The seminar in Sitagroi village in 1968, presented by Marija Gimbutas and attended by members of excavation teams from both Sitagroi and Dikili Tash. Personal archive of the author.

After their serendipitous reacquaintance (both were at Harvard in the 1950s) at a conference in northern Italy in 1972, Santo Tiné of the University of Genoa invited Marija to visit sites on the Italian Tavoliere Plain. She noted that the shapes and incised or painted surface designs of the Neolithic pottery were reminiscent of Old Europe pottery. Tiné had explored the lower chamber of Scaloria Cave in 1965 and knew from an earlier reports of the archaeology of the upper chamber. In close cooperation, Marija and Tiné initiated the bilateral Tavoliere Expedition, which included two excavations: Lagnana da Piede (with James Mallory as field director; Mallory 1989)—one of the hundreds of *villaggio trincerati* (entrenched villages)—and Grotta Scaloria in 1978–1979 (Figure 8). In the latter, human remains representing some 300 years were recovered from the upper chamber, along with pottery, stone and bone tools, and evidence of fire. Tiné described the findings in the lower chamber as "representing a cult of water." Based on the calibrated dates and the variability in pottery, the cave was thought to be in use between 6500 and 3500 B.C.E. In 1980, in Manfredonia, Marija, Sándor Bökönyi, and I, together with students and volunteers, studied, tabulated, drew, and photographed materials from the cave. A preliminary report of the first season was published by the field supervisors, but Grotta Scaloria was the only excavation that Marija did not publish fully before her death in 1994. When I visited

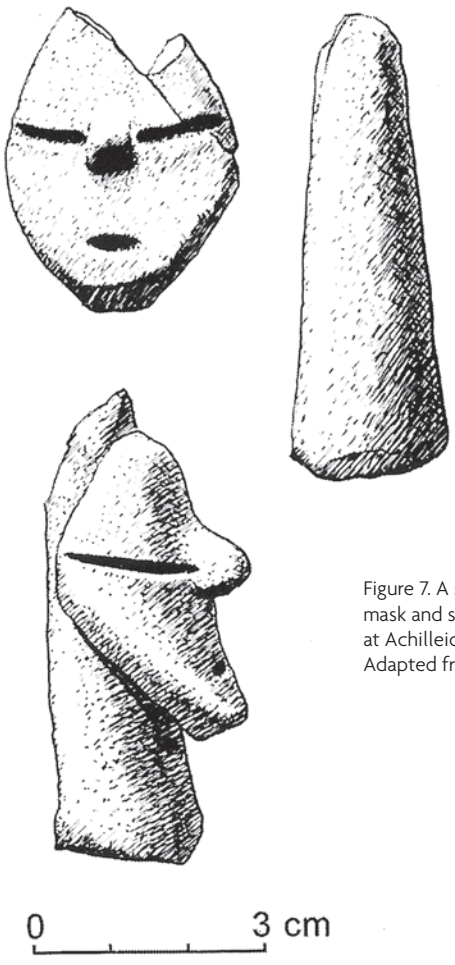


Figure 7. A small clay figurine mask and stand recovered at Achilleion in 1973. Adapted from Elster 2007.



Figure 8. Marija Gimbutas in 1978, outside of the entrance of Scaloria Cave. Personal archive of the author.

her at UCLA Medical Center toward the end and we talked about her life, she smiled and said: "Good, but promise me that you will see Scaloria published." I promised, and it is forthcoming in the spring of 2016 (Elster et al. forthcoming).

OLD EUROPE

At conferences, in journals, and in *Gods and Goddesses of Old Europe 6000–3500 BC: Myths, Legends and Cult Images* (1974), using voluminous data sets from dozens of prehistoric sites, Marija introduced the culture of Old Europe: Neolithic and Chalcolithic southeastern Europe, centered in Greece and the Balkans but extending east and west to the Adriatic and Black Seas. Ceramics included highly polished vessels, with lively bi- or polychrome painting, or with white infilling enhancing the incised or excised designs, easily taken as products of accomplished potters. Also in these assemblages were seals (*pintaderas*), human and animal figurines, and ornaments of shell and bone—artifacts representing technology and symbolism. Marija described Old Europe as a wide region of agricultural settlements with a social organization. She observed occupation over millennia with debris building up over time, forming the mounds (*magoulas*, or tells) described in the literature. She further postulated the absence of strife because of the paucity of identifiable weapons and fortified settlements and the overwhelming presence of figurines that she identified as female and indicative of a peaceful matrifocal social structure. Old Europe is one of Marija's most original contributions, which, because of the contention surrounding her pantheon of gods and goddesses, was at first met with muted interest. But the geography and economy, if not the social organization, have been accepted. *The Lost World of Old Europe: The Danube Valley, 5000–3500 BC* is the title of a large illustrated volume and catalog to an exhibition in New York of artifacts loaned from Romania, Bulgaria, and Moldova. In his well-received publication *The Horse, the Wheel and Language: How Bronze Age Riders from the Eurasian Steppes Shaped the Modern World* (2007), David Anthony uses the term *Old Europe* to describe what he calls a proto-civilization: Neolithic and Chalcolithic Europe and the Balkans before the Bronze Age—a description that would have satisfied Marija.

THE PANTHEON

Marija named the small sculptures of humans and animals and identified them as representing a prehistoric cult of goddesses and gods of Neolithic and Chalcolithic Europe and the Balkans. In one fell swoop, she brought the variability of Neolithic art front and center, a lasting contribution that has produced some fascinating work, unraveling decades of goddess scholarship (Talalay 2000), enlarged now with a very new critique (Lesure forthcoming). A polyglot and prodigious scholar, Marija had remarkable command of the data. combined with a brilliant ability to synthesize and create an entire pantheon. *Gods and Goddesses* (1974), with the title reversed for the second edition in 1982, was followed in 1989 and 1991 by the large goddess volumes (Gimbutas 1989, 1991). Further,

Marija tabulated, correlated, and "deciphered" the many incised or painted markings and designs on pottery, figurines, and *pintaderas* as an Old Europe proto-script linked to the pantheon. The nature of the pantheon, the proto-script, and its widespread influence diachronically and synchronically are all presented in a series of articles and in the richly illustrated volumes. They are written in full confidence, without any of the ambiguity that often surrounds the discussion of cultic practice in prehistory.

Colleagues were at first mute when she offered her daring interpretations of the role of the ubiquitous clay figurines and the proto-script. Here was one of the leading scholars of prehistoric southeastern Europe, with enormous control of an international database, publishing her ideas on a prehistoric pantheon and its role in religion and symbolism, an agenda with which prehistorians at that time were most reluctant to engage. Her vision was furthermore expressed in a kind of storytelling, even though it focused on excavations and hard data; the prehistoric world was presented in a powerful narrative, complete and unquestionable. Archaeologists had difficulty accepting Marija's interpretation of Old Europe's matrifocal social organization and the *longue durée* that she postulated for the pantheon. Prior to her lectures and publications, the figurines had been reported on, but this was received solely by the archaeological community. The supreme irony, not lost on some of her critics, is that Marija forced her constituency to deal with this material—if first as a critique—at a critical moment in social history. Her writings coincided with the rise in feminist thought and famously intersected with popular culture, borne aloft by a group of feminists who found in her writings what they had sought, proof that God was a once woman and that women were once in charge, or at least equal partners with men. Reviews by archaeologists of the first goddess volume were critical; with its reprinting, they remained critical but became increasingly analytical. Scholars of prehistoric religion embraced her work, as did some feminists. See Lesure (2011; forthcoming) for a clear, current, and concise review of decades of goddess studies and an approach to interpreting these figurines—weighing context and comparisons—that holds much promise.

THE TRANSFORMATION OF CULTURE

Marija published on the Kurgan culture, the PIE speakers, and their homeland in a series of data-rich, intellectually provocative papers and articles in which she synthesized evidence from historical linguistics, archaeology, mythology, and folklore. Her thesis was that the PIE Kurgan culture was patriarchal, warlike, pastoral, and horse breeding and lacked a pantheon, whereas Old Europe was matriarchal, peaceful, and agricultural and had a pantheon. She viewed the meeting of these two groups as catastrophic and transforming Old Europe. Its florescent Chalcolithic culture was annihilated, and in its wake were the seeds of the Indo-European patriarchal society and the languages, social structure, and proclivity for war that we observe today. Indeed, the end of the Chalcolithic and the beginning of the Early Bronze Age in Greece and the Balkans present dramatic changes in the material record (sites burned, abandoned, and so on). Marija's explanation for this transformation of culture was challenged, but recent work by David Anthony (2010) recognizes her research with respect and presents a more nuanced and detailed evaluation of the transformation.

What some archaeologists find especially galling is that Marija's model of female control (Old Europe) being replaced by male control (Indo-European) had enormous influence. Marija Gimbutas is a name long known and respected beyond archaeological circles; the goddess volumes were both beautifully produced and accessible to a wide audience, thus hers has been the voice of authority. Still, the critique is fair, because in prehistory, just as in modern history, social control and negotiation of power were much more ambiguous than would be allowed by claiming that matriarchy was simply usurped by patriarchy. Further, recognition of this ambiguity is more likely to advance the study of a prehistory populated with individuals of all ages and sexes rather than just two in a gendered duality. Feminist archaeologists have particular problems with what may be perceived as the hijacking of feminist interests in the past and their harnessing to a particular interpretation, which they find both poorly supported by the evidence and problematic in its implications for feminist theorizing.

There are also problems with the version of womanhood that the goddess interpretation offers. First, it is a unitary vision of women that conflicts with much of recent feminist theorizing, which instead emphasizes the differences among women as much as their collective differences from men. Second, it is a vision of women concentrating on biology (sexuality, reproduction, and motherhood), which historically the women's movement has seen as limiting. Admittedly in the goddess version, biological aspects of womanhood are glorified and considered a source of power,

which has to be better than the androcentric version, which sees them as limiting and a source of weakness. Nonetheless, most feminists, including feminist archaeologists and scholars in other fields, would be reluctant to return to an understanding of women defined largely as wives and mothers, even if this allowed them to be goddesses.

I think these critiques are quite important, but what also comes through in some of the critical articles is a certain anger with Marija's refusal to back down or to see the wrongheadedness of her goddess theories. Her critics were impatient because she did not realize that she was not advancing the cause of feminism. However, Marija was a product of her generation and education, and she hardly noticed the change in social thought, which took decades to be adopted and understood. Marija was paradoxical in a sense: when archaeologists disagreed with her concerning the homeland of the PIE speakers, the Kurgan culture, the proto-civilization, or the destruction and transformation of Old Europe, she responded in an academic fashion, pointing out the critics' errors and introducing new evidence and arguments; she did not back down. But with the pantheon, she believed her critics to be not only wrong but also guilty of personal jealousy. Such an uneasy interpretation of criticism left her rather vulnerable, and I think it was difficult for her to refuse the outpouring of enthusiasm and support, and indeed adoration, from the goddess groups. In the last years of her life, Marija seemed to regard all her archaeological challengers and critics with great equanimity, for she had moved on to her final abiding interest, archaeo-mythology and the respectful audience of new age feminists, folklorists, and mythologists.

Marija's death brought about a virtual industry of memorials in newspapers and scholarly journals; a joint memorial was held at the Fowler by the Institute of Archaeology and the Indo-European Studies and Slavic Studies Departments. In Lithuania, an extraordinary two-day state funeral was held in Vilnius and in Kaunas, where a main thoroughfare was renamed in her honor. In the autumn of 1997, a conference was held at the Pacifica Graduate Institute to honor her work with the goddess groups, and the University of California Press posthumously published an edited volume of her last writings (Gimbutas 1999). Initiated before her death, a video documentary of her life, produced and filmed by a Canadian documentarian, was premiered at a conference held at UCLA, cosponsored by UCLA's Center for the Study of Women. There is no doubt that her ghost has indeed cast a long and deep shadow.

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Ran Boytner (right) and graduate student Ben Nigra (left) flying a kite to take aerial photographs in Tarapaca Valley (Chile).

Out of the Classroom and into the Field: Ran Boytner and the Field School Revolution

by Ben Nigra

IN MAY 2015, *BACKDIRT* sat down with Ran Boytner, UCLA alumnus archaeologist and director of the Institute for Field Research (IFR). After falling in love with South America on an extended backpacking trip, Ran became a graduate student at UCLA, where he conducted research on Moche textile production, colorants, and identity making. He later directed major research projects in northern Chile and southern Peru. Today, as director of the IFR, he is a leading proponent for fieldwork abroad as part of a well-rounded undergraduate education, insisting that the everyday challenges of fieldwork help to build tomorrow's innovators and creative problem solvers.

Ben Nigra: Ran, thanks for sitting down with *Backdirt.* Today archaeologists from around the world interact with you as the director of the Institute for Field Research, but once, not too long ago, you were a UCLA graduate student. Let's start at the beginning. Why did you decide to pursue archaeology as a career, and what were the formative experiences that led you down this path?

Ran Boytner: In terms of what brought me to archaeology, I never wanted to be an archaeologist. I wanted to be a firefighter all my life. But, as you know, I grew up in Israel. By the time that you finish your service to your country, your military service, you are pushed out to go someplace around the world. Typically it's either Southeast Asia or South America. Israelis usually go in groups, typically the same groups they served with in the military. They often travel around the world and try to reconstruct some kind of "traditional pathway." It's very Amish-like, and I

did it. The only problem was that I fell in love with South America. I backpacked in South America for two years, and when I was done, I wanted to go back. I thought the best way to return was to become a tourist guide.

Now in Israel, you can't be a tourist guide without getting a bachelor's degree— it's a minimum requirement. I went to the university, and they asked me for a major. The Israeli system is very different than the American system—there is no GED [general education degree], and you declare your major before you enter, similar to the European system. So I said, "Well, I guess anthropology," since I planned to be dealing with living cultures. Now in Israel, archaeology is part of the humanities. It's Old World, so there are standalone departments of archaeology. I looked at anthropology and said, "I want anthropology." And I was told, "You cannot have a single major. You must have a double major," because that's how the system works. So I looked at the book with all the majors, and archaeology was the first one listed. It looked easy enough, so I just took it! [laughs]. Three weeks into the academic year, I was completely hooked. All the way through. And that was it!

BN: What brought you to UCLA?

RB: When I applied to UCLA in the 1990s, there were still three active faculty working in South America. But by the time I got here, there was only one. They were all shifting out because of the civil war. Chris Donnan had just returned—I think it was a year or two after the attack at Pacatnamu. Tim Earle also decided to move away from Peru, and at the time I think he was moving toward Denmark. The Mantaro project was attacked, you know, and as I recall two of their project members were executed. I am not sure that this is a fact, but that's the story. But that's why I came. There were three active faculty members when I applied, and it seemed to me that this was the best place, at the time, for doing archaeology.

BN: You had traveled extensively throughout the Andes, so I imagine you had experienced a bit of Andean archaeology before deciding to take it on as a career?

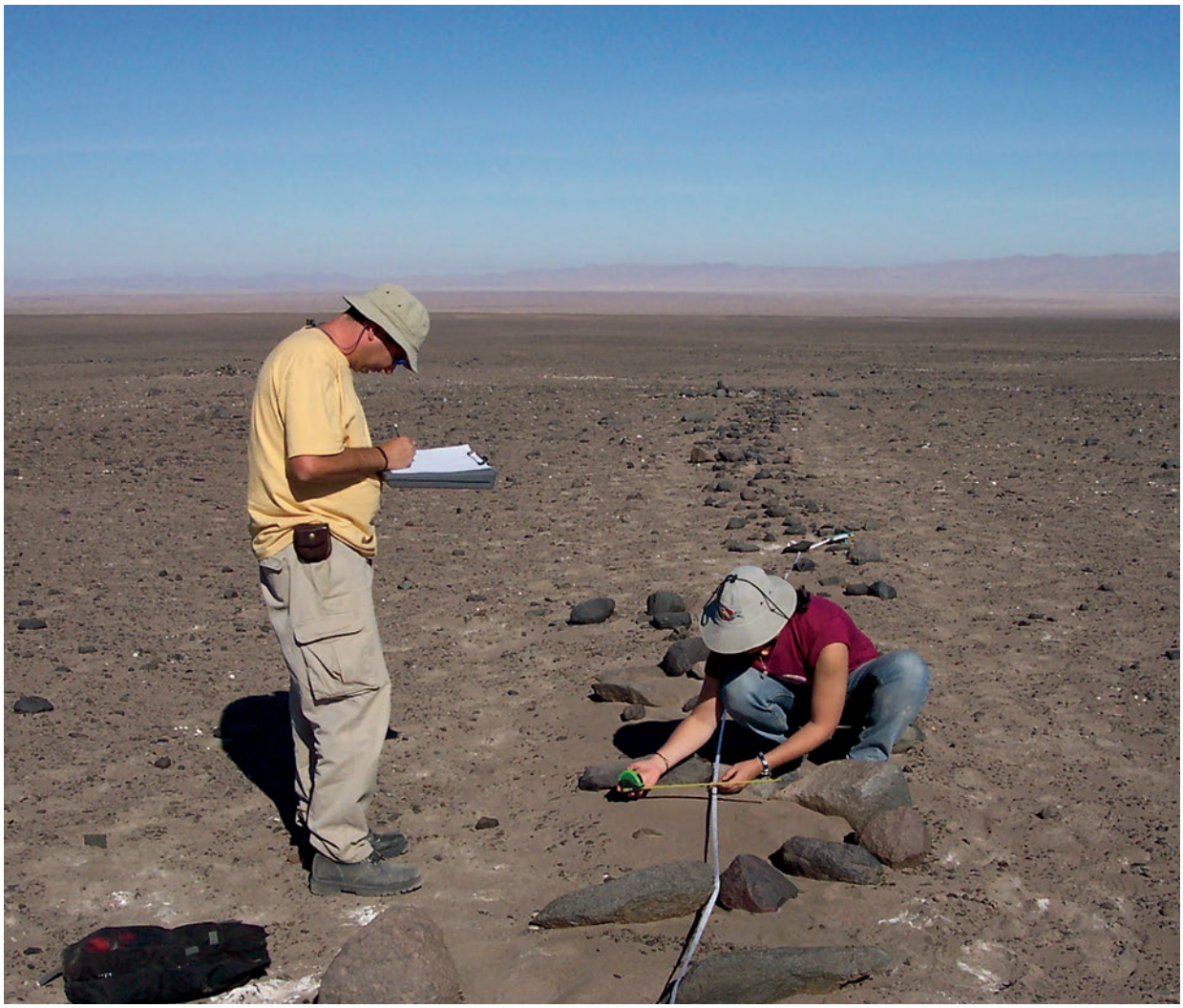
RB: I had been around, but not as an archaeologist. I was backpacking. You aren't trained to see the kinds of things archaeologists see. There wasn't a lot of literature, and it was before the Internet. I don't know if you or some of your readers will remember a time before the Internet! [laughs]. The only way to get knowledge was from books, and in South America at the time, there were not a lot of libraries. So, as one traveled through South America, there was very little information outside of the few guidebooks that you could buy in some places, and there was very little information at all about archaeology. It was a very different era. I didn't prepare myself to be emotionally overwhelmed by the archaeology, by the landscape, and by the people—especially the way it happens in the Andes.

BN: Do you think that the experience of today's young wayfarers is very different than yours, now that people can simply Google "What to do in Cuzco" and make all their arrangements online without interacting with other human beings?

RB: It is authentic to this time and age. We live in an information-rich era. I think maybe what you're asking is if today's experience is more or less in depth. There is something about actually *doing* things rather than reading about them, even if it's online, that is a little bit different. I grew up in a country that sent its young people abroad for long periods of time. Today very few people take the time to travel around, to take a year off or even six months off and just go—many Andeanists in this generation don't take the time to travel around the Andes and visit all the major sites, because it takes a lot of money and a lot of time. And people don't have the time. I don't know if that is good or bad. But I think that there is something about traveling around, walking around places, that allows you to connect things better. I don't want to pass judgment. But I do think there is some kind of added quality if you take the time, take the three to six months to travel and visit the central Andes, you know, Ecuador, Peru, Bolivia, northern Argentina, northern Chile—just to go and see all the sites.

BN: Tell me a little more about your research before you became the creator and director of the IFR, and some of the questions you were pursuing.

RB: For my undergraduate degree, I was studying very traditional Near Eastern archaeology, which is cultural-historical. And even though it was interesting, it was not intriguing. I remember when I first read Lewis Binford's "Archaeology as Anthropology" and it just knocked my socks off. How interesting it is to focus on change! I did this reading on my own and tried to take classes in Israel. But outside of the prehistorians, no one was able to talk about it in any comprehensive way. The 1990s was one of the most fascinating eras in archaeology because this was a time when the struggle between processional and post-processual archaeology was playing itself out on campuses across the Unites States. And I was very lucky to be on a campus [UCLA] where it was not a war but a debate. It was always kept as a debate, and



Ran Boytner (left) and a field school student recording a geoglyph in the Atacama Desert (northern Chile).

it was between the huge names that were there at the time—Earle, Hill, Sackett, etc. Richard Leventhal was on the cutting edge of post-processual archaeology. This was a fascinating time to be around. And I was always interested and got pulled in under the question of change and why it takes place.

As I did my work, I sort of fell into textiles, because when I started to do my research, I couldn't go to the field. It was too dangerous because there was a civil war. I had to work on a collection, and I was offered the botany, the zooarchaeology, or the textiles, and I randomly chose the textiles. I was never interested in textiles per se. I was interested in them only as a vehicle to understand change—why change takes place, why people change, and especially how people change how they view and feel about the world. So focusing on identity was really important to me—how people really see and view themselves.

BN: More recently you've shifted your focus toward understanding the positive impact that participation in archaeological fieldwork can have, especially on student populations. What made you decide to pivot in this direction? Is there a link between your experiences in the field and your transition into fieldwork impacts on undergraduates?

RB: I started to do field schools in 2006. I was asked to run a project in Chile as a field school and then was told to expand that to more than one field school. So I started to travel around the world, now as a Ph.D. in archaeology, looking at archaeology from a global perspective. I sort of drifted outside of the questions about the past and into the questions about the present. For example, what impact does archaeology have on people in the places where we work? What does archaeology have to give back, and what impact does it have on the students and folks that are practicing it? I started to look at archaeology as an industry. I was really fascinated by the fact that there is very little literature about archaeology as a profession, especially its economic impacts and its behavioral impacts on the ability of folks who are going through the process to take it and utilize it for other things. It was fascinating to me that 90 percent of all the folks that go through field schools never end up in

archaeology. Most archaeologists felt that this is dead weight—that this is part of the evolutionary process of selection [laughs] and only those that are selected for should be considered and we should focus on them. I always felt that this is the wrong way of looking at it. Because the 90 percent that are coming through, they are really important. I wanted to focus on that and had been trained extensively by my faculty and mentors to be quantitative in anything that I do. So I sort of shifted my emphasis. Basically, I was asking the same questions—how does social change take place and why—but instead of looking at the archaeology of people in the past, I was looking at archaeology and people in the present.

BN: You've told me many times before that fieldwork is a powerful and formative experience for young people, even when they don't plan to become professional archaeologists. What kind of skills and experiences does fieldwork promote in tomorrow's leaders and innovators if they choose not to become professional archaeologists?

RB: At the IFR we have started a long-term study to try to quantify that impact. It will take 10 to 20 years to really measure, but we're committed to doing that because it's extremely interesting. But, for now, it is very important to state that there are no data available to answer that question. Any assumption that I make here is in the realm of hypotheses and anecdotal evidence, but not on the level of measureable data. Some work has been done by British folks—interviewing students who have gone to field schools, interviewing employers, etc.—but not with very good methodologies.

I think the impact of field schools is related to labor—most of us, especially in the West, never engage in manual labor. The most that we'll do for the rest of our lives is sit in a chair and type things on computer screens or on keyboards, maybe talk to computers, but never engage in things that combine both intellectual challenges with physical challenges. So I think that the first thing field schools do is take everybody far outside of their comfort zone and make everybody understand how physical work and intellectual challenges fit together. I think that this alone is a very transformative experience, very much like the way that boot camps are transformative experiences. They don't necessarily teach you the skills. What they do is push your limits. That's the first thing. The second thing that I think is happening is that archaeological projects are typically limited in time and resources, and there is a very high ratio between faculty and students. This is the most effective way for people to learn—a mentor–mentee relationship. You live, work, eat, and conduct research with your faculty. Everybody shares the same space for a prolonged period of time, typically five weeks, and that creates a true community of scholars. Most of the learning is not done through traditional teaching but instead through leading by example, by seeing how all the processes work together. This is true especially in good projects where the faculty are interested in propagating *how* we do the research, not just the substance of the research. Everybody becomes involved in the day-to-day operation of the project.

BN: Over the past four years, the IFR has grown to include dozens of field schools represented by some of the world's top archaeologists. Hundreds of undergraduates have now passed through IFR programs. Tell us about some of the challenges that the IFR faced in expanding its scope to become the institution that it is now, and tell us about some of its greatest milestones.

RB: Let's break it into elements. First, there were three initial challenges. The first was to create credibility. What is the IFR? How can the IFR survive if nobody knows what it is? It is just a name I invented. A name on a piece of paper. So how can we create credibility and legitimacy to become a viable organization capable of attracting both faculty and students? One way to address this challenge was to recruit a large board of directors composed of very well-known archaeologists.

The second challenge was guaranteeing credit units for students. I do not want to run an organization that does not provide students with credit units. We were initially able, through really great work by Cathy Costin at Cal State–Northridge, to create a relationship with that university. After the first year and after really long and very hard work by Costin, we secured eight semester credit units for students. It was a lifesaver for us. But it was very expensive. Cal State–Northridge did not agree at the time to provide financial aid to students from their own resources. So we got the credit units, but the costs were beyond the reach of most students. We needed to do something about it, and we were very lucky that Connecticut College came through, allowing us to give credit units at about 20 percent of the cost of what Cal State–Northridge wanted. It was thanks to the very hard work of Anthony Graesch that we could get credit units from Connecticut College at a very reasonable price. We could then transfer those savings to students. And so that was challenge number two.

Challenge number three is that the IFR is the

first of its kind—the first time an organization like this has ever existed. It was very dangerous that the community of archaeologists might think that this was a "business." Initially, a lot of people started to talk about the IFR as a business, or my business, or someone's business. Most faculty and most scholars in archaeology do not like the idea of a private business in archaeology. It was a big challenge to make sure that the universe understood that this is not for profit. It is not about making money. Rather, this is an organization that is trying to contribute, to help and support field schools in the *longue durée*, to expand their capabilities and create economies of scale that can benefit both faculty scholars and students. Challenge number three is a big challenge, because in academia everybody waits a long time before making decisions, before passing judgment. It is still very much a challenge.

BN: How about some milestones? What do you think of as real turning points in the success of the IFR?

RB: The first milestone was just to create it. It was created in March 2011. The fact that we were able to get the original 14-person board that we had, that was a major milestone. A lot of people put their faith in the IFR without knowing anything, just believing in the idea. That was a major milestone because it was not easy to convince so many people to come and participate. The second milestone was to get the starter funding. To bring a board here for a meeting, to fly them all here, to feed them, to house them—it's tens of thousands of dollars. So we needed to find someone who could invest this kind of money. And I was very lucky to find somebody like that. It was a big challenge to find our first donor. But he's very committed. His name is Yuval Bar-Zemer, and he's a visionary developer in downtown LA. He was the first funder of the IFR and still sits on the board. He recently donated to us a lot of money, and he is a very active board member that allows us to benefit both from his business acumen, from his resources, and from his network.

BN: My last question for you: I know that you are busy operating the IFR today, but if you could start a new research program anywhere in the world on any subject, what would be tomorrow's hottest archaeology?

RB: I don't think that it is a place, in a geographical sense, but a place in the mind. I think the hottest stuff in archaeology right now, what fascinates me, is coevolution—the relationship between biology and culture and how it really works. Especially how it works with the dramatic changes in environment that took place since the origins of agriculture. So if you ask me what is the hottest question for the archaeology of the future, it is the question of how our genes coevolved with culture. One accommodating the other, allowing us to become the most dominant species on the planet, at least at this time.

Conversations with a Friend: Sonia Gottesman

by Ben Nigra



Sonia and Mike Gottesman in the 1990s.

SONIA GOTTESMAN IS A Friend of Archaeology, an avid volunteer in the UCLA Rock Art Archive, a longtime supporter of graduate student research, and a scientist at heart. She sat down with *Backdirt* to talk about her work in the archive, how a career in the aerospace industry influenced her approach to archaeology, and her adventures with her late husband and fellow Cotsen supporter, Michael Gottesman.

Ben Nigra: Sonia, every year I see you at SAA, watching student presentations. What's more, every year you provide conference travel funding to many Cotsen graduate students. It's really something. So first off, I want to thank you.

Sonia Gottesman: You know, I don't decide who gets the money, I just make the money available. So you've gotta be nice to all those other people! [laughs]

BN: I saw in an older Cotsen article, from 2008, which made its way onto the Internet that the conference travel grants for students were named the Michael Gottesman Graduate Student Travel Awards. Most of the students that are here now weren't here in 2008. Many of us didn't have a chance to meet Mike or to know him. So many of us benefit from that generosity. It is good to know what the roots of it are.

SG: He died in 2008, so that is why you never got the chance to meet him. If he had gotten out of the navy, and if he was slightly older, he would've become a stockbroker. As it was, he was too young to become a stockbroker, so he went into aerospace. He ultimately became a project manager for Hughes Aircraft Company. He worked at Litton and some other place before he ended up at Hughes. I spent most of my career at Hughes. I can't tell you how many years [laughs]. Hughes is the kind of company where you go in as one thing and you come out as something else. You can work on a project, and when the project's over, you find another job with another company on a different project.

BN: Sounds like archaeology in a way.

SG: In a way. I suppose that's true.

BN: So how did you and Mike become part of the Cotsen community?

GS: Well, at Hughes Aircraft Company you could retire early, at the age of 55. By the time we were approaching that age, it was starting to fall apart. The [Berlin] Wall had fallen and defense budgets were falling, and it was a function of how long could we hang on. Could we hang on long enough to actually retire? We did manage to retire by the skin of our teeth, but before we retired we both knew that we were living and breathing Hughes Aircraft Company. It was our whole life. And we knew we needed something else when we retired. Michael started taking classes here at UCLA Extension, in archaeology, and as he told the story, I decided that he was having too much fun and I started joining him in the classes. My first class was so frustrating because the language and the jargon were totally different from aerospace, which has its own jargon.

BN: I can only imagine.

SG: You're trying to get a good grade in the class, you're listening to the lectures saying, "Okay, I can handle that," but the reading was really crazy, and the way that references have to be done in archaeology is just different. Anyway, I survived, and here I am. That was how we started. We both joined the Friends of Archaeology, and once we retired we were drafted into the labs here.

BN: This was when about?

SG: Oh gosh . . . well, we retired in '93. My first assignment was helping Marilyn Beaudry-Corbett in the publication lab. She wanted to clean out some files. But I had my eye on the rock art lab and I finally got in there.

BN: What is it about rock art that attracts you?

SG: I used to go to Sequoia every summer with my kids, as a single mom for a while, and the only thing we could afford was a tent cabin [laughs]. The first rock art site I can remember seeing is Hospital Rock up in Sequoia National Park. It is a pictograph site, near a bunch of bedrock mortars, and it just grabbed me. That was a long time before the Cotsen. I was still working, for years and years. Once we got here I worked for Marilyn, and when that job was done, there was a place for me to go to in the archive. We were going through slides and photographs, and we did an evaluation of the quality of the material that was available. For example, was it fading? Did it have a north arrow? Little things like that. Having a scale in a photograph of rock art is important! [laughs]. At any rate, that was one of the first things I did. It took a lot of time and a lot of concentration, but we did it. Then Joanne asked me to work on the Robert Heizer material. First we looked at what was there to get an idea of how we were going to approach it. Gordon Hall helped to design an input screen and we just started working. We started to put the archive material into this database, page after page after page. Now, the database that was done before is obsolete. It got transferred to an updated program, and I'm going through page by page by page to do the tweaking necessary to make it comply with what we're doing. Not everything got picked up. I also correct typos [laughs].

BN: Were you an engineer at Hughes?

SG: No. I ultimately ended up as a procurement manager, and my most interesting assignment was the procurement of optical subsystems. Hughes was making things like laser range finders, optics for tanks, things like that, and so the optical assemblies could be pretty complicated, and the optical coatings on them were also very specific. You coat a lens to make sure as much light as possible gets through. In some cases you want that lens or mirror coated so that it will withstand a laser. Other coatings are put on—germanium, for example—so you can focus on the infrared spectrum. So there are all kinds of different optics. There are lenses, mirrors, prisms—little things that are cute and you have no idea what they're for unless you're the engineer that designed them.

BN: Do you ever think back on some of the projects you worked on and think: I wonder if we could apply this to the world of archaeological materials?

SG: No, but the concepts I learned as a purchasing manager apply beautifully to archaeology. You have to understand a little bit about everything involved. As you know, an archaeologist requires certain knowledge of his own site—knowledge of the local ethnohistory regarding a site—and he also needs to know how to pull samples, for a radiocarbon date, for example. There are all kinds of samples and experts in all kinds of things: dating, the bone lab—those guys blow me away! They can look at a bone and determine not only that it's a fish, but what kind of fish. For example, we came back from SAA, and before we came directly home, I was with some of the ladies from the bone lab and they dug up a fox! [laughs]. It had been buried two years ago, and they dug it up and cleaned it up, and now it's in the lab as a comparative sample. So, I mean, you have to know the right leg from the left—from all those bones you can tell the minimum number of individuals from a site, so it's important. Then there are the lithics and everything else to consider!

BN: And so as a project manager, you have to be the person who takes all these threads from all of these different endeavors, pull them together, and understand the big picture whole.

SG: Exactly. The other thing that happened as we moved from aerospace to archaeology was that we exchanged one set of politics for another. Aerospace—cutthroat. Academia—which is worse? Who knows? [laughs]. But then because we don't have a dog in the fight, we aren't making a living out of this.

BN: Was Mike able to translate his engineering expertise into archaeological research?

SG: Michael took an interest in obsidian hydration dating. The concept there—Kristine [Olshansky] can tell you—is that obsidian is a glass that, over a long period of time, absorbs water. The amount of water absorbed can tell you how long it has been since that thing was flaked, since that one surface was exposed. Michael wanted to do an experiment to see if he could force obsidian to hydrate. He borrowed a "bomb" [a heated pressure chamber] from the Chemistry Department, set it up in the garage, turned it on, and walked away. A week later my car was covered in oil! I guess it sort of leaked. I called him my own personal mad scientist. He was a very intelligent individual, and he really had a great sense of humor. He would try anything. After he died, Chip suggested that the folks here that cared about it would make contributions to a fund, which is the precursor for what you were talking about, to getting you guys to get to go to conferences. Well, I thought that was a grand idea, and I started supporting it in a small way, and then Lisa Mohan came to me and said, "If you were to set up a fund at the $100,000 level, that would allow us to do a lot," and as it happened, Michael had wanted to set up something called a Donor Advice Fund, and I had enough to set up that fund, so we were good to go, just like that!

BN: How did those experiments turn out? Was he able to force moisture into the obsidian?

SG: I think perhaps so, but it would have been a very small amount. The hydration process generally

takes years and years and years, requiring moisture, heat, and time. Ask Kristine. She'll tell you about it. Mike was also president of the Friends of Archaeology for a while. He was a very smart man with a terrific sense of humor.

BN: Let's talk about fieldwork. Can you tell us about some of your favorite experiences?

SG: I had the field class after I had taken Glenn Russell's lithics class. We were walking a site, looking down and seeing lithics, understanding what we were seeing. And Ben, it was so cool! Like, wow, look at that! We also did a couple of different university sessions where you pay to go work for free. One of them was on Inishmore, Ireland. For them, I did drawings. I also did illustrating in Peru.

BN: Where in Peru?

SG: Glenn Russell's site at Huanchaco. The interesting thing about being in the field, I remember Glenn chatting with some young people . . . they were *huaqueros* [looters]. They thought we were out there to steal the good stuff. Well, you know how in Peru you can't export much out of the country. You just don't. You're not there to find gold mirrors; you're there to find out how people lived. But some people don't understand that. Because they're out there to find a pot that they can go and sell, to make money. It's kind of sad.

BN: Tell me a little more about Inishmore! That sounds lovely.

SG: I worked as an illustrator in Ireland for Sinéad Ní Ghabhláin [Ph.D. UCLA 1995]. She had rented a house and ran three sessions of two weeks each. We were there for the second session. So we show up [laughs] and there were . . . a few good experiences. We were going to an island, and Mike and I spent a few days in Galway first. Then we met the group to catch a ferry to go to Inishmore. Michael left a bag behind, and that had my laundry in it. Fortunately someone had missed their plane and was going to come along later, so we asked that person to bring our wet laundry. So we hung up the wet laundry in the landlady's yard next door. And the landlady had a horse, or her son had a horse, which they used to run tourist carts on the island. And so Jack the horse was out there all day with my wet laundry. It was a lovely place, right there on the ocean. And the site we were working on was an old church—a ruin, a pile of rubble really—and every day the cows would go out and come back, watching what we were doing [laughs]. I was basically illustrating walls and structures while I was there. It was kind of a wet, rainy site, but those are the breaks. We had to cook. Everyone took turns cooking, and since Mike liked to cook and I didn't mind cleaning up, I told him you can take my turn cooking and I'll clean up. Every day someone would go to the market and see what was available, and that's what we'd cook for dinner. I think my most memorable field experience was on Inishmore—I really loved the place. I don't know exactly what it was, but I loved the place.

BN: If you could get on an airplane bound for any archaeological destination in the world, where would you go? What's on your bucket list?

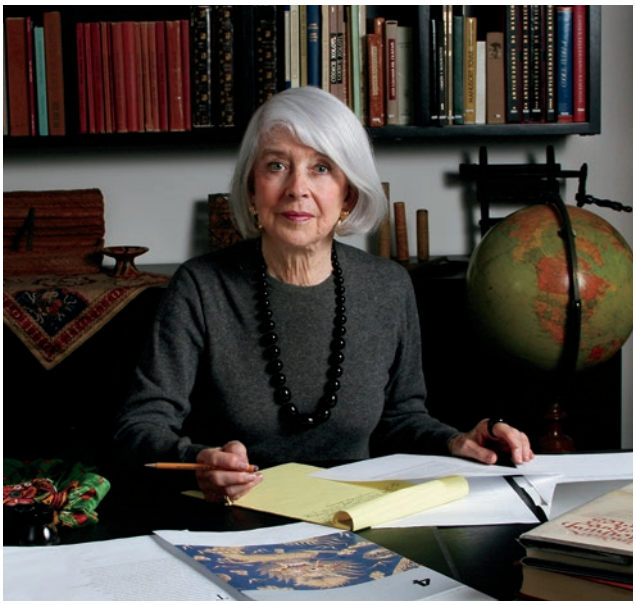
SN: After we retired and before we got heavily involved at the Cotsen, I became a whale-watching naturalist. And so my bucket list includes sperm whales and right whales [laughs]. I've seen humpbacked and fins and the big guys, the blues. But I want to see sperm whales. Right whales are of course endangered, and in fact whale watchers don't go after right whales because they just want to leave them alone. Sperm whales tend to wander, but there are a few places where they're widely available. One of them would be off the Azores. Another would be Tasmania.

BN: Maybe we can find you some archaeological site to work on while you're there?

SG: Well, I'm sure there are some good combinations. If I didn't have to mess with this thing—I'm referring to my walker—the Heizer file has some pictures of Erle Stanley Gardner going down to Baja. Now, he was interested not only in the gray whales that go to the lagoons in Baja, which is a fantastic trip, but he also visited the big murals, the great murals out there. Now that's a combination of whales and murals that would be alright with me, if I didn't have to fuss with that [points to the walker]. And, of course, in the archive, we not only have that picture that shows Erle Stanley Gardner sitting on a mule in front of a helicopter. Is that cool or what! The archive has a whole collection about the Baja murals, not from Heizer but from another source. So there's a lot of stuff in that archive that I'd love to see. If you really want a pure archaeological answer, I'd love to see Petra.

BN: Sonia, thanks again for sharing your stories and for supporting graduate student research.

SG: Well, we both felt if there was something we could do to help students, we'd be happy to do it. I mean, let's face it, we get some pretty great students here. This is an elite place, and the best and the brightest show up. It's nice! You have a lot of other folks in here who have also provided support. Talk to any number of the volunteers. They've had long careers, and they've been well prepared for their career, and they're just not ready to pack it in!



OBITUARY

Patricia Reiff Anawalt

March 10, 1924 – October 2, 2015

by Hans Barnard

AFTER A VERY BRIEF ILLNESS, Dr. Patricia Reiff Anawalt passed away on October 2, 2015, at the age of 91. Patty was director emerita of the Center for the Study of Regional Dress, an endowed research and teaching facility in the Fowler Museum, and was an academic affiliate of the Cotsen Institute.

During her long and active life, Patty published four books and more than 60 articles in peer-reviewed journals and special-interest magazines. Her most influential publication is the ethnographic study *The Worldwide History of Dress* (Thames and Hudson, 2007), which is available in Arabic, English, French, German, Italian, Japanese, Korean, Portuguese, and Spanish. Patty served on the President's Cultural Property Advisory Committee from 1984 to 1993, held the Archaeological Institute of America's Charles Eliot Norton Memorial Lectureship in 1996, and served on the Villa Advisory Council of the J. Paul Getty Museum. She was a fellow of the Society of Antiquaries of London and of the Costume Society of America. Her honors included a 1989 John Simon Guggenheim Memorial Foundation Fellowship, the AIA 1994 Outstanding Book Award for *The Codex Mendoza* (University of California Press, 1992), five National Geographic Society grants for ethnographic fieldwork in Mexico, two National Endowment for the Humanities grants, two Ahmanson Foundation grants, and five UCLA grants.

Patty received her Ph.D. in anthropology from UCLA in 1975 and later worked on Aztec archaeology and history. Her main interest was the collision and mutual influences of native and Spanish culture and technology in the early 1500s. In 2000 she succeeded her husband as chair of their family-owned lumber company, founded in 1923. After serving for 25 years as director of the Center for the Study of Regional Dress, Patty retired in September 2013. Her contributions to archaeology and the Cotsen Institute were many. She was a great scholar and friend and will be deeply missed.

OBITUARY

Michael R. Walsh

August 4, 1955 – July 30, 2015

by James E. Snead and Robert W. Preucel



Mike Walsh relaxing in the field (1977).

MICHAEL R. WALSH, PH.D., RPA, alumnus of the Department of Anthropology at UCLA, and a research associate of the Cotsen Institute, passed away in Simi Valley on July 30, 2015. He was 60 years old.

Mike was born in Flushing, New York, on August 4, 1955. After a brief career in minor-league baseball, he started college in the mid-1970s, completing all his academic degrees at UCLA: B.A. (1978), M.A. (1980), and Ph.D. (1997). He married his wife, Renee Fraser, on June 24, 2000. This is the feast day of St. John the Baptist, which in the American Southwest is also the traditional start of the summer monsoons, fitting for an archaeologist who deeply loved the region. It didn't rain on that particular day, however—perhaps, as Renee notes, "one or both of us messed up on the dance steps."

Mike's archaeological work combined a deep interest in archaeological theory with an expertise in southwestern, Great Basin, and California archaeology. A student of James N. Hill, Mike was a strong advocate of the New Archaeology. His research reflected a commitment to explicit research design, logical argumentation, and evidential testing.

His UCLA legacy is closely tied to the Pajarito Archaeological Research Project (PARP) in northern New Mexico, directed by Hill between 1977 and 1980. Mike helped write the project's successful National Science Foundation proposal and developed its sampling strategy. In the 1990s he played a role in reviving interest in the PARP collections and analyzed associated lithic material for his dissertation. This research, published in *American Antiquity* in 1998, used innovative methods to explore prehistoric social boundaries, arguing that differential access to raw materials in the 1100–1500 C.E. era was a reflection of increasing competition.

Much of his professional career was spent in public archaeology in California, working with such companies as Ancient Enterprises and Archeo-Tec. Over time Mike produced a significant body of scholarship on the prehistory and history of California. Together with Jeanne Arnold, he authored the well-received *California's Ancient Past: From the Pacific to the Range of Light*, published by the Society for American Archaeology in 2010.

Mike was a natural teacher who inspired many students and colleagues with his love of survey and the dramatic landscapes of the American West. Terisa Green (UCLA Archaeology 1999) describes him as "a voracious learner who reveled in being a Luddite, a wannabe curmudgeon who was far too kind to be one." Indeed, his many friends relished his broad knowledge, dry wit, and deadpan delivery. According to Nick Trierweiler (UCLA Anthropology 1987), who worked with Mike in the late 1970s, "He was the guy who taught me to appreciate Willie Nelson, and I remember him shaking with grief when the news came across the radio about Elvis. Mostly, I remember him sitting around the campfire late at night with a beer in one hand, telling outrageous stories."

Renee recalled him describing a professional presentation in which he showed an X-ray of a prehistoric human bone with pieces of obsidian embedded in it. An audience member insisted that the obsidian could have gotten there in any number of ways. Mike responded, "Yes, I suppose he could have been cleaning his bow and it went off."

Donations may be made in Mike's name to St. Jude's Children's Research Hospital at www.stjude.org/give/memorials-and-dedications.html. There is also a Facebook site for recollections: "Remembering Michael R. Walsh."

OBITUARY

Pochan Chen

October 29, 1973 – June 28, 2015

by Ellen Hsieh



Pochan and Kuei-chen at UCLA in 2015, just before the SAA Annual Meeting in San Francisco.

POCHAN CHEN, ALUMNUS of the Cotsen Institute and associate professor in the Department of Anthropology at the National Taiwan University (NTU), passed away on June 28, 2015, after a suspected heart attack. He was 41 years old.

Born in Keelung, Taiwan, Pochan was a talented child who developed an interest in prehistory at an early age. He gained his B.A. in the Department of Anthropology at NTU in 1995 and continued his studies at the Cotsen Institute, where he earned his M.A. and Ph.D. degrees in 1999 and 2004, respectively. He went back to teach at his alma mater in Taiwan right after graduating. In addition to his NTU career, Pochan held a visiting position at Sichuan University in the People's Republic of China in 2008 and was a Harvard-Yenching Scholar in 2011.

Pochan conducted research through various projects in the People's Republic of China and Taiwan. After completion of a project at the Zhongba site in the Three Gorges area, where he collected data for his dissertation, he became a director of the Chengdu Plain Archaeological Study Project (2005–2011), collaborating with his UCLA colleagues Dr. Rowan Flad and Dr. Gwen Bannett and Chinese archaeologists Shuicheng Li and Zhanghua Jiang. Subsequently, Pochan worked with Flad on the Tao River Archaeology Project. He was also involved in a historical archaeology project in the mountain area in Taiwan. Pochan published a variety of works. His academic papers introducing theories of world systems and trade diasporas were considered pioneering in Chinese archaeology. In 2013, together with Flad, he published his first book, *Ancient Central China: Centers and Peripheries along the Yangzi River*.

Pochan had great passion for teaching and was truly an inspiration to his students. Although his research was focused on Chinese archaeology and salt production, his classes at NTU covered many topics. He received the NTU Teaching Award in 2007, 2009, and 2010, as well as the Outstanding Teaching and Distinguished Student Mentoring Awards in 2012. He liked to share his overseas research experience and helped Taiwanese students cross language barriers and participate in international projects and conferences, not only to improve their professional skills but also to avoid an island mentality. He strongly believed that archaeology is not only a study of the past but profoundly links to the present; that it is impossible to understand people in the past if one does not have curiosity for current issues. Therefore, he actively participated in various social movements and wrote for a Taiwanese blog, "Guavanthropology," on which anthropologists in academia share ideas.

Pochan is survived by his fiancée, Kuei-chen Lin, who is also a Cotsen Institute alumna, and by his parents, his younger brother, and his cat, Olulu.

Pochan's funeral was held on July 20, 2015, in Taipei, and he was interred in a flower burial the next morning. A commemorative session will be held at the 81st SAA Annual Meeting in Orlando, Florida. His family will donate the funeral gift (white envelope) as a contribution to the establishment of a memorial fellowship at NTU.

Pochan, we will always remember you.

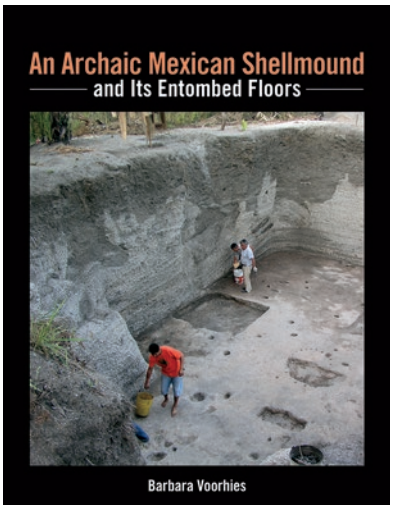
New Titles from the Cotsen Institute of Archaeology Press

Randi Danforth[1]

THIS YEAR, OUR LIST offers scholarly books on subjects as diverse as an ancient shellmound in Chiapas, Mexico, the last days of the Inca, and a kurgan in the Russian steppes containing evidence of Bronze Age nomads putting down the first roots of settlement. Archaeological research from Chiapas to Vilcabamba to the Samara Valley was documented, analyzed, and published by the CIoA Press, both in print and in electronic editions. We look forward to 2016, when we publish titles that explore the meeting of the Aztec and the Spanish empires in the New World, sacred iconography in the Old World, and archaeological treasures in a Neolithic cave in southeastern Italy.

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An Archaic Mexican Shellmound and Its Entombed Floors

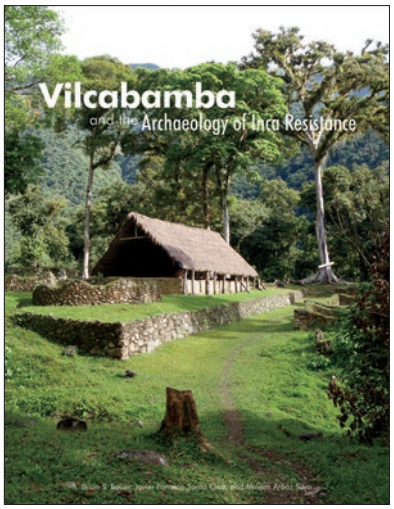
Barbara Voorhies

ISBN: 978-1-938770-02-9
Publication date: April 2015
Series: Monograph 80
Price: $55.00 (paper)

Tlacuachero is the site of an Archaic-period shellmound located in the wetlands of the outer coast of southwest Mexico. This book presents investigations of several constructed floors, built during the 600 to 800 years of site formation in the Archaic period (circa 8000–2000 B.C.E.), the crucial time span in Mesoamerican prehistory when people were transitioning from full-blown dependency on wild resources to the use of domesticated crops. The constructed floors at the site are among the region's earliest permanent architecture and are now deeply buried in a limited area within the shellmound. The authors explore what activities were carried out on their surfaces, discussing the floors' patterns of cultural features, sediment color, and density and types of embedded microrefuse and phytoliths, as well as chemical signatures of organic remains.

The studies conducted at Tlacuachero are especially significant in light of the fact that data-rich lowland sites from the Archaic period are extraordinarily rare. The wealth of information gleaned from the floors of the Tlacuachero shellmound can now be widely appreciated.

1. Publications Director, The Cotsen Institute of Archaeology Press

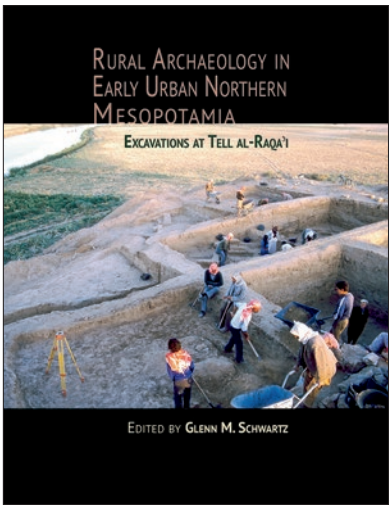


Vilcabamba and the Archaeology of Inca Resistance

Brian S. Bauer, Javier Fonseca Santa Cruz, and Miriam Aráoz Silva

ISBN: 978-1-938770-03-6
Publication date: July 2015
Series: Monograph 81
Price: $55.00 (paper)

Vitcos and Espíritu Pampa are two of the most important Inca cities within the remote Vilcabamba region of Peru. The province has gained notoriety among historians, archaeologists, and other students of the Inca, since it was from here that the last independent Incas waged a nearly 40-year-long war (1536–1572 C.E.) against Spanish control of the Andes. Building on three years of excavation and two years of archival work, the authors discuss the events that took place in this area, speaking to the complex relationships that existed between Europeans and Andeans during the decades that Vilcabamba was the final stronghold of the Inca Empire. This has long been a topic of interest for the public; the results of the first large-scale, scientific research conducted in the region will be illuminating for scholars as well as for general readers who are enthusiasts of this period of history and archaeology.



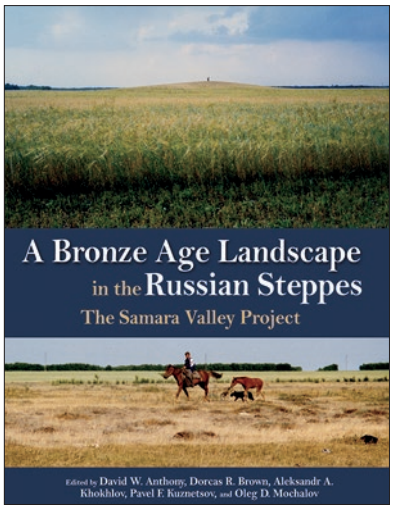
Rural Archaeology in Early Urban Northern Mesopotamia

Excavations at Tell al-Raqa'i

Edited by Glenn M. Schwartz

ISBN: 978-1-938770-04-3
Publication date: July 2015
Series: Monumenta Archaeologica 36
Price: $89.00 (hardbound)

This book presents a new perspective on the emergence of urban societies in Mesopotamia, focusing attention on life in a rural village and helping to correct the traditional bias of archaeologists toward the urban and the elite. Reporting on the extensive excavations at Tell al-Raqa'i (early to middle third millennium B.C.E.) in upper Mesopotamia/Syria, the authors offer detailed studies on architecture, pottery, animal bones, plant remains, and other varieties of artifacts and ecofacts. These data provide a wealth of information on the nature of life in a small community during the transition to urbanism. Spatial and social organization, household economics, and the significance of enigmatic structures such as the Round Building and a small "temple" are among the issues discussed. The excavations at Raqa'i, with their exposure of a broad segment of an ancient village, reveal important new insights on the nature of rural life in upper Mesopotamia and on the role of villages in early urban societies in general.



A Bronze Age Landscape in the Russian Steppes

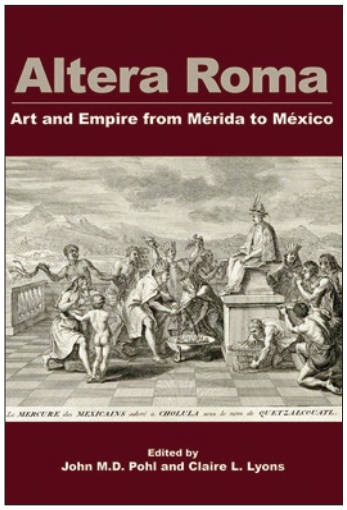
The Samara Valley Project

Edited by David W. Anthony, Dorcas R. Brown, Aleksandr A. Khokhlov, Pavel F. Kuznetsov, and Oleg D. Mochalov

ISBN: 978-1-938770-05-0
Publication date: December 2015
Series: Monumenta Archaeologica 37
Price: $89.00 (hardbound)

The first English-language monograph that describes seasonal and permanent Late Bronze Age (LBA) settlements in the Russian steppes, this is the final report of the Samara Valley Project, a U.S.–Russian archaeological investigation conducted between 1995 and 2002. It explores the changing organization and subsistence resources of pastoral steppe economies from the Eneolithic (4500 B.C.E.) through the Late Bronze Age (1900–1200 B.C.E.) across a steppe and river valley landscape in the middle Volga region, with particular attention to the role of agriculture during the unusual episode of sedentary, settled pastoralism that spread across the Eurasian steppes with the Srubnaya and Andronovo cultures (1900–1200 B.C.E.). Three astonishing discoveries were made by the SVP archaeologists: agriculture played no role in the LBA diet across the region, a surprise given the settled residential pattern; a unique winter ritual involving dog and wolf sacrifices was practiced at Krasnosamarskoe, possibly related to male initiation ceremonies; and overlapping spheres of obligation, cooperation, and affiliation operated at different scales to integrate groups defined by politics, economics, and ritual behaviors.

Forthcoming Spring 2016

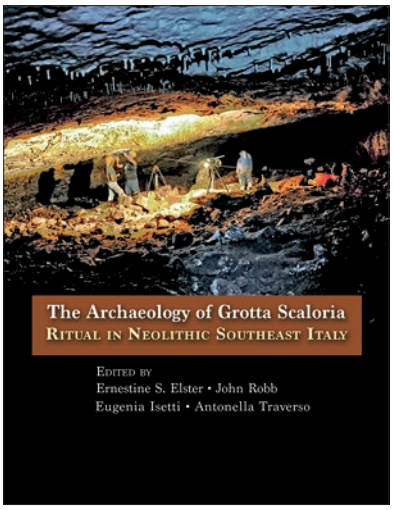


Altera Roma

Art and Empire from Mérida to México

Edited by John M. D. Pohl and Claire L. Lyons

Altera Roma explores the confrontation of two cultures—European and Amerindian—and two empires—Spanish and Aztec. In an age of exploration and conquest, Spanish soldiers, missionaries, and merchants brought an array of cultural preconceptions. Their encounter with Aztec civilization coincided with Europe's rediscovery of classical antiquity, and Tenochtitlán came to be regarded as "another Rome," Altera Roma. Iberia's past as the Roman province of Hispania served to both guide and critique the Spanish overseas mission. The dialogue that emerged between the Old World and the New World shaped a dual heritage into the unique culture of Nueva España. In this volume, 10 eminent historians and archaeologists examine the analogies between empires widely separated in time and place and consider how monumental art and architecture created "theater states," a strategy that links ancient Rome, Hapsburg Spain, preconquest Mexico, and other imperial regimes.



The Archaeology of Grotta Scaloria

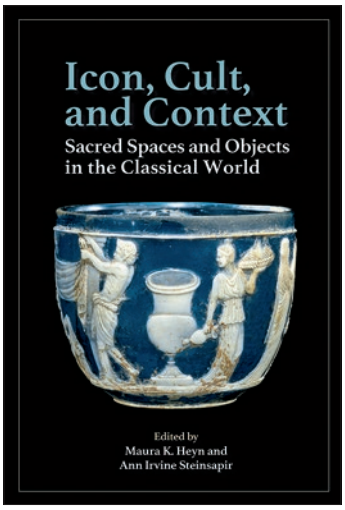
Ritual in Neolithic Southeast Italy

Edited by Ernestine S. Elster, John Robb, Eugenia Isetti, and Antonella Traverso

Scaloria Cave, or Grotta Scaloria, is in Apulia, where the Tavoliere Plain rises to meet the Gargano Peninsula. Hundreds of villages were located there during the Neolithic period—the *villagi trincerati* first identified from aerial photographs taken by the British RAF during World War II. Certainly, some Neolithic villagers of the Tavoliere visited Scaloria Cave, for refuge from the elements and for the mysterious rituals held in both the lower and upper chambers.

Grotta Scaloria was first discovered and explored in 1931, excavated briefly in 1967, and excavated extensively from 1978 to 1980 by a joint UCLA–University of Genoa team, but it was never fully published. The Save Scaloria Project was organized to locate this legacy data and to enhance that information by application of the newest methods of archaeological and scientific analysis.

This important site is finally published in one comprehensive volume that gathers together archaeological data from the upper and lower chambers of Scaloria Cave. These data indicate intense ritual and quotidian use during the Neolithic (circa 5600–5300 B.C.E.). The Grotta Scaloria project is also important as historiography, since it illustrates a changing trajectory of research spanning three generations of European and American archaeology.



Icon, Cult, and Context

Sacred Spaces and Objects in the Classical World: Essays in Honor of Susan B. Downey

Edited by Maura K. Heyn and Ann Irvine Steinsapir

This Festschrift honors UCLA professor emerita Susan Downey's meticulous scholarship on the architecture of classical sacred spaces and the objects and imagery contained in those spaces. The contributors, former students and current colleagues of Susan Downey's, demonstrate a shared concern for very careful consideration of the evidence in their analyses of religious iconography, cult practices, and sacred edifices. The book is divided into sections that echo the title of the volume: icon, cult, and context. The iconography of gods and goddesses, the analysis of sacred imagery in the context of ancient cult practices, and the design and decoration of sacred spaces are the main themes of the book. Professor Downey's influence shines through in these discussions of cult objects, iconography, and religious architecture, which echo her mentorship of several generations of art history and archaeology students and recognize her scholarly achievements.



Friends of Archaeology members at the site of Jerash, Jordan, on a trip with Professor Charles Stanish, Director of the Cotsen Institute of Archaeology. Photograph by Charles Stanish.

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Moche nose ornaments excavated by Professor Christopher Donnan, Cotsen Institute of Archaeology. Photographs by Christopher Donnan.

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