

SAS BULLETIN

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SAS BOARD CHANGES-NEW PRESIDENT AND PRESIDENT-ELECT

Congratulations to Dr. Rachel S. Popelka-Filcof who has been elected SAS Vice-president /President-elect. Rachel is a Senior Research Fellow at the Australian Institute of Nuclear Science and Engineering (AINSE) at Flinders University. She holds a BA in Archaeology and Classics from Washington University in St Louis, a PhD in Chemistry from the University of Missouri, and completed a National Research Council postdoc at the National Institute of Standards and Technology (NIST). Her research uses the application of analytical, radioanalytical and physical methods to cultural, environmental and forensic questions. Her work is the first comprehensive characterization of Australian Aboriginal natural mineral pigments on cultural heritage materials, including ochre, by several advanced analytical methods. She also analyses uranium materials by a variety of methods for international nuclear forensics projects. Rachel has also been involved with the SAS as Associate Editor for the *Bulletin*.

Marc Walton has stepped in as President and outgoing president Rob Tykot stays on the board as Past President. We would like to thank Rob for his two years of service as President and in particular his work establishing the open-access journal STAR (Science and Technology of Archaeological Research) with Maney Publishing, which offers SAS members free submission of articles.

Vanessa Muros, Editor

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STABLE ISOTOPE ANALYSES OF FAUNAL REMAINS FROM THE 1838 SHIPWRECK OF THE RIVER STEAMBOAT *HEROINE*

Eric Guiry

*PhD Student, Dept. of Anthropology,
University of British Columbia*

I am grateful for having received funding from the Society for Archaeological Sciences that provided financial assistance for me to travel to the Oklahoma History Center in Oklahoma City in order to analyze faunal remains excavated from the 1838 shipwreck site of the steamboat *Heroine*. The goal of the research trip was to collect faunal bone samples from domesticated species, particularly pigs, for isotopic analyses with a view to reconstructing animal husbandry practices in a key livestock-producing region of North America.

The steamboat *Heroine* was on a routine cargo-delivery voyage on the Red River in May 1838 when it hit a submerged log and sank (Crisman et al. 2013). The steamboat had been transporting, among other things, casks of salt pork from the meat packing hub of Cincinnati, Ohio, to the US Army garrison at Fort Townson, Texas (Brophy and Crisman 2013). Casks excavated from the *Heroine* shipwreck site bore the stencil of Alfred S. Reeder's meatpacking business in Cincinnati, Ohio, and it is therefore reasonable to expect that the faunal remains sealed inside represent pigs that had been raised, slaughtered, and packed somewhere in or near Cincinnati, probably sometime between the years 1833 and 1836.

The size of contemporaneous Cincinnati hog farming operations combined with the capacity for long distance export means that meat products from this region could have made their way onto the plates of many North Americans (Pate, 2005:65). During the 1840s, Cincinnati was synonymous with pig farming, being variably known as Porkopolis and Hogopolis, because it was the largest pork producer in North America and, with help of new canal systems, exported its meat products across the continent (Pate 2005; Guiry et al. 2015).

At the Oklahoma History Center, I obtained samples from pigs in a number of casks and later conducted stable carbon and nitrogen analyses on their bone and tooth collagen (as per Richards and Hedges 1999; Ballase et al 2001; Guiry et al. 2012) in order to gain new information about how animals were raised in this area. Isotopic analyses were performed at the Stable Isotope Laboratory in the Museum of Anthropology at the University of British Columbia, Canada. As these pigs derive from a single shipment that was likely packaged in and exported from the same location, I had expected that animals would have been raised under similar husbandry regimes and would have relatively homogenous diets from an isotopic perspective. Surprisingly, however, preliminary results show a wide range for pig stable carbon and nitrogen isotope values, suggesting that some animals had diets based heavily on maize byproducts while others did not. This suggests that pigs were raised in disparate, perhaps small scale, husbandry operations before being sold, slaughtered, and eventually packaged by Alfred S. Reeder's meatpacking business. Further consideration of these findings awaits comprehensive stable carbon, nitrogen, and sulfur isotope analyses of more bone and tooth samples.

Considering the potential importance that pork products exported from Cincinnati could have had in the diets of many North Americans at this time, these results will also provide an important contribution as a baseline for the reconstructions of human diet at historical archaeological sites in other areas of the United States, Canada, and further afield.

Acknowledgements

This project would not have been possible without the time and effort that was generously provided by staff at the Oklahoma History Center, especially Jeff Briley and Dan Provo. Kevin Crisman and Juliet Brophy also provided invaluable guidance with respect to the excavation and zooarchaeological analyses of the steamboat *Heroine*. Thanks are also due to Michael Richards for analytical support as well as Nathan Liden and Shannon Montgomery for other assistance.

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SCIENTIFIC STUDY OF GLASS ARTIFACTS FROM YANLIAOFANG, NANJING CITY, CHINA

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Yuan Lin, Dept. of Materials Science & Engineering, UCLA

Introduction

The site of *Yanliaofang* is located along the eastern bank of the *Qinhuai* River, one of the branches of the Yangtze River, in Nanjing city, China. Excavations conducted since 2009 have yielded significant findings, such as water fronts, rammed dams, pavements, and houses. Many artifacts have been recovered including ceramics, porcelain, iron, bone, lacquer, wood and stone tools, as well as glass objects. The total excavation area exceeds more than 3000 square meters.

The site was a busy port beginning in the 3rd c. A.D. and remained in use until at least the 10th c. A.D. along the *Qinhuai* River. It was partly developed into a dwelling complex after the width of the river shrank from over 200 meters to less than 100 meters in the 13rd c. A.D. After the 14th c., the site grew and contained many dyeing workshops, earning the name *Yanliaofang*, roughly translated as pigment workshop, which is still used today (Fig.1).

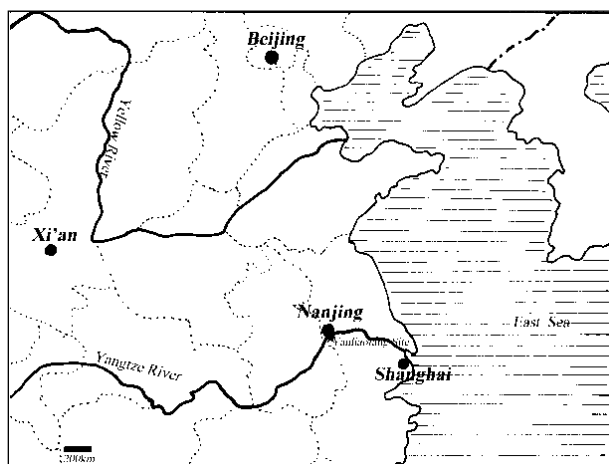


Fig. 1 Location of Yanliaofang in Nanjing City, China

Although the excavation of Yanliaofang has generated a great deal of interest amongst archeologists and historians (Wang 2010, 2014), there has been very little scientific investigation conducted on the artifacts. Worthy of note was the discovery of hundreds of glass beads, dated to the 3rd -10th c. A.D. They were mostly monochrome dark red, translucent blue, opaque yellow and translucent green (fig. 2). Many of them are remarkably tiny. The smallest bead was only 1mm in diameter and 0.3mm thick.

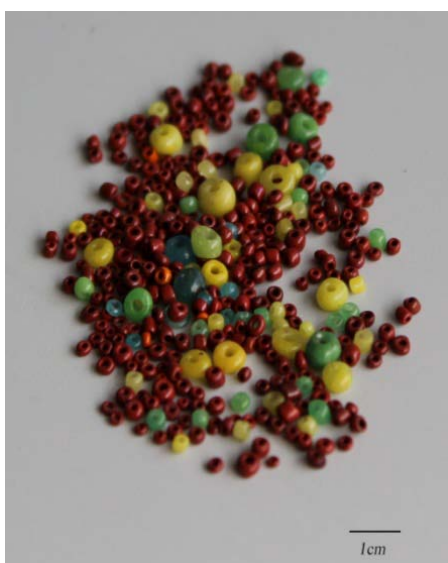


Fig.2 The excavated beads

In this paper we present the study of an interesting glass artifact made of tiny beads in dark red and translucent blue, which appear to be melted or fused together with tube-like strands (Fig. 3a, b), and attempt to examine its features and analyze the chemical composition using several scientific methods.

Experimental

The artifact was first examined and photographed using an optical microscope and a Keyence VHX-1000 digital

microscope. Following the examination, a translucent blue bead and a dark red bead were removed from the artifact. In addition to two other samples were cut from the blue and dark red tube-like strands, for detailed examination. The four samples were labeled: YLF-01, YLF-02, YLF-03 and YLF-04, representing a blue bead, a part of the blue strand, a dark red bead and part of the dark red strand respectively (fig.3). The samples were prepared as polished sections by embedding them in epoxy resin. Once the resin had set, the samples were ground using several grades of silicon carbide paper and polished with diamond pastes.

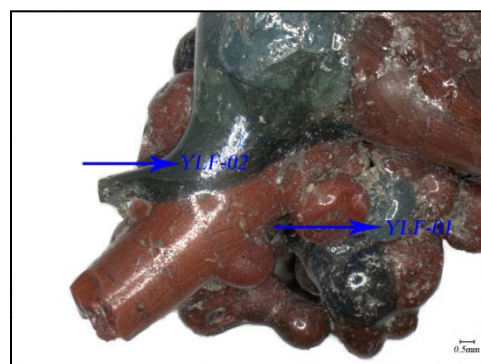


Fig. a,b Images of the front (a-top image) and the back (b-lower image) of the artifact

Once the samples were prepared they were analyzed by scanning electron microscopy (SEM) and energy dispersive x-ray spectroscopy (EDS) to identify their general morphology and elemental distribution. This analysis was performed on a FEI Nova NanoSEMTM230 scanning electron microscope with a field emission gun, equipped with a Thermo ScientificTM NoranTM system EDS.

Results and discussion

Microscopic examination of the structure of the beads identified them as drawn beads. The mixture of beads and tube-like strands could have two possible interpretations. One could be that this artifact represents a small portion of an object made of beads and strands as an intentional design. The other possibility is that this is a glass waste

product, which may have occurred due to problems or carelessness in the process of making drawn beads which resulted in a mixture of strands and cut beads.

The back scattered electron (BSE) images of the four samples are presented in Fig. 4 - 7. Glass is shown in gray, quartz in dark gray and voids in black. The micrographs reveal that the samples are relatively homogeneous. Over ten areas were analyzed on each sample using EDS, including the gray parts, light gray parts and dark gray parts. The elemental analyses on the areas marked in fig. 4-7 are summarized in Table 1.

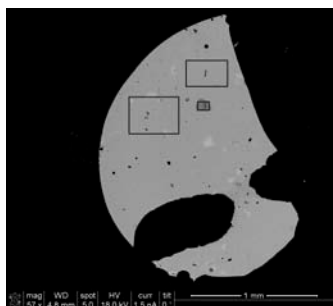


Fig.4 BSE micrograph YLF-01

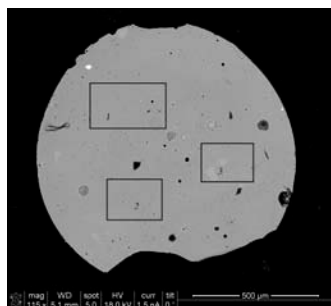


Fig.5 BSE micrograph YLF-02

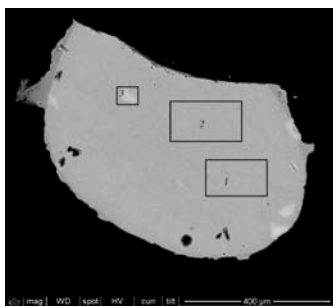


Fig.6 BSE micrograph YLF-03

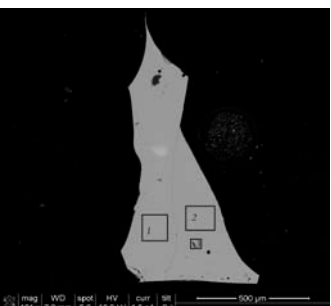


Fig.7 BSE micrograph YLF-04

The results of the EDS analysis shows the samples are $\text{Na}_2\text{O-Al}_2\text{O}_3\text{-CaO-SiO}_2$ glass with copper and iron as colorants. Their compositions are characterized by a high sodium level between 12-17%, high aluminum 3.7-5.9%, potassium between 1.4-4.7% and low calcium 1.13-2.78%.

Early Chinese glasses are thought to be compositionally distinctive, containing significant amounts of barium and lead oxide, and high potassium rather than soda (Gan 2009). However, glass pieces found at the site of Hazartam or Saqal-tam, dated to the 2nd-6th c. A.D. (Brill 1999b), and the 6th-8th c. AD finds of a yellow fastener-shaped glass fragment found at Tuo-Mu-Li-Ke, and a green transparent glass vessel found at Bo-Xi-Ke-Re, are soda glass with high alumina (Li, et.al 2009). Brill (1999) believed that this type of mixed-alkali glass with high alumina indicated a central Asian origin. Li (2009) categorized them as a $\text{Na}_2\text{O-K}_2\text{O-CaO-SiO}_2$ glass with a sodium content higher than 10% and thought they

possibly contained saltpeter as the melting flux. Henderson (2013) noted that soda-alumina glass was used in Southeast Asia from the mid-1st millennium B.C. to the 1st millennium A.D. in a range of countries such as Sumatra and as far east as Japan. In Korea, this glass was made between the 2nd c. B.C. and the 6th c. A.D. (Henderson 2013). Moreover, additional soda-alumina glass has been excavated from Vankali in Sri Lanka (Brill 1999a) along with two 'black' armlets of high alumina-natron composition dating to at least the 13th c. from India (Henderson 2013). Because *Yanliaofang* is located near a busy port, it was possible to import glass artifacts or frits through the watercourse from South Asia to the site, or obtain the sand and other raw materials needed to produce glass. The origin of the glass artifacts are unknown due to the lack of historical documentation or archaeological evidence, but further detailed and systematic investigations on associated artifacts using other scientific techniques could help answer these questions.

Sample No.	Elemental Composition (wt. %)				
	Si	Na	O	K	Ca
YLF-01-1	35.69	12.31	40.98	2.56	1.30
YLF-01-2	35.63	12.09	40.42	2.80	1.16
YLF-01-3	51.88	/	48.12	/	/
YLF-02-1	31.78	17.33	39.42	2.55	1.35
YLF-02-2	31.97	17.37	38.51	2.50	1.42
YLF-02-3	29.60	17.70	42.40	2.17	1.13
YLF-03-1	34.37	12.71	39.50	1.67	1.71
YLF-03-2	34.59	13.09	39.32	1.69	1.69
YLF-03-3	31.82	13.47	43.88	1.42	1.49
YLF-04-1	32.32	15.93	38.60	2.63	1.44
YLF-04-2	32.69	15.95	38.70	2.67	1.48
YLF-04-1	42.83	11.89	22.30	4.71	2.78

Sample No.	Elemental Composition (wt. %)				
	Al	Cl	Ti	Fe	Cu
YLF-01-1	5.25	0.53	0.25	0.50	0.64
YLF-01-2	5.23	0.61	/	0.74	0.66
YLF-01-3	/	/	/	/	/
YLF-02-1	5.58	1.17	/	0.83	/
YLF-02-2	5.52	1.28	0.26	0.68	0.47
YLF-02-3	5.37	0.96	0.18	0.50	/
YLF-03-1	4.16	0.79	0.93	1.82	2.26
YLF-03-2	4.17	0.73	0.82	1.84	1.84
YLF-03-3	3.72	0.51	0.58	1.58	1.49
YLF-04-1	4.96	1.01	/	0.65	1.53
YLF-04-2	4.93	0.99	/	0.84	1.44
YLF-04-1	5.92	3.43	0.25	1.02	2.76

Table 1. Results of EDS analysis of the glass samples excavated from the site of Yanliaofang

Conclusions

The Yanliaofang site is very complicated and features numerous findings from different historic periods. The investigation conducted thus far on the glass artifacts shows they are Na₂O-Al₂O₃-CaO-SiO₂ glass, but their origin is still unclear. In order to identify their source, we need to investigate additional artifacts, not only of glass but also possible frits. From additional work completed on material from this site, more than twenty glass beads in various colors and shapes have been analyzed using x-ray fluorescence (XRF) spectrometry and μ -XRF, and the results fall into the type of soda-alumina glasses. Future analysis of this material should include inductively coupled mass spectrometry ICP-MS or electron microprobe analysis (EMPA).

Acknowledgements

We express our sincere thanks to Dr. Ioanna Kakoulli (University of California, Los Angeles) for her valuable suggestions regarding preparation of the samples and helpful discussions during the SEM analysis. Thanks also go to Ma Xiao and Lindsay Chaney from UCLA for assistance with the Keyence photography. We are grateful to Vanessa Muros for proofreading the whole paper and her advice on the paper revision. This research has been financially supported by the Jiangsu Social Foundation (Project No.12LSC009), China Scholarship Council and Humanities Fund of Nanjing University.

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ANNOUNCEMENTS

Awards

R.E. Taylor Student Poster Award

Congratulations to Kara Fulton (Doctoral Candidate, Applied Anthropology University of South Florida), recipient of the 2015 R.E. Taylor Student Poster award for her poster *Shared Practices and Identities in the Northern Settlement of Actuncan, Belize*. Honorable Mention has been awarded to Kristine Martirosyan-Olshansky's (Doctoral candidate, Cotsen Institute of Archaeology, UCLA) for her poster *Provenance Study of Obsidian Artifacts from the Neolithic Settlement of Masis Blur (Armenia) Using Portable X-ray Fluorescence Spectrometry*. Both these posters were presented at this year's annual meeting of the Society for American Archaeology in San Francisco, CA.

The abstracts for both posters are below:

Shared Practices and Identities in the Northern Settlement of Actuncan, Belize

Kara Fulton

This poster examines how urban families developed and shared neighborhood identities at the Maya city of Actuncan, Belize, ca. AD 800-900, a time when the city experienced rapid population growth as surrounding centers, including Xunantunich, declined. To investigate household relationships, this research considers the nature and location of activity patterns in and around three commoner households to infer shared practices and the shared identities that those activities both enabled and constrained. Multiple methods were employed, including subsurface testing, soil chemical residue analysis, and macro- and microartifact analysis. The data were examined spatially using geostatistics as well as with quantitative assessment. This research contributes to the understanding of urban processes of growth and decay in this region, and how they are linked to the behaviors of social factions in neighborhood communities.

Provenance Study of Obsidian Artifacts from the Neolithic Settlement of Masis Blur (Armenia) using portable X-ray Fluorescence Spectrometry

Kristine Martirosyan-Olshansky

Over the past two decades, provenance research on obsidian from Armenia has been on the rise, primarily for provenience purposes, however, with only few studies on

obsidian archaeological artifacts. In these studies, the geochemical characterization of obsidian artifacts and geological sources was carried out using different laboratory-based techniques such as INAA, ICP-MS and XRF. The current project presents preliminary results obtained with a portable XRF (pXRF) on the chemical characterization and provenience of a selected obsidian assemblage from the aceramic Neolithic settlement of Masis Blur. This assemblage was used to assess the prevailing belief that the raw material for the majority of the artifacts was primarily coming from one of the two Arteni sources in Northwestern Armenia, this one being nearest to the settlement. The assemblage was analyzed to determine the number of geochemical groups present. Data are compared to geological samples from all known Armenian and one eastern Turkey source in an attempt to assign individual groups to specific obsidian sources. Thirteen distinct obsidian groups were identified and many of these were attributed to various sources in Armenia or eastern Turkey. The findings attest to a much wider obsidian source utilization network than previously thought for the Neolithic settlement.

The next R. E. Taylor Award will be offered at the 41th ISA meeting in Kalamata, Greece. Entries will be judged on the significance of the archaeological problem, appropriateness of the methods used, soundness of conclusions, quality of the poster display, and oral presentation of the poster by the student, who should be the first author in order to compete. The deadline for the next Taylor Poster Award Competition is April 2016. Please check the SAS website for more information on how to apply: <http://www.socarchsci.org/awards.html>

SAS Student Research International Travel Award

Congratulations to Kuan-Wen Wang, University of Sheffield, who was awarded the SAS Spring 2015 Research Travel Award to conduct research on *Scientific Analysis of Early Iron Age Glass Beads from Taiwan*.

This project involves chemical analysis, through SEM-EDS and EPMA, on 1st millennium AD glass beads from sites in north-eastern, southern and eastern Taiwan. The results will establish chemical groupings in the region to indicate potential social interaction, both regionally and chronologically, and help elucidate prehistoric trade/exchange networks in the South China Sea region in the transitional period from the late Neolithic Age to the early Iron Age.

To learn more about the travel award and past awardees, please visit our website: <http://socarchsci.org/awards1.html>

Workshops

"Doing pXRF Right: An intermediate course for Archaeologists"

Center for Applied Isotope Studies, University of Georgia

August 11-13, 2015

Dr. Jeff Speakman & Dr. Alice Hunt

Focusing primarily on the quantitative bulk chemical analysis of archaeological materials using portable x-ray spectrometry, this course provides in-depth, hands on training in the strengths and limitations of energy dispersive x-ray fluorescence spectrometry for culture historical applications. Through interactive lectures and practicums, the course is designed to transform current users into adept analysts. Although this course is not sponsored by a manufacturer, we will only be working with Bruker Tracer model instruments during this course.

Course Overview

- Day 1 — pXRF Basics & Developing Analytical Protocols
- Day 2 — Building Matrix Matched Calibrations & Data Analysis
- Day 3 — Optimizing Instrument Performance & One-on-One Tutorials

Dr. Jeff Speakman and Dr. Alice Hunt between them have more than 30years experience analyzing archaeological materials, working with bulk chemical data and have recently turned their attention to optimizing the performance of pXRF spectrometers for archaeological research. Check out their latest paper: Hunt and Speakman 2015 *Journal of Archaeological Science* 53: 1-13

Registration information can be found at:

<http://cais.uga.edu/workshop> Space is limited to 10 participants, so register early. Cost for the three day course is \$500 and includes all instruction materials, lunch and an afternoon snack. **YOU MUST BRING YOUR OWN pXRF WITH YOU TO THE COURSE**

ARCHAEOLOGICAL CERAMICS

Charles C. Kolb, Associate Editor

This issue contains three topics: 1) Book Reviews on Ceramics; 2) Previous Professional Meetings; and 4) Forthcoming Professional Meeting.

Book Reviews

Asirios en el Medio Éufrates: La cerámica medioasiris de Tell Qabr Abu al-'Atiq en su contexto histórico-arqueológico / Assyrians on the Middle Euphrates. Study on the Middle Assyrian Pottery from Tell Qabr Abu al-'Atiq in its Historical and Archaeological Context, Juan-Luis Montero Fenollós, with Francisco Caramelo, Ignacio Márquez Rowe and Jorge Sanjurjo Sánchez (2015). Middle Syrian Euphrates Archaeological Project / Proyecto Arqueológico Medio Éufrates Sirio, Cuadernos Mesopotámicos n° 5, Universidade de Coruña, Ferrol (A Coruña). 141 pp., 88 illustrations. ISBN: 978-84-606-5543-5 [published in Spanish], paperback. Open access to a pdf at:

http://www.arqueologiaoriental.com/publicaciones/ceramica_medioasiria.pdf Between 2008 and 2010, the Syrian and Spanish team from the Middle Syrian Euphrates Archaeological Project conducted archaeological work in Tell Qabr Abu al-'Atiq (Deir ez-Zor, Syria). This monograph presents a preliminary study on pottery found in a Late Bronze II building, located at the main hill of the site, and appears to be highly interesting in understanding the expansionist policy of the Assyrian kingdom during the thirteenth century BC. The ceramics analysis shows the existence of a homogeneous collection identified as the so-called “official,” “standard or administrative” Middle Assyrian pottery, well known on the Khabur and Balikh valleys, but, previously, not on the Middle Euphrates region. The archaeological research at Tell Qabr Abu al-'Atiq reveals new perspectives regarding the issue of the western expansion of the Middle Assyrian kingdom by the time of Tukulti-Ninurta I.

This volume contains seven chapters, the majority written by Montero Fenollós, monochrome illustrations (except for the cover) and a bibliography, but no index. References are by footnotes on the text pages and there is no summary in any other languages than Spanish. A synopsis of the contents follows: A brief topical essay, “Introducción: asirios en el Medio Éufrates” by Montero Fenollós (pp. 7-8), followed his “Contexto geográfico: Khanuqa y el Medio Éufrates”(pp. 8-10) which includes geomorphology, and “Contexto arqueológico” by Montero Fenollós (pp. 10-14). The latter focuses on the Khanuqa region’s human occupation supplemented by a useful table of the archaeological periods seen at 11 sites, Assyrian occupation in the Middle Euphrates, notably near the area of the Tišrin dam, al-Asad lake, and the territory between Deir ez-Zor and Abu Kemal. Figures 1-8 and 12 provide important visual references in the form of maps and satellite images. The fourth chapter, “Contexto histórico. La presencia medioasiria en el Éufrates Medio: la construcción de una frontera” (pp. 15-

23) is written by Francisco Caramelo). He discusses the geopolitical organization of the region during the 14th and 13th centuries BCE including the reign of Aššur-uballit I (c. 1363-1328 a.C.), Adad-nirari I, Salmanasar I, and Tukulti-Ninurta I, and the Mitanni and vassal state that dominated the area between the Tigris and Euphrates rivers. A new geopolitical and ideological era followed and manifested along the eastern Euphrates frontier during the 13th century, and he details the expansion and organization of the empire.

In Chapter 5, “Tell Qabr Abu al-'Atiq II: ocupación y cerámica del período medioasirio,” (pp. 24-56), Montero Fenollós documents the site, N 35° 45' 58" - E 39° 46' 42" at an elevation of 238.33 m on the left bank of the Euphrates. He characterizes prior visits and archaeological excavations by Europeans at Khanuqa and Tell Qabr Abu al-'Atiq from 1835 to 1992 (Chesney, Sachau, Mortiz, Sarre, Herzfeld, Chapot, Bell, Musil, Hérault, Poidebard, Lauffray, Kohlmeyer, and Calvet and Geyer), then details the 2008 to 2010 investigations by staff of the Proyecto Arqueológico Medio Éufrates Sirio; each year’s work is briefly reviewed. The 2008 Campaign: two phases of the Bronze Age and an Islamic cemetery; the 2009 Campaign: ancient and recent Bronze Age work, the latter including excavations of four rooms, and excavations of two dozen tombs in the Islamic cemetery; and the 2010 Campaign which focuses on the two Bronze Age levels, five rooms and additional Islamic tombs. The rooms in the Middle Assyrian building yielded 19 polychrome murals and the structure was devastated by fire. Montero Fenollós next considers the preliminary study of the ceramic assemblage characterized as “administrative” Middle Assyrian recovered from Rooms 1 (20 types), 3 (22 types), and 4 (13 types). The ceramic types, dimensions, tempering materials, color, decorations, and comparanda are provided and keyed to illustrations (Figs. 35-71). An essay on preliminary type classifications emphasizes eight groups defined by vessel forms and functions (carinated vessels, conical vases, a variety of jar forms, and colander) that were locally made, highly standardized, and mimics “imperial culture.” There is a section of the chapter (prepared by Juan-Luis Montero Fenollós, Jorge Sanjurjo Sánchez e Ignacio Márquez Rowe) devoted to the dating of Tell Qabr Abu al-'Atiq (Phase II) based on radiocarbon dating, contextual analysis, thermoluminescence (TL), and optically stimulated luminescence (OSL) dating of the ceramic mineral grains. Procedures and potential errors are also noted. Lastly a chronological model is presented based on absolute dating (2 OSL, 3 TL, and 9 C14); relative dating (the work of Pfälzner (1995, 1997) and Duistermaat (2008) at Tell Šeikh Hamad y Tell Sabi

Abyad); and dating from two cuneiform tablets. Table 3 provides Bayesian model dates, 1320-1050 BCE. Figures 13-31 document the excavations and figures 32-88 (black-and-white photographic illustrations and splendid line drawings with appropriate scales) depict the ceramic assemblage.

The preliminary “Conclusiones” by Montero Fenollós (pp. 57-59) focuses on Assyrian presence along the Middle Euphrates and provides three hypothetical scenarios. The “Bibliografía” (pp. 60-66) contains 132 entries, and “Documentación gráfica: planos, dibujos y fotografías” (88 figures, pp. 57-141) by Ana Bermejo, Francisco Bescós, Eva Celdrán, Ana García, Patricia Mora, Víctor Rivera, Eloy Taboada, and Jon Uranga are acknowledged. This is a very useful monograph that characterizes the western expansion of the Middle Assyrian kingdom

Previous Professional Meetings

9th ICAANE: International Congress of the Archaeology of the Ancient Near East, University of Basel, Switzerland, 9-13 June 2014. ICAANE is held every two years. Twenty-eight oral papers and one poster focused on ceramics. The full program is posted at 9icaane.unibas.ch/ICAANE2014ProgramMay.pdf. The ceramic presentations were: Sauvage, Caroline “Late Bronze Age Regional Identities and Distribution of Motifs: Mycenaean Pictorial Ceramics in their Cypriot and Levantine contexts”; Maresca, Giulio “Echoes of Regional Traditions plus Western Typological Influences: Some Notes about the Post-Achaemenian Pottery Assemblage from the Italian Excavations at Qal’ a-ye Sam (Iran, Sistan)”; Bergoffen, Celia J. “Prized Pots: Cypriot Painted Wheel Made Kraters in MB-LB Cyprus and the Levant”; Kaercher, Kyra “A Preliminary Assessment of the Ceramic Sequence of Northeastern Iraqi Kurdistan”; Harrison, Matthew “The Houses of ʿatFu Beyond Importation and Influence”; Yedidağ, Turgay Yaşar “Hellenistic Moldmade Bowls from Phrygia Epiktetos: New Evidence from Dorylaion”; Uygun, Çilem “Roman Pottery from Üçtepe Excavation in South-East Anatolia”; Gerber, Yvonne “The South Jordan paradox and the Early Islamic ceramics”; and S. Khasswneh, A. Murray & D. Bonatz Investigating OSL Dating Technique for Young Archaeological Heated Materials Using Potshards from the Tell Tabqat Fahl (Pella) in the Jordan Valley.”

Conard, Nicholas and Zeidi, Mohsen “The Record of Clay Objects from the Aceramic Neolithic Site of Chogha Golan, Ilam Province, Iran”; Nigel Goring-Morris and Anna Belfer-Cohen “The Relationship Between the Aceramic and Ceramic Neolithic in the Southern Levant” *Poster*; Rembart, L. and Peloschek, L. “The Influence of

the Hellenistic World on the Local Ceramic Production in Syene/Upper Egypt”; Abolahrar, Alireza, Zare, Mosa, and Ebrahimi, Saeed “The Study of the Oldest Pottery belong to Neolithic Period, Based on Archaeological Survey on Banooj Tepes in Darab, Fars, Iran”; Marghussian, A. K. and Coningham, R. A. E. “Investigation of Neolithic Pottery from Sialk in the Central Plateau of Iran, Utilising Chemical and XRD Analysis”; Siméon, Pierre New Data on Islamic Material Culture from the Central-Asian margins: Dehistan and Balkh ceramic studies”; Dreiser, Anja R. “Islamic Ceramics from Central and Eastern Oman”; Rashid, Nargis “Sgraffito Pottery from first conquered city of Debal (Banbhore), in South Asia-Pakistan”; Ünsal, Nur Deniz “What can Mycenaean pottery of Çine Tepecik can tell us?”; and Döpfer, Stephanie “The LBA Pottery of Area BU in the Royal Palace of Qatna, Syria.”

Greener, Aaron “Late Bronze Age Imported Pottery in the Southern Levant: Intercultural Contact, Symbolism and Society”; Eli Cohen-Sasson “Qurayya Ware (Midianite Pottery) in the Southern Levant”; Mario Martin “Iron IIA Pottery from the Negev Highlands and its Link to the Wadi Arabah Copper Districts”; Faramarzi, Khashayar and Akbari, Mahsa Sassanian Royal Army against Counterpart World Powers”; Marro, C., Bakhshaliyev, B., Berthon, R., and Dessène, F. “The Earliest Kuro-Araxes Pottery Known to Date: New Discoveries from Ovçular Tepesi (Nakhchivan, Azerbaijan)”; Robert, Beatrice and Daverat, Loïc “Modeling Images by Shaping Ceramics”; Fragnoli, Pamela and Mallegni, Chiara “Society and Visual Image Transmission. The Painted Pottery during the Early Bronze Age at Arslantepe and in the Malatya-Elazi Are”; D’Andrea, Marta “Pottery Production at Khirbat Iskandar, Jordan: Preliminary Results of the Technological Study of EB IV Pottery from the Site”; Mousavi Haji, Seyyed Rasool, Shirazi, Ruhullah, Zour, Maryam, and Farzin, Saman “Survey of the Pottery Samples Collected from the Islamic Ages in Nikshahr and Chabahar (South East of Iran)”; Pizzimenti, Sara “A Reassessment of the Iron Age I-III Pottery in Northern Levant. The Contribution of the Iron Age Levels of Tell Mardikh-Ebla”; and Alizadeh, Fatemeh, Afarin, Reza Mehr, and Shirazi, Rouhollah “Study of the Pottery Samples of the Parthian Period in Baluchestan (Classification, typology and typology comparison).”

Terracottas in the Mediterranean through Time was the title of a conference held 23-26 March 2015 at the University of Haifa, Israel, and organized by the Archaeological Institute of America. This conference was under the auspices of the Zinman Institute of Archaeology, Faculty of Humanities, School of History, Department of Art History in the University of Haifa, and

the Association for Coroplastic Studies. (See also *SAS Bulletin* 37(2):12-13, 2014). The conference aims to bring together scholars and students who often tackle the same issues as the study clay figurines and related objects from different periods and parts of the Mediterranean region. Scholars who research terracottas of illiterate societies often use anthropological and ethnographical methods, while those studying terracottas of historical periods refer to historical sources and artistic analogies. The various viewpoints and attitudes may enrich and deepen our understanding of terracotta figurines and their role in society. The scope of issues discussed at the conference was wide, and followed the different stages of the terracottas' lives: First stage - the artisans or coroplasts: aspects of manufacture; typology and iconography; production of large- and small-scale terracottas; social status of the artisans; organization of workshops; questions of specialization; relationships with other media and workshops; new technologies employed in the dating and identification of workshops. Second stage - patterns of distribution: interaction between terracotta production and markets; local production versus imports; imitations; trading, selling and offering. Third stage - the users: Who used terracottas and who did not; how they were used and in what circumstances; usage through space and time; other objects used together with terracottas; themes and types in specific contexts (sacred, funereal and domestic); choice of types; symbolic meaning conveyed by terracottas; the role of terracottas in society; terracottas and gender. Fourth stage - phasing out: How, why and when terracottas went out of use; patterns of deposition or obliteration; archaeological context of terracottas and its meaning. Fifth stage - ancient terracottas today: influence of ancient terracottas on 19th- and 20th-century art; robbery and the antiquities market; museum display of terracottas. The official language of the conference was English. Additional information may be obtained from Dr. Adi Erlich, aerlich@research.haifa.ac.il.

The keynote address, "2015, the Year of Coroplastic Studies," was given by Jaimee Uhlenbrock (President of the Association for Coroplastic Studies). Ten sessions were held (titles in italics):

The Deconstructed Body: Heads, Protomai, Hands: "Countenances of Clay: Isolated Heads and Terracottas in Pre-Roman Italy" by Keely Heuer (State University of New York at New Paltz); "Gestures and Symbolology of the Terracotta Hands from the Cave of the Nymph Koroneia, Boeotia, Greece" by Stavros Oikonomidis (Arcadia University, Glenside) and Nelli Skumi (Ephorate of Paleoanthropology and Speleology, Athens); and "Votive Terracotta Protomai in Greek Sanctuaries

and their Settings" by Sanne Hoffmann (National Museum of Denmark and Aarhus University). *Terracottas in Sanctuaries I: "Fragments of Identities: The Goddess Parthenos, her Cult and Worshippers in Light of Terracotta Votives from her Sanctuary in Neapolis (Greece, Modern Kavala)"* by Alexandra Prokova (University of Cologne); "Figurative Terracottas from a Cave Sanctuary at Paliambela Vonitsas, (Akarnania), West Greece" by Aggie Karadima, on behalf of Evangelia-Miranda Chatziotou (Ephoreia of Speleology and Palaeoanthropology of South Greece, Athens); and "Terracotta Finds from the Demeter and Kore Sanctuary at Ancient Corinth" by Sonia Klinger (University of Haifa). *Terracottas in Sanctuaries II: "A Glimpse of Large-Scale Terracotta Figures from Gela Workshops in Late-Archaic and Classical Periods"* by Marina Albertocch (CNR-IBAM, National Research Council of Italy); "The Function and Meaning of the Large Clay Statues from Despotiko" by Yannis Kourayos (Paros Archaeological Museum), Erica Angliker (University of Zurich), and Kornilia Daifa (Greek Ministry of Culture); and "On Sacred Ground: Interpreting Diverse Depositional Contexts at the Pantanello Sanctuary at Metaponto" by Rebecca Miller Ammerman (Colgate University, Hamilton NY).

Types, Meaning and Context: "Hellenistic Grotesque Figurines: Societal Functions on Mainland Greece" Heather Bowyer (Arizona State University); "Hellenistic and Roman Imperial Terracottas from Secondary and Primary Contexts in Pergamon and its Region: a Confrontation" Sven Kielau (Independent Researcher); and "Terracotta Figurines and Fertility Cult in Ashqelon in the Byzantine Period" by Fanny Vitto (Israel Antiquities Authority). *Technique, Production and Artisans I: "From Production to Consumption: Life Histories of Figurines from Cretan Bronze Age Peak Sanctuaries"* by Christine Morris, Trinity College Dublin and Alan Peatfield (all University College Dublin); "Understanding the Choices of Artisans in the Production of the Base-Ring Female Figurines from Cyprus" by Constantina Alexandrou (Trinity College Dublin); "Judean Pillar Figurines and the Organization of Production: Evidence from Jerusalem and Beyond" by Erin Darby (University of Tennessee, Knoxville); and "Sculpture in Clay: The Techniques of the Ancient Coroplast" by Nancy Serwint (Arizona State University). *Technique, Production and Artisans II: "Made in Akragas, Moulded Figurines, an Archaeological Experiment"* by Gerrie van Rooijen (Leiden University); "A Technological and Compositional Study of the Hellenistic and Roman Terracotta Figurines from the House of Orpheus in Nea Paphos, Cyprus" by Maria Dikomitou-Eliadou (University of Cyprus), Giorgos

Papantoniou (Trinity College Dublin); Demetrios Michaelides (University of Cyprus), Eleni Aloupi-Siotis (THETIS Authentics Ltd), and Vassilis Kilikoglou (National Centre for Scientific Research “Demokritos”); and “Relatives in Province: Sepulchral Appliqué from the 1st-2nd Centuries AD Bosphorus - a Phenomenon of Terracotta Reliefs Reissued in Plaster” by Nadia C. Jijina (State Hermitage Museum, St. Petersburg).

Terracottas and Gender: “Gendering Figurines: Sex, Gender, and Ideology in Figurine Studies” by Erin Averett (Creighton University, Omaha) and Erin Darby (University of Tennessee, Knoxville); “Mycenaean Figures and Figurines as Gendered Bodies” by Ann-Louise Schallin (University of Gothenburg); “Who Used the Judean Pillar Figurines?” by Raz Kletter (University of Helsinki); and “Motifs Defining Male and Female Images on Chalcolithic Ossuaries” by Dina Shalem (Kinneret Institute for Galilean Archaeology). *Terracottas of the Late Bronze and Iron Age in the Southern Levant*: “New Figurines from Tell Jemmeh: Assessment of a Border Site” by David Ben Shlomo (Ariel University, Israel); “Putting Together the Pieces: A New Look at the Anthropomorphic and Zoomorphic Figurines and Vessels from Samaria” by Daphna Tsoran (Hebrew University of Jerusalem); “The Female Terracotta Figurines from the Iron Age II Found in Jordan” by Regine Hunziker-Rodewald (University of Strasbourg); and “The Megiddo-Ta’anach Figurines Revisited” by Laura Peri (Israel Museum, Jerusalem). *Between the Koine and the Regional*: “The Effects of Miniaturization: Figurines and Social Change in Hellenistic Babylonia” by Stephanie Langin-Hooper (Southern Methodist University, Dallas); “The Reclining Figurines from Seleucia on the Tigris: Transformation of Iconographies and Cultural Complexity in Seleucid and Parthian Mesopotamia” by Roberta Menegazzi (Centro Ricerche Archeologiche e Scavi di Torino per il Medio Oriente e l’Asia, Torino); and “Ritual Gestures and Bodily Communication: Exploring Religious Transformation in Cyprus during the First Millennium BC” by Giorgos Papantoniou (Trinity College Dublin). *Interpreting Terracottas in the Greco-Roman Near East and Egypt*: “‘The Gesture of Blessing’ on Near Eastern Clay Figurines of the Roman Period” by Renate Rosenthal-Heginbottom (Independent scholar); “The Role of Greco-Roman Egyptian Terracotta figurines as Representatives of the Notion of ‘Divine Reflexivity’: A Case Study of Figurines from the Collection of the Israel Museum, Jerusalem” by Rachel Caine Kreinin (Israel Museum, Jerusalem); and “Graeco-Egyptian Coroplastic Art: Interpreting Formal Consistency and Changes of Meaning” by Veit Vaelske (Humboldt-Universität Berlin).

The Society for American Archaeology’s 80th Annual Meeting was held 15-19 April 2015 in San Francisco, CA, USA. Information from the “Preliminary Program” (major session titles and lists of participants) was previously published in the *SAS Bulletin* 38(1):15-16 (2015). I have been reporting author’ names and titles of ceramic papers and posters from the SAA meetings for a number of years: *La Tinaja* (2000-2010) and *SAS Bulletin* (1997-2015). The 2015 SAA meeting has the most presentations (240) demonstrating that ceramic studies are alive and well – and shows increases in the number of topics and the use of analytical techniques. Three colleagues whose research involves ceramic studies were recognized during the annual 2015 Business Meeting: Barbara Mills, David Hurst Thomas, and Jeff Parsons. The Award for Excellence in Archaeological Analysis was presented to Barbara J. Mills. The award states: “Barbara J. Mills has earned the SAA’s Award for Excellence in Archaeological Analysis for her scholarly breadth and path-breaking research in the field of ceramic analysis. Dr. Mills’ work has spanned a remarkable spectrum of topics and issues, from her influential early publications on core interpretive problems of ceramic assemblage formation, to technical studies of ceramic production, sourcing, and causes of stylistic variation. Dr. Mills has long been at the vanguard of scholars using ceramic data to address social questions, including issues of gender, identity, social competition, and inequality in the prehistoric Southwest. Most recently, she has used ceramic data to explore modes of interaction, migration, and social resistance among Prehispanic populations and communities within a regional-scale network analysis. Throughout her exemplary career, Dr. Mills has elevated the study of archaeological ceramics to the highest order of anthropological inquiry, and she stands as a model and inspiration to the discipline.”

The Fryxell Award for Interdisciplinary Research was given to David Hurst Thomas. The award states: “David Hurst Thomas earns the SAA’s Fryxell Award for Interdisciplinary Research for his combination of cross-disciplinary scholarship, leadership in public education, and committed service to the profession. Through his long and productive career, Dr. Thomas has pioneered research in the interdisciplinary spirit, incorporating human biology, history and ethnohistory, experimental archaeology, paleoethnobotany, zooarchaeology, geoarchaeology, remote sensing, and quantitative methods. He has published widely on this work, ranging from the Great Basin Archaic to the early Colonial Contact period interactions in coastal Georgia and the Desert Southwest. His textbooks have been staples in the archaeological education of two generations of American students. He is widely respected for his engagement with

descent communities, his authorship of several award-winning popular books on colonial impacts and entanglements with Native America, and his service on numerous editorial boards, museum boards, and professional committees.”

The Award for Excellence in Latin American and Caribbean Archaeology was presented to Jeffrey Parsons. The award states: “Jeffrey Parsons deserves the Award for Excellence in Latin American and Caribbean Archaeology for his combination of scholarship, service to the profession, and academic influence on colleagues all over the Americas. Dr. Parsons’ long-lasting contributions to Mexican and Peruvian archaeology extend back more than four decades and include groundbreaking fieldwork and research that helped shape the entire discipline, in theory and methodology. His approaches to ethnoarchaeology, and especially his development of methods for regional and systematic settlement pattern surveys, have had profound and widespread implications in the practice of archaeology, becoming the standard for such research. Dr. Parsons is a prolific author with a wide impact on his audience, as well as a model collaborator with fellow Latin American archaeologists, furthering local research and training wherever he has worked. He is an established indefatigable investigator and an accomplished teacher whose work is an inspiration to students and professionals alike.”

SYMPOSIUM: ADVANCES IN THE METHOD AND APPLICATION OF CERAMIC PETROGRAPHY: INTERNATIONAL PERSPECTIVES ON KEY ARCHAEOLOGICAL QUESTIONS, PART I (Sponsored by Geoarchaeology Interest Group (GIG). Chair: Peter Day. Participants: Jennifer Meanwell “Function-Based Processing Decisions in the Middle Balsas Region of Guerrero, Mexico”; Jill Hilditch “Fabrics of Space and Time: Multiscalar Analytical Approaches to Social Process in the Middle Bronze Age Aegean”; Vassilis Kilikoglou and Anno Hein “Petrography and Chemistry Live Together in Perfect Harmony”; Suzanne Eckert and Tiffany Clark “Integrating Petrographic and INAA Compositional Data: Chupadero Black-on-White Ceramic Production and Distribution in the Salinas and Sierra Blanca Regions of New Mexico”; Lane Fargher, Marc N. Levine and Flor Arcega-Cabrera “Using Natural Breaks to Work Together: Compositional Analysis of Archaeological Ceramics Using Petrography and NAA”; Wesley Stoner “The Analytical Nexus: Multi-Technique Approaches to Ceramic Composition”; Marta Tenconi, Peter Day, Elina Kardamaki, Joseph Maran and Alkestis Papadimitriou “Transport Jars at the Mycenaean Citadel of Tiryns,

Greece: New Evidence from Petrographic Analysis of Trade in the Late Bronze Age Eastern Mediterranean”; Ioannis Iliopoulos and Albert J. Ammerman “A Characterization Study of Some of the Earliest Ceramic Building Materials from Sites in Rome and its Surrounding Area”; John Millhauser “The Social Dimensions of Complex Industries: Insights from a Thin Section Microscopy Study of Aztec Salt-Making Pottery”; Ian Whitbread, Jeremy Taylor, Mark Williams, Ian Wilkinson and Ian Boomer “Microfossils and Micro-XRF: Sourcing Raw Materials for Iron Age to Romano-British Pottery Production at Burrough Hill Hillfort, UK”; Jason Sherman and Leah Minc “Assessing Ceramic Production and Exchange in the Early Monte Albán State (Oaxaca, Mexico)”; John Moody, Linda Howie and Lisa Hodgetts “Expanding the (Micro)Scope: Exploring the Technological and Provenance Characteristics of Inuit Pottery Containing Atypical, Animal-Deriving Organic Paste Ingredients”; and Linda Howie “New Faces, New Pressures, New Pots: Collective Identities in Action in the Ceramic Record at Lamanai, Belize.”

SYMPOSIUM: ADVANCES IN THE METHOD AND APPLICATION OF CERAMIC PETROGRAPHY: INTERNATIONAL PERSPECTIVES ON KEY ARCHAEOLOGICAL QUESTIONS PART II (Sponsored by Geoarchaeology Interest Group (GIG): Chairs: Wesley Stoner and Lane Fargher. Participants: Gareth Perry “Pottery Production in Anglo-Scandinavian Torksey (Lincolnshire): Reconstructing and Contextualising the Chaîne Opératoire”; Donna Roper “Characterizing Eighteenth Century Technological Changes in Pawnee Pottery”; Roberta Montesana, Peter M. Day, Vassilis Kilikoglou and Simona Todaro “Technological Variability in Ceramics of the Neolithic to Early Bronze Age transition at Phaistos, Crete: An Integrated Approach”; Robert Mason “The Microscopy and Macroscopy of Islamic Lustre Wares”; William Gilstrap and Peter M. Day “‘A Burden of One’s Own Choice is Not Felt’: Observing Ceramic Production Technology, Exchange and Consumption in the Late Mycenaean Saronic Gulf”; John Lawrence, Kathleen Marsaglia, Scott Fitzpatrick and Thomas Wake “Preliminary Petrographic Analysis of Ceramics from the Bocas del Toro Archipelago, Panama”; Maria Masucci and Hector Neff “Arybolas, Amphoras and Manteño Ordinario: The Production and Significance of Ecuadorian Transport Vessels”; Clare Burke, Peter Day, Eva Alram-Stern and Katie Demakopoulo “Crafting Choices: Neolithic–Early Helladic II Ceramic Production and Distribution, Midea, Mainland Greece”; Lori Reed and Mary Ownby “In the Land of Lava: Petrographic and Chemical Analysis of Pottery from El Malpais National Monument”; Ann Cordell, Neill Wallis and Thomas

Pluckhahn "Ceramic Petrography and Woodland Period Social Interactions in Florida and the Southeastern United States"; Isabelle Druc "Rojo Grafitado is Not Graphite. A Slow-Science Interpretation of the Production of an Andean Ceramic Style"; David Killick and Edwin Wilmsen "Ceramic Petrography, Historical Linguistics and the Bantu Expansion: Tracking the Arrival of the First Pottery-Using Peoples in Northern Botswana"; Edyta Marzec, Peter Day and Katherine Grillo "Petrography of "Nderit" Pottery from Pastoral Neolithic Sites Surrounding Lake Turkana in Kenya"; and Veronica Testolini "Cooking Vessels of the Early Medieval Village of Miranduolo, Tuscany: A Petrographic Study."

GENERAL SESSION: ARCHAEOLOGICAL APPLICATIONS OF X-RAY FLORESCENCE: Chair: Jayne-Leigh Thomas, Participants: Detlef Wilke "Using Spiked, Fired Clay Samples for Developing Robust Quantification Algorithms for pXRF of Pottery"; Sam Carrier, Hillary Conley and Susan Kan "Portable X-Ray Florescence Studies of Black-Gloss Pottery from Monte Pallano (Italy)"; and Shawn Lambert Patrick Livingood "Locally-Made or Transported Heirlooms?: XRF Source Analysis of Post-Removal Choctaw Ceramics from Southeastern Oklahoma." GENERAL SESSION: ADVANCES IN ARCHAEOLOGY TECHNOLOGY: Mary Malainey, Timothy Figol and James Skibo "Addressing the Challenges of Developing a Standardized System for the Morphological and Functional Analysis of Archaeological Pottery." POSTER SESSION: XRF IN ARCHAEOLOGY: Ursel Wagner, Benilde Costa, Werner Häusler, A. Silva and Friedrich Wagner "Mössbauer, XRD and XRF Study of Roman Amphorae and Amphora Kilns from the Roman Provinces of Baetica and Lusitania Andclays [sic.]; and Kevin Nolan and Mark Hill "Exploration of Wet and Dry Portable X-Ray Fluorescence for Archaeochemical Propection: A Pilot Study in Comparative Method." POSTER SESSION: GEOPHYSICAL SURVEYS, GIS, AND SETTLEMENT PATTERNS IN PERU AND BOLIVIA: Melissa Litschi and Kayeleigh Sharp "pXRF Meets GIS: A Preliminary Investigation of Spatial Variability in Domestic Ceramics at Songoy-Cojal, North Coast, Peru."

SYMPOSIUM: FROM FORAGERS TO EMPIRES: RECENT RESEARCH ON THE SOUTH COAST OF PERU: Masato Sakai, Jorge Olano, Yoichi Watanabe and Kaoru Honda "Nasca Lines, Ceramic Sherds, and Social Changes: Recent Investigation at the Nasca Pampas, Southern Coast of Peru"; and Meghan Tierney "The Human/Animal Continuum in Nasca Sculptural Ceramics (c. 1-450)."

POSTER SESSION: ARCHAEOLOGIES OF ISLANDS AND ATOLLS OF OCEANIA: Ian Takaoka and Jojie Banas "Nukubalavu 1: A Preliminary Examination of Mid-Sequence Ceramics and Culture Change on Vanua Levu, Fiji"; and Nicole Hernandez, Julie Field, John Dudgeon and Christopher Roos "Starch and Ceramics: Dietary Transition and Technology in the Sigatoka Valley, Fiji." GENERAL SESSION: NEW METHODS IN ARCHAEOLOGY IN MESOAMERICA: Adam Sellen "Using X-Radiography to Reveal an Ancient Zapotec Urn."

GENERAL SESSION: ARCHAEOLOGY OF THE MOCHE: Aleksa Alaica "Companions or Counterparts: Considering the Role of Animal Depictions in Moche Ceramics from Northern Peru"; and Sally Lynch "A Study of Fineline Iconographic Depictions at the Late Moche site of Huaca Colorada, in the Jequetepeque Valley, Peru." SYMPOSIUM: CAPITAL, CRAFT, AND CONSUMPTION IN MESOAMERICA AFTER THE SPANISH INVASION: Cynthia Otis Charlton and Patricia Fournier "Conspicuous Consumption in the Basin of Mexico: Chinese Porcelains as Prestige Markers in the Eastern Teotihuacan Valley"; Patricia Fournier and Bridget M. Zavala "Firing Pots in Durango: Craft Manufacture of Glazed Wares and the Origins of Consumption and Production Inequality in Northern Mexico"; and Veronica Velasquez "Potters' Signatures and Changes in the Maiolica Craft from Colonial Mexico as an Expression of the Doctrine of Blood Purity."

SYMPOSIUM: AN ARCHAEOLOGIST'S GEOLOGIST: A SYMPOSIUM IN HONOR OF WILLIAM R. DICKINSON: Scarlett Chiu, David Killick, William Dickinson and Christophe Sand "Connection and Competition: Some Early Insights Gained from Petrographic Studies of New Caledonian Lapita Pottery"; Ethan Cochrane and Timothy Rieth "Petrographic and Geochemical Evidence Reveals the Local Focus of Interaction throughout Samoa's Prehistory"; Michiko Intoh "Clay and Technology: Micronesian Ceramic Tradition"; Kathleen Marsaglia, Scott Fitzpatrick, John Lawrence and Jenni Pavia "From Sea to Shining Sea: The Influence of Bill Dickinson's Pacific Island Ceramic Petrography on Caribbean Research"; and Peter Sheppard "The Use of a Bench-top SEM in Ceramic Characterization in Oceania."

SYMPOSIUM: CIRCULATION OF PEOPLE, THINGS & IDEAS: PRACTICES OF MOBILITY IN THE UPPER USUMACINTA BASIN: Rodrigo Liendo and Esteban Miron "Territorial Attachments and Border Formation in the Upper Usumacinta River Basin Discussing Ceramic Mobility within a Fractured Political

and Geographical Landscape”; and Ronald Bishop, Socorro Jiménez and Erin Sears “Volcanic Ash in the Ceramics of the Greater Palenque Region and Usumacinta Drainage, Chiapas and Tabasco, Mexico.” SYMPOSIUM: MICRO-WORLDS, MATERIALITY AND HUMAN BEHAVIOUR: MAGNIFYING MATERIAL SCIENCE IN EXPLANATIONS OF TECHNOLOGY: Marcos Martinon-Torres, Andrew Bevan, Xiuzhen Janice Li, Yin Xia and Kun Zhao “Chemical Analyses and Copy-Errors: Technological Control and Artistic Behaviour in the Making of China’s Terracotta Army”; Erik Gjesfjeld “Archaeometric Analysis of Hunter-Gatherer Pottery from Northeast Asia”; Silvia Amicone, Patrick Quinn, Miljana Radivojevic and Thilo Rehren “On the Transmission of Pottery Recipes at the Dawn of the Metal Age: A Case Study from Pločnik and Belovode”; and Kevin Gibbs “Inclusions and Innovations in Late Neolithic Pottery from the Southern Levant.” SYMPOSIUM: NEW INSIGHTS INTO PAINTED POTTERY FROM NORTHWEST CHINA: Chairs: Ling-yu Hung and Liangren Zhang. Participants: Eric Carlucci and Ling-yu Hung “Neolithic Northern China in the Context of Early Eurasian Interactions”; Ting An “Considering a ‘Chinese Element’ in Southeast Europe before the 2nd Millennium BC”; Yi-Xian Lin, Ian Freestone and Hui Wang “Understanding the Production of Majiayao Painted Pottery in Gansu: New Data and New Thoughts”; Ling-yu Hung and Jianfeng Cui “Migration, Diffusion, and Trade: Potting in Neolithic NW China”; Shuicheng Li “Painted Pottery of the Siba Culture and Its Implications”; Liangren Zhang “The Dispersion of Early Painted Pottery in Northwest China”; Enguo Lu “Prehistoric Painted Pottery of Xinjiang”; and Louisa Fitzgerald-Huber as Discussant. GENERAL SESSION: THE ARCHAEOLOGY OF EAST AND SOUTHEAST ASIA: Fumie Iizuka, Masami Izuho and Pamela Vandiver “Adoption of Ceramic Technology: Case Study from Incipient Jomon of Southern Kyushu (ca. 13,500/14,000–12,000 cal yr BP).”

POSTER SESSION: EXPERIMENTAL ARCHAEOLOGY AND ACTUALISTIC STUDIES: Jay Stephens and Pam Vandiver “Technical Analysis and Replication of Corinthian Polychrome Slips, 8th-6th Centuries BCE.” POSTER SESSION: DEVELOPMENTS IN FIRED CLAY CERAMIC REHYDOXYLATION DATING (RHX DATING): Chairs: Timothy James Scarlett and Kostalena Michelaki. Participants: Timothy James Scarlett, Jaroslav Drelich, Carl Lipo, Elizabeth Niespolo and Shan Zhao “Multi-Lab Collaborative Experiments with RHX Dating”; Shan Zhao, Jaroslav Drelich and Timothy James Scarlett “Revised Drying Conditions in Rehydroxylation (RHX)

Technique for Dating Ceramic Artifacts”; and Steven Sarich and Timothy James Scarlett “Physical Characterization of Stoneware Ceramic Materials.” GENERAL SESSION: ARTIFACTS AND ARTISANS IN ANCIENT MESOAMERICA: Timothy Garfin, Sachiko Sakai and Hector Neff “Possible Functions of a Late Prehistoric Coarseware from the Estuary Zone of Eastern Soconusco.”

SYMPOSIUM: ARCHAEOLOGICAL RESEARCH IN THE CAÑETE VALLEY, PERU: Francesca Fernandini “Change and Continuity in Ceramic Production at Cerro de Oro, Cañete”; and Carol Rodriguez “Characterization of the Cerro de Oro Pottery Style.” ELECTRONIC SYMPOSIUM: SMOKE, FLAMES, AND THE BODY IN MESOAMERICAN RITUAL PRACTICE: Joel Palka “Where There’s Fire, There’s Smoke: Contemporary Lacandon Maya Incense Burners and Ritual Transformation.”

POSTER SESSION: ZOOARCHAEOLOGY AND CERAMIC STUDIES IN THE CARIBBEAN: Jillian Hendrix, Steven Hackenberger, Diane Ward, Amanda Kaminski and Timothy Ward “Analysis of Fatty Acids in Precontact Ceramics from Barbados, West Indies”; and Amanda Guzman “The Breaking and Making of Ceramics in the Pre-Columbian Caribbean: A Technological Approach to Grog Identification.” SYMPOSIUM: HOUSEHOLD AND RITUAL IN THE EASTERN OLMEC HEARTLAND: María Higuera “Las figurillas cerámicas de Los Soldados, Veracruz: Una evidencia de la relación cultural y de identidad de una comunidad Olmeca.” GENERAL SESSION: MISSISSIPPIAN ARCHAEOLOGY: Rachel Briggs “Characterization of the Mississippian Standard Jar”; Erin Phillips “The Associations Model for Use of Hemphill-Style Engraved Pottery at Moundville”; and Dru McGill “Standardization and Variability of Decorated and Undecorated Pottery Vessels from Angel Mounds, Indiana.”

SYMPOSIUM: USE-WEAR, EXPERIMENTAL ARCHAEOLOGY AND RESIDUE ANALYSIS IN THE PEOPLE’S REPUBLIC OF CHINA, A SESSION IN MEMORY OF GEORGE H. ODELL: Wei Ge and Weijin Huang “The Diversity of Botanical Food of the Hemudu People: Evidence from an Examination of Food Residues in a Fu pot.” SYMPOSIUM: SEE HOW WE ARE: REPRESENTING IDENTITY IN THE ANCIENT AMERICAS” Yumi Huntington “Head Motifs on Cupisnique Style Ceramics: Emblems of Cultural Identity in Early Andean Art.” SYMPOSIUM: INTERPRETING CHANGES IN ANCIENT MAYA SOCIETY: FROM LANDSCAPE AND ARCHITECTURE TO

EVERYTHING IN BETWEEN: Erin Sears “Willfully Obscured: Figurines and Caves in the Maya Late Classic Period.” SYMPOSIUM: PRECLASSIC KAMINALJUYU, GUATEMALA: NEW INTERPRETATIONS ON SOCIAL PROCESSES: Jose Raul Ortiz “Revisiting the Preclassic Ceramic Sequence of the Greater Kaminaljuyu Zone”; and Gloria Aju, Barbara Arroyo, Lorena Paiz and Andrea Rojas “The Chronological Ceramic Sequence of Naranjo, Guatemala: A Revision and Relationship to Kaminaljuyu.”

GENERAL SESSION: MESOAMERICAN ARCHAEOLOGY: CENTRAL MEXICO AND THE GULF COAST: Chantal Huckert “Imágenes en la Vestimenta de las Figurillas Sonrientes de la Costa del Golfo.” SYMPOSIUM: MAPPING OUT POTTERY PRODUCTION AND EXCHANGE IN THE LATE CLASSIC VALLEY OF OAXACA, MEXICO: Chairs: Leah Minc and Jeremias Pink. Participants: Leah Minc “From Clay Survey to Ceramic Provenance: Establishing a Ceramic Geography for the Late Classic Valley of Oaxaca”; Robert Markens, Cira Martínez López and Marcus Winter “Ceramic Production and Distribution in Classic Period Monte Albán, El Trapiche and Lambityeco”; Ronald Faulseit, Gary Feinman and Linda Nicholas “Ceramic Paste Distribution and Market Exchange in the Tlacolula Valley, Oaxaca, Mexico”; Jeremias Pink “Rural Craft Production and Market Participation in Late Classic Oaxaca: A Case Study from Yaasuchi”; and Jeffrey Blomster as Discussant. SYMPOSIUM TAMTOC: CHARACTERIZING AN URBAN SOCIETY. RECENT INVESTIGATIONS: Denia Berenice Villanueva Ruiz “Zoomorphic Representations of Figurines in Tamtoc, SLP, Mexico.” SYMPOSIUM: EVOLUTIONARY THEORY AND ARCHAEOLOGY, PART II: APPLICATIONS OF HUMAN BEHAVIORAL ECOLOGY, MACROEVOLUTIONARY APPROACHES, AND COSTLY SIGNALING: Fraser Neiman “Costly Signaling and the Dynamics of Consumption in the Early-Modern Atlantic World: The Case of Clay Tobacco Pipes.”

SYMPOSIUM: ADVANCES ON THE INVESTIGATION OF CHALCHIHUITES CULTURE: Cindy Sandoval, José Luis Punzo and Héctor Víctor Cabadas “Petrographic Analysis of Ceramics and Construction Materials: The Dwellers of Cueva del Maguay in the Sierra Madre Occidental and the Ferreria Site of the Guadiana Valley in Durango, Mexico.” SYMPOSIUM: NEW PERSPECTIVES ON THE ARCHAEOLOGY OF TECHNOLOGICAL CHANGE: Pamela Vandiver “Reverse Engineering Ancient Pyrotechnologies”; and Heather Miller “Invented,

Adopted, Shared, Acquired, Inspired? Technological Change and the Talc-Faience Complexes of the Indus Valley Tradition.” SYMPOSIUM: THE DIMENSIONS OF RITUALITY 2000 YEARS AGO AND TODAY: Violeta Vazquez Campa “The Roles of the Figurines of Oaxaca.” SYMPOSIUM: MOVING FORWARD IN CASAS GRANDES ARCHAEOLOGY: Gordon Rakita and Michele Pierson “Plainware Ceramics from the Surface of the 76 Draw Site, Luna County, New Mexico”; John Topi and Philip Leflar “Geometric Morphometric Approaches to Casas Grandes Ceramic Specialization”; and Emma Britton “Results of Petrographic Analysis of Polychromes Across the Casas Grandes World.”

POSTER SESSION: MAYA ARCHAEOLOGY: Lisa Duffy and Timothy Garrett “Investigating Ancient Beverages from Cerro Maya, Belize through Chemical Residue Analysis”; Jillian Jordan and Keith Prufer “Late Classic Household Ceramic Production at Uxbenká, Belize”; Angelina Sweeney, Robyn Dodge, Fred Valdez, Jr. and Lauren Sullivan “Sourcing the Clay: LA-ICP-MS Analysis of Ceramics from the Programme for Belize Archaeological Project, Northwestern Belize”; and David M. Hyde “A Problematic Deposit from a Maya Hinterland Household: Chert, Sherds and Obsidian.” POSTER SESSION: CERAMIC ANALYSIS IN SOUTH AMERICA: Participants: Hannah McAllister, Rebecca Bria and Elizabeth Katherine Cruzado Carranza “Reconstructing a Recuay Feasting Event at Hualcayán, Peru through Ceramic Analysis”; Erick Casanova Vasquez, Rebecca E. Bria and Elizabeth K. Cruzado C. “A Study of Domestic Ceramics from Hualcayán, Ancash, Peru”; Andrew Roddick “Chijipata Alta: Tracing A Genealogy of Potting Practice in the Lake Titicaca Basin”; Nuria Sugrañes and Fernando Franchetti “Distributional Studies in North Patagonia, Argentina. An Archaeological Ceramic Approach”; Ester Echenique “Technological Styles and Production Practices in the Río Grande de San Juan Basin (Argentinean Bolivian Border) during the Late Intermediate Period”; Joseph Cronin and Rebecca E. Bria “Not Incised, but Well Burnished: A Typology of Undecorated Early Horizon Feasting Wares from Hualcayán, Highland Ancash, Peru.”

POSTER SESSION: COMPARATIVE APPROACHES TO POSTCLASSIC MESOAMERICAN CERAMICS: Chairs: Angela Huster and Anna Cohen. Participants: Anna Cohen and Elsa Jadot “Toward a Comparative Approach: Postclassic (AD 900–1521) Ceramics from the Pátzcuaro and Zacapu Basins, Michoacán, Mexico”; Angela Huster “Patterns of Postclassic Ceramic Exchange in the Toluca Valley and Surrounding Areas of Central Mexico”; Kea Warren “3,065 Sherd Disks and Their Potential Uses in Calixtlahuaca in the Toluca Valley”;

Kirby Farah “Examining Elite Domestic Practices in Postclassic Xaltocan, Mexico”; Lisa Overholtzer “Consuming in Empire: The Materiality of Household Consumption at Postclassic and Colonial Xaltocan, Mexico”; and Jamie Forde “Material Culture Change, Continuity, and Innovation at Postclassic and Early Colonial Achiutla, Oaxaca, Mexico.” POSTER SESSION: PREHISTORIC ARCHAEOLOGY IN THE SOUTHWESTERN UNITED STATES: Andrew Fernandez, Lauren Klein, Donald Millar and Alexia De Loera “Mugs of the Mesa and Old Chocolate: Evidence of Prehistoric Cacao Use in the Mesa Verde Region of the North American Southwest.” POSTER SESSION: CERAMIC ANALYSIS FROM SITES IN THE SOUTHWESTERN UNITED STATES: Ashton Satterlee and Andrew Duff “Further Analysis on Vessel Size and Feasting in Three Chacoan Great House Communities”; Elizabeth Newcomb “Relations in the Zuni Region: A Comparative Study of Ceramics”; Matthew Taliaferro, Bernard Schriever, Jeff Speakman and Elizabeth Toney “Exploring Technological Organization through Time: Mimbres Pottery Production”; Michael Pool “A Chronological and Functional Analysis of Pottery from the HO-Bar Site: A Mogollon Early Pithouse Period Site in West-Central New Mexico”; Shannon Horton and Karen Harry “Utilizing Corrugated Wares to Explore Regional Variations in the Virgin Branch Puebloan Culture”; Lydia Pittman “A Study of Miniature Pottery Vessels in the Mimbres Region 274-g James Allison and Jeffrey Ferguson—Neutron Activation Analysis of San Juan Red Ware Pottery”; Victoria Sluka, Chase M. Anderson, Donna M. Glowacki and Edward J. Stech “Reducing Human Error and Identifying Unknowns: X-Ray Fluorescence as a Tool for Identifying Paint Composition of Mesa Black-on-White Pottery”; and Hunter Burgess and Judith Habicht-Mauche “Connecting Tijeras Pueblo: Identifying Utility Ware Communities of Practice.” POSTER SESSION: PREHISTORIC ARCHAEOLOGY IN THE SOUTHEASTERN UNITED STATES: Katherine Wilson Examining the Ceramic Assemblage from Washington Mounds: An Early to Middle Caddo Site in Southwestern Arkansas”; Keith Stephenson and Karen Smith “A Chronology of Complicated Stamping in the Lower Savannah River Valley”; Christina Sampson “Lines and Legacies: Ceramic Assemblages from the Weeden Island Site (8PI1)”; Corey Frasca, Michael Carlson, Carlton Gover and Cliff Boyd “A Comparison of Lithic and Ceramic Artifacts from Two Adjacent Late Woodland Villages”; and Karla Oesch-A Stylistic Analysis of Protohistoric Polychrome Ceramics from the Lower Mississippi Valley.” POSTER SESSION: NEW PERSPECTIVES ON SALADO: Hannah Zanotto, Will Russell and Jeffery Ferguson “Reading between the Lines: Salado

Polychrome and (In)organic Paint Variability”; and Patrick Lyons and Deborah Huntley “Temporal and Spatial Variability in Roosevelt Red Ware Painted Decoration.”

SYMPOSIUM: 20 YEAR RETROSPECTIVE OF NATIONAL CENTER FOR PRESERVATION TECHNOLOGY AND TRAINING SPONSORED ARCHAEOLOGY (Sponsored by The National Center for Preservation Technology and Training): Chandra Reedy “Incorporating Image Analysis into Ceramic Thin-Section Petrography.” SYMPOSIUM RECENT ADVANCES IN THE SETTLEMENT AND LANDSCAPE ARCHAEOLOGY OF SOUTHWEST CHINA AND SOUTHEAST ASIA PART I: THE MACRO PERSPECTIVE: SPATIAL ANALYSIS AND SUBSISTENCE SYSTEMS: Caitlin Evans “Sites, Survey, and Ceramics: A GIS-based Approach to Modeling Early Prehistoric Settlement Patterns in the Upper Mun River Valley, Northeast Thailand.”

SYMPOSIUM: SOCIETY AND ECONOMY IN THE HOHOKAM WORLD: NEW EVIDENCE AND INSIGHTS FROM CANAL SYSTEM 2, PHOENIX, ARIZONA: Mary Ownby and James Heidke “Chronological Changes in Pottery Production in the Phoenix Basin: Evidence from La Villa”; and Joshua Watts “Pots, Middlemen, and the ‘Shopkeeper’ Hypothesis in the Hohokam Sedentary Period.” GENERAL SESSION: ARCHAEOLOGIES OF IDENTITY AND HUMAN EXPERIENCE IN THE PAST: Frank Winchell “The Butana Group in Comparison with the Predynastic and Late Neolithic Groups in the Nile Valley and Adjacent Areas of the Sahel and Sahara: A Look at How Ceramics Can be Used to Differentiate Socioeconomic, Ethnic, and Political Differences.” POSTER SESSION: CALIFORNIA ARCHAEOLOGY: Margie Burton, Patrick Quinn and Rhiannon Byrne-Bowles “Ceramic Distribution, Migration, and Social Interaction at Mine Wash, a Late Prehistoric (1300–200 BP) Seasonal Habitation Site in San Diego County, California.” POSTER SESSION: CERAMICS AS MEANS TO ENDS AND MEANS OF EXPRESSION IN TERMINAL CLASSIC NORTHWESTERN HONDURAS: Jacob Griffith-Rosenberger, Reagan Neviska and Chelsea Katzeman “Fashioning Meaning through Ceramic Candeleros in the Terminal Classic Naco Valley, Northwestern Honduras”; Edward Schortman and Patricia Urban “Through a Smoke Cloud Darkly: The Possible Social Significance of Candeleros in Terminal Classic Naco Valley Society”; Caroline Del Giudice, Patricia Urban and Edward Schortman “Is It Hot Enough Yet? Reconstructing Firing Temperatures for Prehistoric Honduran Ceramics through

Re-Firing Experiments”; Patricia Urban “Variations in Late and Terminal Classic Ceramic Firing Facilities within Southeastern Mesoamerica”; and Marne Ausec, Patricia Urban, Jacob Griffith-Rosenberg, Reagan Neviska and Chelsea Katzeman “Birds, Monkeys, and Shapes, Oh My!: Investigating Intersecting Motifs on Ceramic Vessels, Stamps, and Candeleros.”

GENERAL SESSION: CERAMIC STUDIES IN THE SOUTHWESTERN UNITED STATES: Chair: Meaghan Trowbridge. Participants: William Willis and Karen Harry “The Potential Role of Water Salinity in Limestone Tempered Logandale Gray Ware Ceramic Production in the Moapa Valley, Nevada: An Experimental Approach”; Meaghan Trowbridge and Lori Stephens Reed “Looking through the Local Lens: Recognizing Southern Chuska Valley Production of Mesa Verde Style Pottery”; and Isabel Starr, James McGrath and Will Russell “Depictions of Human Facial Decoration on Mimbres Pottery as an Indication of Social Affiliation.”

SYMPOSIUM: THE SHORT AND THE LONG OF IT: COMBINING TIMESCALES: Zackary Gilmore, Asa Randall and Kenneth Sassaman “Locating Events in Process: A Multiscalar Examination of Early Pottery in the Southeastern U.S. Using Bayesian Statistics”; and Seren Griffiths “Modelling the Chronology of Neolithic Ceramics in Eastern France.”

POSTER SESSION: PLAINS ARCHAEOLOGY: Zachary Day, LuAnn Wandsnider and Matthew Douglass “Sourcing Interactions: X-Ray Diffraction of Central Plains Tradition Ceramics during the Medieval Climatic Anomaly.”

GENERAL SESSION: CONTEXTS OF ARTIFACT PRODUCTION AND USE IN SOUTH AMERICAN ARCHAEOLOGY: María Scattolin “Before Calchaquí: The Formative Period and Middle Horizon Ceramics in Northwest Argentina”; William Barse “The Culebra and Ronquin Paleosols and Their Vessel Assemblages”; and Christian Mesia “A Classification of Middle Formative (1200– 800 BCE) Ceramics from Chavin de Huantar.”

GENERAL SESSION: MAYA CERAMICS: Chair: Keith Eppich. Participants: Joseph Horne “Maya Ceramic Production along the North Coast of the Yucatan Peninsula: Diagnostic Attributes Associated with Unslipped Wares at Viste Alegre”; Keith Eppich “The Evolution of Classic Maya Ceramic Shape Classes through Time; New Evidence from El Peru-Waka, Guatemala”; Mark Irish “Unit-Stamped Red Jars in the Southern Lowlands: New Insights into Ceramic Production and Exchange”; Jennifer Loughmiller-Cardinal “Categorical Imperatives: Reimagining the Classificatory Schema for Mayan Ceramic Vessels”; and Sarah Nicole Boudreaux “Distribution Patterns and Production Technology of Ancient Maya Ceramics in the Three Rivers Region.”

GENERAL SESSION: CERAMIC ANALYSIS: Chair: Cinzia Perlingieri. Participants: Julia Burtenshaw, Diana Magaloni and Johannes Neurath “Researching LACMA’s Colombian Ceramics”; Cinzia Perlingieri, Habtamu Mekonnen and Michael Harrower “An Integrated Digital Approach for Ceramic Analysis at Baita Semati, Northern Ethiopia”; Laura Marsh “Examining Variability and Provenance through Ceramic Petrography at Chavín de Huántar”; and Isabelle Martínez-Muñiz “The Application of X-Ray Diffraction to the Characterization of Clay Samples from the Tuxtla Mountains, México.”

SYMPOSIUM: THE IMPERIAL CRAFT: COMPARATIVE PERSPECTIVES ON PRODUCTION AND SOCIETY IN EMPIRES: Chairs: Bradley Sekedat and Steven Karacic. Participants (Ceramics only): Johanna Pacyga and François Richard “Crafting the Fringes of French Imperialism: Ceramic Politics in Siin, Senegal”; Steven Karacic “Producing Pottery in a Province of the Hittite Empire”; Bradley Parker “A Tale of Three Assemblages”; Elizabeth Murphy “Tinker, Tailor, Soldier... Potter? Roman Legionary Ceramic Production and its Organization”; and Carla Sinopoli as Discussant.

GENERAL SESSION: STUDIES OF TECHNOLOGY, ECOLOGY, AND CRAFT PRODUCTION IN SOUTH, CENTRAL, AND WESTERN ASIA Ian Jones “Questioning Technological and Economic ‘Decline’ in the Medieval Rural Levant”: Chair: Yiu-Kang Hsu. Participants (Ceramics only): Kyle Olson “No Aryans Needed: Toward Explaining the Distribution of Burnished Grey Ware Ceramics of the Third Millennium in Northeastern Iran”; Alexis Torrano, Andreas Angourakis, Veronica Martinez and Josep Maria Gurt “CAMOTECCER: Beyond the shard. Modeling and Simulating Variability in Central Asian Pottery Technology”; Siavash Samei and Karim Alizadeh “Craft Production and Specialization in the Transcaucasian Early Bronze Age: A View from Köhne Shahar, NW Iran; and Yukiko Tonoike “Interactions during the Iron Age in the Lower Khabur Basin of Northeastern Syria: Insights from Ceramic Petrography.”

SYMPOSIUM: ENVIRONMENTAL ARCHAEOLOGICAL APPROACHES IN SOUTHEAST ASIA: Seungki Kwak “Farming as a Dominant Subsistence Strategy?: Organic Geochemical Analyses on Potsherds from Prehistoric Korean Peninsula.”

SYMPOSIUM: THE MIRADOR BASIN: NEW INVESTIGATIONS AND CONSERVATION PROGRAMS: Donald Forsyth “The Ceramics of the El Mirador Region: An Update”; and Oscar Lopez and Stanley Guenter “Patrons and Artists: New Information on the Producers of Codex-Style Ceramics of the Mirador Basin.”

SYMPOSIUM: ITINERANT MATTERS AND HYBRID OBJECTS: RESEARCH ON MATERIAL TRANSFERS AND

CONTACT PRODUCTS: Peter Day and Vassilis Kilikoglou "Revealing the Common Ground: Technological Practice, Intrusive Shapes and Hybrid Pastes in the Kampos Group Pottery of Crete"; Thilo Rehren, Maninder Gill and Ian Freestone "Cultural Transmissions and Indigenous Influences: Glazed Tiles from Mughal India"; John Hoopes "Imitating from Memory: Hybrid Vessels and Attempted Replications of Stylistic Elements from Central Panama in the Pre-Hispanic Ceramics of Costa Rica"; Veronica Acevedo "Alfarería en las fronteras de La Quebrada de Humahuaca, Jujuy, Argentina (Ceramics at the borders of the Humahuaca Quebrada, Jujuy Argentina)"; Beatrix Hoffmann-Ihde "Identifying Transcultural Processes: The Wayana-Apalai and Tiriyo Example." SYMPOSIUM: PORTS, TRAILS, AND WATERWAYS: TRADE AND ECONOMY IN THE ANCIENT MAYA WORLD: E. Cory Sills, Linda Howie and Heather McKillop "Ancient Maya Trade and Communication as Evidence by Petrographic and Iconographic Analysis of Unit-Stamped Pottery." GENERAL SESSION: ARCHAEOLOGY OF THE BRONZE AGE: Eleanora Reber "Wine or Wax?: Organic Residue Analysis on Pottery from the Early Bronze I at Nahal Tillah."

Forthcoming Professional Meeting:

The 10th International Congress on the Archaeology of the Ancient Near East (10ICAANE) is scheduled for 25-29 April 2016 at the Austrian Academy of Sciences. The focus of the 10ICAANE comprises Ancient Near Eastern Archaeology, with special attention to Prehistoric studies, Ancient Near Eastern, and Egyptian Archaeology, as well as Islamic Archaeology. A specific focus will be given to connections between the Ancient Near East and the Early Aegean. A call for papers, workshops and posters has been issued with a submission deadline of 30 June 2015. Contact: 10icaane@oeaw.ac.at

All speakers are requested to observe a 20 minutes limit for their papers. All speakers must be registered in the congress. No papers or posters dealing with unprovenanced artefacts will be accepted. Abstracts submitted for papers, workshops or posters should be no longer than 200 words. All submitted abstracts will be evaluated by the Organizing Committee, information on accepted proposals will be sent via e-mail. The abstracts of the accepted papers, workshops or posters will be published on the ICAANE website by October 2015.

Special consideration will be given to the following themes: 1) Transformation & Migration; 2) Archaeology of Religion & Rituals; 3) Ancient Near Eastern Environments: Shifts, Impacts, & Adaptations; 4) Prehistoric and Historical Landscapes & Settlement

Patterns; 5) Economy & Society; 6) Excavation Reports & Summaries; 7) Images in Context: Agencies, Audiences & Perception; and 8) Islamic Archaeology.

Registration began 1 April, 2015 onwards. To register, please, go to the website: www.orea.oeaw.ac.at/10icaane.html. The Organizing Committee of the 10th ICAANE Vienna 2016 10icaane@oeaw.ac.at

ARCHAEOLOGICAL CHEMISTRY

Ruth Ann Armitage, Associate Editor

In this issue of the *Bulletin*, please join me in welcoming Dr. Ruth Beeston from the Department of Chemistry at Davidson College as Guest Columnist in Archaeological Chemistry. Ruth has graciously agreed to provide an overview of a recent symposium from the American Chemical Society Spring National Meeting that might be of interest to the SAS membership. As your Associate Editor was unable to attend the ACS meeting, my report would have been merely a summary of the abstracts, which can be found at [this link](#). Instead, here is Dr. Beeston's review of the symposium and forthcoming volume:

"A one-day symposium on "Chemical Technology in Antiquity" was held in Denver, CO on March 23, 2015, during the 249th American Chemical Society National Meeting. Featuring talks on a wide range of topics including pigments and dyes, perfumes and soaps, metals, ceramics, glass, leather, and alcoholic beverages, the symposium was organized by Seth Rasmussen and co-sponsored by the ACS Division of the History of Chemistry and the Multidisciplinary Program Planning Group. The nine presentations will be assembled into an ACS Symposium series volume to be published in 2016.

Rather than focusing on current research developments in archaeological chemistry, the symposium provided an overview of what is known, through different categories of evidence, about raw materials and the multitude of processes by which ancient civilizations transformed them into utilitarian and aesthetic objects. The presenters cited ancient literary texts, discussed linguistic evidence and discovery stories or theories, projected images of artifacts that illustrate the use of particular materials and methods, and developed timelines of production and technological accomplishments across different regions of the ancient world. Several authors also highlighted the most important analytical techniques being applied to the study of material remains in order to answer compelling questions regarding the development and spread of

technology in the ancient world. With each presentation, the audience was left with an intense appreciation for the range of chemical and physical manipulations early civilizations mastered while making “stuff”- from artificial pigments to decorated ceramic vessels, from scented oils to intoxicating beverages.

The symposium opened with a presentation by Mary Virginia Orna, “Pigments in Antiquity-Colorful Forerunners of Every Aspect of Modern Chemistry” that attracted many more attendees than there were seats. She directed a whirlwind tour of materials used for coloring surfaces- from the walls of caves in France to Roman frescoes to the terracotta warriors, focusing on how the palette expanded as production techniques (surface gathering, heat treatment, mining, manufacture, and alchemy) advanced and trade with other regions widened. Her fascination with the origin of color names and with the multitude of ancient writings describing pigment procurement, production, and usage added to this compelling presentation. This was followed by “First Artificial Material: Ceramics from Prehistory to the Fall of Rome”, delivered by Nicholas Zumbulyadis. In this presentation, he showcased some of the earliest known ceramic objects, explained the chemistry of clay and the firing process, and described a variety of surface treatment methods; faience, glazed brick, zuku glass glazes, slip decoration (for red- and black-figured pottery), and the application of colors post-firing were some of the methods illustrated with intriguing examples.

A highlight of the symposium for many attendees was Seth Rasmussen’s talk, “From Honey Wine to Cultivation of the Grape- An Early History of Fermented Beverages”. Beginning with the fermentation of honey and date palm fruit, and continuing with the more complex fermentation of grains to produce beer and the eventual domestication of grapes, civilizations have been concocting intoxicating substances since at least 8000 BCE. This presentation was an introduction to the fermentation and consumption practices of a variety of cultures as evidenced by literary descriptions and recipes, artistic references, microscopic examination of residues, and DNA studies of yeast varieties. The many other uses of fermented substances- medicinal, cleansing, cosmetic, funerary, and artistic- were also highlighted in this informative presentation.

In “Metals of Antiquity and their Alloys”, Vera Mainz discussed ancient metallurgy as it evolved from the working of native metals to the roasting and smelting of copper ores, the use of alloys in casting and welding, and the processing of iron. She presented a rich vocabulary of raw materials, chemical and physical processes involved in extraction and smelting, products and side products of

those processes, and refining and shaping methods used in the production of metal objects. The talk was accompanied by a well-chosen selection of images of objects fashioned of native, hammered, or cast copper, as well as bronze, iron, gold and silver.

During the afternoon session, Christopher Heth presented “The Skin They Were In- Leather and Tanning in Antiquity”, an introduction to the chemistry of collagen and the various ways that proteins in skins can be cross-linked via smoke, mineral, or vegetable tanning processes. In another presentation, Narayanaganesh Balasubramanian provided an overview of “Scented Oils and Perfumes in Antiquity” that included a summary of raw materials and processes used in the making of fragrances, the roles of various scented products in both ritual and daily practices, and artistic depictions of the production and use of ancient perfumes. In “Soap Production and Use in Antiquity”, Kristine Konkol presented evidence for the use of soap plants as well as early evidence for the production of soft and hard soaps by the saponification of oils and fats with potash and other alkaline substances.

An additional highlight of the afternoon session was a presentation by Zvi Koren, well known for his work involving the analysis of purple dyes obtained in antiquity from murex snails. In a talk entitled “A Craft to Dye For: Modern Chemistry of Ancient Organic Dyes and Pigments”, Koren emphasized the interdisciplinary nature of this work, encompassing and enlightening not only chemistry and archaeology, but also religion, linguistics, economics, history, and art. His understanding of the complicated dye process, obtained from ancient literary sources as well as his own efforts to replicate it, are complemented by his use of HPLC to analyze individual dye components present in different species of snails and different colors of fibers. It was this talk that drove home the idea that even in the absence of any modern understanding of atoms and molecules, ancient people had a working knowledge of many chemical concepts, such as attractive forces between substances, complexation, pH control, and photochemistry. Gained from experience and experimentation, this comprehension enabled them to control the results achieved with a variety of precious and complex natural colorants.

The focus of the final presentation was the history of glass, from the myths and theories associated with the invention of glass and glaze, to the production of glass beads and core-formed vessels, to more advanced ways of shaping glass objects by casting, slumping, glass-blowing, and mold-blowing. This talk, entitled “Modern Materials in Antiquity: An Early History of the Art and

Technology of Glass”, presented by Seth Rasmussen, also included an introduction to the chemistry of glass and the ways that its properties, such as color and opacity, can be manipulated through experimentation with various raw materials.

Since each talk was limited to 30-45 minutes, much was left unsaid. The content of the slides that were never projected, the stories not told, and the objects not showcased will hopefully be revealed in the highly anticipated, forthcoming symposium series volume.”

Thank you, Ruth, for your comprehensive review of what must have been an interesting symposium and for providing some much needed content for this section of the *Bulletin*. Thanks also to Joe Lambert who suggested that a review of this symposium would be of interest to the SAS membership. As always, when items of interest in Archaeological Chemistry come to your attention, please contact me by email: rarmitage@emich.edu.

ARCHAEOMETALLURGY

Thomas R. Fenn, Associate Editor

The column in this issue includes the following categories of information on archaeometallurgy: 1) New Books; 2) New Book Chapters/Articles; 3) Forthcoming Meetings; 4) Previous Meetings; 5) Research and Education Opportunities; and 6) Obituary.

New Books

Archaeometallurgy in Europe III: Proceedings of the 3rd International Conference, Deutsches Bergbau-Museum Bochum, June 29 – July 1, 2011, edited by Andreas Hauptmann and Diana Modarressi-Tehrani, 2015, *Montanhistorische Zeitschrift Der Anschnitt, Beiheft 26 = Veröffentlichungen aus dem Deutschen Bergbau-Museum Bochum, Nr. 202*, Verlag Deutsches Bergbau-Museum (DBM), Bochum, Germany, ISBN: 3937203745; (hbk.); 9783937203744 (hbk.), €44.00. This volume comprises a range of articles, which were submitted and selected from all the presentations given at the International Conference “Archaeometallurgy in Europe III”, held from June 29th to July 1st, 2011, at the Deutsches Bergbau-Museum, Bochum, Germany. The present volume is the third in the series “Archaeometallurgy in Europe”, capturing the spirit of the successful series of international conferences on this special theme of research. The volume contains an Editorial by the editors, 42 papers divided into four main thematic sections, and list of contributors. Several papers interspersed through the thematic sections are designated

as “key-note lecture” papers, emphasizing specific aspects within and between themes.

Contributions to the first thematic section, “*Early mining and metallurgical innovation stages in Europe*”, consist of “Iron – a driving force in early urbanisation” (Hans Andersson; p. 13), “Elemental and lead isotopic data of copper finds from the Singen cemetery, Germany – a methodological approach of investigating Early Bronze Age networks” (Florence Cattin, Matthias B. Merkl, Christian Strahm, Igor Maria Villa; p. 19), “The Roman mines near Ulpiana, Kosovo” (Guntram Gassmann, Sabine Klein, Gabriele Körlin; p. 33), “The spread of early copper mining and metallurgy in Europe: an assessment of the diffusionist model. A key-note lecture” (Marc Pearce; p. 45), “The earliest metallurgy in the north-eastern Iberian Peninsula: origin, use and socioeconomic implications” (Ignacio Soriano; p. 55), “Humans approach to resources: Old World mining between technological innovations, social change and economical structures. A key-note lecture” (Thomas Stöllner; p. 63), and “New research into Roman metal mining in Britain” (Simon Timberlake, Tim Mighall, Thomas Kidd; p. 83).

Contributions to the thematic section, “*Regional studies in Europe and beyond*” comprise “Counterfeit coinage of the Holy Roman Empire in the 16th century: silvering process and archaeometallurgical replications” (Lucile Beck, Elise Alloin, Anne Michelin, Florian Téreygeol, Claire Berthier, Dominique Robcis, Thierry Borel, Ulrich Klein; p. 97), “Augustus’ gold coinage: investigating mints and provenance through trace element concentrations” (Maryse Blet-Lemarquand, Arnaud Suspène, Michel Amandry; p. 107), “Chemical composition of fibulae from the Iron Age in Thrace (Bulgaria)” (Velislav Bonev, Boika Zlateva, Ivelin Kuleff; p. 115), “The Final Bronze Age hoard from Solveira (northern Portugal): a multi-disciplinary approach” (Carlo Bottaini, Claudio Giardino, Giovanni Paternoster; p. 125), “Bronze Age tin mines in central Asia” (Jennifer Garner; p. 135), “Metallurgy of the copper-based objects from Gournia, east Crete” (Alessandra Giunlia-Mair, Susan C. Ferrence, Philip P. Betancourt; p. 145), “Roman metalworking in northern Italy between archaeology and archaeometry: two case studies” (Elisa M. Grassi; p. 155), “Early Bronze Age metal workshops at Çukuriçi Höyük: Production of arsenical copper at the beginning of the 3rd millennium BC” (Babara Horejs, Mathias Mehofer; p. 165), “New horizons: archaeometallurgy in eastern Europe and beyond. A key-note lecture” (Rüdiger Krause; p. 177), “The Anglo-Saxon cemetery at Dover Buckland, Kent, UK and the technology of some of the iron artefacts”

(Janet Lang; p. 185), “Late Bronze Age axe traffic from Volga-Kama to Scandinavia?” (Lene Melheim; p. 193), “Prehistoric gold metallurgy: the Arqomeb research project” (Alicia Perea, Patricia Fernández-Esquivel, Salvador Rovira-Llorens, José Luís Ruvalcaba-Sil, Ana Verde, Oscar García-Vuelta, Fabián Cuesta-Gómez; p. 203), “The mirrors of the early nomads of the foothills of south Urals: a complex archaeo-technological study” (Irina Ravich, Mikhail Treister; p. 211), “Provenance of ancient metallurgical artifacts: implications of new Pb isotope data from Timna ores” (Irina Segal, Miryam Bar-Matthews, Alan Matthews, Yehudit Harlavan, Dan Asael; p. 221), “Iron metallurgy of the Pannonian Avars of the 7th - 9th century based on excavations and material examinations” (Béla Török, Árpád Kovács, Zsolt Gallina; p. 229), “Large Roman bronze statues from the UNESCO World Heritage Limes” (Frank Willer, Roland Schwab, Kati Bott; p. 239), and “Three-fold welding technology in the blacksmith’s craft of Medieval Rus’ (concerning Scandinavian innovations)” (Vladimir I. Zavyalov, Nataliya N. Terekhova; p. 247).

Contributions to the thematic section, “*Reconstructing ancient technologies*” consist of “Ancient brasses: misconceptions and new insights” (David Bourgarit, Nicolas Thomas; p. 255), “On the characterization of slags and ancient iron artefacts applying the slag-analytical method” (Vagn F. Buchwald; p. 263), “The Alsatian Altenberg: a seven-hundred-year laboratory for silver metallurgy” (Joseph Gauthier, Pierre Fluck, Alexandre Disser, Carmela Chateau; p. 271), “Material properties of pyrotechnical ceramics used in the Bronze Age Aegean and implications on metallurgical technologies” (Anno Hein, Ioannis Karatasios, Noémi S. Müller, Vassilis Kilikoglou; p. 279), “Observations on the technology of Bronze Age copper and copper alloy finds from Bulgaria” (Silviya Ivanova, Veselina Rangelova, Deyan Lesigjarski, Ivelin Kuleff; p. 287), “Archaeometallurgy as archaeology. A key-note lecture” (David Killick; p. 295), “Archaeometallurgical studies on the slags of the Middle Bronze Age copper smelting site S1, Styria, Austria” (Steffen Kraus, Christian Schröder, Susanne Klemm, Ernst Pernicka; p. 301), “Mineralogical-petrological investigations of metallurgical slags from the Late Bronze Age fahlore-smelting site Mauken (Tyrol, Austria)” (Matthias Krismer, Gert Goldenberg, Peter Tropper; p. 309), “Some thoughts on the interpretation of the elemental composition of Chalcolithic copper finds from central Europe” (Matthias B. Merkl; p. 319), “Experimental simulation study of prehistoric bronze working: testing the effects of work-hardening on replicated alloys” (Nerantzis Nerantzis; p. 329), “Experiments in archaeometallurgy. A key-note address” (Barbara S. Ottaway; p. 337), “The Lombard fibula of the

Arcisa: a substitution?” (Alessandro Pacini; p. 347), “Copper slags and crucibles of copper metallurgy in the Middle Bronze Age site (El Argar Culture) of Peñalosa (Baños de la Encina, Jaen, Spain)” (Salvador Rovira, Martina Renzi, Auxilio Moreno, Francisco Contreras; p. 355), “Comparison of compositional variations in modern European bronze coins with variations in some ancient coins” (Sana Shilstein, Sarel Shalev; p. 363), “New excavations at smelting sites in Trentino, Italy: archaeological and archaeobotanical data” (Elena Silvestri, Paolo Bellintani, Franco Nicolis, Michele Bassetti, Siria Biagioni, Nicola Cappellozza, Nicola Degaspero, Marco Marchesini, Nicoletta Martinelli, Silvia Marvelli, Olivia Pignatelli; p. 369), and “Ancient slag heaps in Cyprus: the contribution of charcoal analysis to the study of the ancient copper industry” (Maria A. Socratous, Vasiliki Kassianidou, Gaetano Di Pasquale; p. 377).

Contributions to the last thematic section, “*New approaches, new technologies in archaeometallurgy*” included “High energy X-ray tomography of Bronze Age copper ingots” (Gilberto Artioli, Matteo Parisatto, Ivana Angelini; p. 387), and “Characterization of ancient Japanese sword hand guards through time-of-flight neutron diffraction and scanning electron microscopy” (Elisa Barzagli, Francesco Grazi, Francesco Civita, Antonella Scherillo, Alessio Fossati, Marco Zoppi; p. 391). More information about purchasing this volume can be found at the publisher’s website: http://www.bergbau-museumshop.de/shop/article_DBM202/Archaeometallurgy-in-Europe-III.html?sessid=WIXWjlxjJCXYqsysxBL8hyqZge7MNJzYxKZdHbWci4DcwUAJqzMbeAgPjhUD9mK0&shop_param=cid%3D1%26aid%3DDBM202%26.

New Book Chapters/Articles

From the book *Western Anatolia before Troy: Proto-Urbanisation in the 4th Millennium BC?*, edited by Barbara Horejs and Mathias Mehofer, 2014, *Oriental and European Archaeology* 1, Austrian Academy of Sciences Press, Vienna, Austria, comes “The development of metallurgy in western Anatolia, the Aegean and southeastern Europe before Troy” (Ernst Pernicka; pp. 447-462), and “Metallurgy during the Chalcolithic and the beginning of the Early Bronze Age in western Anatolia” (Mathias Mehofer; pp. 463-490).

From the *Journal of Archaeological Science* (2015, Vol. 57) comes “Bismuth behaviour during ancient processes of silver-lead production” (Maxime L’Héritier, Sandrine Baron, Laurent Cassayre, Florian Téreygeol; pp. 56-68), “Artificial patination in Early Iron Age Europe: an

analytical case study of a unique bronze artefact” (Daniel Berger; pp. 1390141), and “New objects in old structures. The Iron Age hoard of the Palacio III megalithic funerary complex (Almad en de la Plata, Seville, Spain)” (Mercedes Murillo-Barroso, Marcos Martín-Torres, Leonardo García Sanjuán, David Wheatley, Mark A. Hunt Ortiz, Matilde Forteza González, María Jesús Hernández Arnedo; pp. 322-334), and from (2015, Vol. 56) comes “Form and flow: the ‘karmic cycle’ of copper” (P. Bray, A. Cuénod, C. Gosden, P. Hommel, R. Liu, A.M. Pollard; pp. 202-209), “The last frontier in sourcing: the hopes, constraints and future for iron provenance research” (Michael F. Charlton; pp. 210-220), and “Archaeometallurgical studies in China: some recent developments and challenging issues” (Jianjun Mei, Pu Wang, Kunlong Chen, Lu Wang, Yingchen Wang, Yaxiong Liu; pp. 221-232), while from (2015, Vol. 55) comes “Bullion production in imperial China and its significance for sulphide ore smelting world-wide” (Siran Liu, Thilo Rehren, Jianli Chen, Changqing Xu, Pira Venunan, David Larreina-Garcia, Marcos Martín-Torres; pp. 151-165).

From *Archaeometry* (2015, Vol. 57, No. 2) comes “The origin and archaeometallurgy of a mixed sulphide Ore for copper production on the island of Kea, Aegean Sea, Greece (A. Pelton, M. G. Stamatakis, E. Kelepertzis, T. Panagou; pp. 318-343). From *Archaeological and Anthropological Sciences* (2015, Vol. 7, No. 1) comes “Finding the invisible smelt: using experimental archaeology to critically evaluate fieldwork methods applied to bloomery iron production remains” (Thomas Birch, Robert Scholger, Georg Walach, Frank Stremke, Brigitte Cech; pp. 73-87). From *Geoarchaeology* (2015, Vol. 30, No. 1) comes “Evidence of early metalworking in Arctic Canada” (Patricia D. Sutherland, Peter H. Thompson, Patricia A. Hunt; pp. 74-78). From *Archaeological Discovery* (2015, Vol. 3, No. 1) comes “Fipa Furnaces and slag: Distinguishing criteria based on physical analysis” (John Uche Ngonadi, Pamela Ifeoma Eze-Uzomaka; pp. 32-39).

Forthcoming Meetings and Conferences

The international conference *Archaeometallurgy in Europe IV* will be held in Madrid, Spain from June 3-6, 2015. *Archaeometallurgy in Europe (AIE)* has been organized every four years since 2003: in Milan, Italy (2003); Grado-Aquileia, Italy (2007); and, Bochum, Germany (2011). The Madrid Edition represents the consolidation of the most important forum for scientific discussion on early metalworking in Europe and far abroad. All this has been possible thanks to the support and generosity of many researchers and institutions, but most of all the organizers want to thank every participant

who attended the last three conferences. The scientific meeting in Madrid is organized by the Institute of History of the Spanish National Research Council (CSIC) in collaboration with the National Center for Metallurgical Research (CENIM-CSIC), the Autonomous University of Madrid (UAM) and the German Archaeological Institute (DAI-Madrid).

The organizers cordially invite the submission of abstracts for oral or poster presentations to the International Conference *ARCHAEOMETALLURGY IN EUROPE IV. MADRID* Edition, 3-6 June, 2015. There will be 6 sessions covering the following main themes under which fall a wide range of possible topics:

- Early metallurgy: technological innovation and social negotiation
- Developments: new materials, alloys and processes
- Technological transmission, change and persistence
- Mines, mining and the miner
- Archaeometallurgy *versus* Archaeometry: you first
- Comparative studies

A provisional program can be found at: http://www.congresos.cchs.csic.es/aie4/sites/default/files/programa_provisional_3_1.pdf. Further information about the conference, the organizers, call for papers, venue, registration, program and other links can be found at: <http://www.congresos.cchs.csic.es/aie4/conference>.

The Historical Metallurgy Society (HMS) presents the conference *Celebrating Street Furniture*, to be held at Stratford-upon-Avon from June 12-14, 2015. Wherever you live, your everyday street-scape will include pieces of metalwork. Drain covers, post boxes, ornate railing, statues and everything in between. These items are so much a part of the modern landscape that few people give them a second thought.

Yet these seemingly ordinary objects offer a fascinating insight into the metalworking industries of our recent past. In some cases study of these finished products fills important gaps where other sources of information are lacking or missing altogether. This conference will discuss the latest research on street furniture, and also discuss the conservation and preservation of this important resource.

The program is now out and available on the HMS website <http://hist-met.org/meetings/hms-annual-conference-and-agm.html>. Registration is open and a

paper booking form available. Online booking is also possible on the website. For further information, please contact: Rachel Cubitt (rcubitt@yorkat.co.uk).

The *European Association of Archaeologists (EAA)*, will hold its annual meeting in Glasgow, from 2-5 September, 2015. There are two themed session at that meeting of archaeometallurgical interest.

The first is "The Social Context of Metallurgy: Material and Identity", Organizers: Vana Orfanou (UCL), Ruth Fillery-Travis (UCL), and Thomas Birch (Goethe-Universität). This session invites papers employing scientific methods to study and discuss the social context of metallurgy amongst past communities. Queries should be addressed to: s.orfanou@ucl.ac.uk. Full abstract: <http://eaaglasgow2015.com/session/the-social-context-of-metallurgy-material-and-identity/>.

The second is "Metallurgical Crafts in the 1st Millenium AD Europe: Technology and Practices", Organizers: Daniel Sahlén (Stockholm University), Thomas Birch (Goethe-Universität), and Guðmundur Sigurðsson (Skagafjörður Heritage Museum). This session places special emphasis on the continuity and change in technological practices during the transition from Late Antiquity to early Medieval Europe and is part of the Medieval Europe Research Congress (MERC Medieval Europe 2015 Glasgow). Queries should be addressed to: daniel.sahlen@arklab.su.se. Full abstract: <http://eaaglasgow2015.com/session/metallurgical-crafts-in-the-1st-millenium-ad-europe-technology-and-practices/>.

Previous Meetings and Conferences

The *80th Annual Meeting of the Society for American Archaeology (SAA)* was held from Wednesday to Sunday, April 15-19, 2015. A number of oral and poster presentations contained research of archaeometallurgical interest. Oral presentations included "Paint it black: The rise of metallurgy in the Balkans" (Miljana Radivojevic), "Non-ferrous casting molds and technical logic: What can the technical differences between the Bronze Age and Iron Age molds tell us about the technological development of metalworking?" (Daniel Sahlén), "Immanence, configuration and the bloomery ironmaking process: Identifying behavioural opportunities from physical constraints" (Michael Charlton), "Behavioral metallurgy of the Phoenicians, Carthaginians, and Neo-Punic Peoples" (Brett Kaufman), "Does practice make perfect? Is it possible to read technological development in the actions and outputs of individual or group practitioners?" (Gillian Juleff), "Beyond provenance: using the chemical composition of copper alloys to explore technology and metal flow" (Peter Bray),

"Investigating the social dynamics of Iron Age copper production: Preliminary results from new excavations at Khirbat al-Jariya, Jordan" (Matthew Howland, Brady Liss, Craig Smitheram, Mohammad Najjar, Thomas E. Levy), "Applying Innovation Diffusion Theory to Archaeology: a Case Study on the Rise of Iron Technology in Western Asia" (Nathaniel Erb-Satullo), "Metal Trade and Interregional Dynamics of the Mesoamerican Late Postclassic Period" (Blanca Maldonado, Niklas Schulze), "Templo Mayor's Gold" (Leonardo López Luján, José Luis Ruvalcaba Sil), "Ceramic Molds for Mixtec Gold: New Insights into Lost Wax-Casting Traditions of Late Postclassic Oaxaca" (Marc Levine), "The Quest for Gold: An Examination of Socioeconomic Exchange and Autonomy in the Parita River Valley, Panama" (Mikael Haller), "Portable X-Ray Fluorescence Analysis of Copper Trace Element Composition: A Methodological Pilot Study" (Mark Hill, Kevin Nolan), "The Organization and Technology of Sicán Metalworks: pXRF Analysis of Floors and Associated Residues" (Izumi Shimada, John Merkel), "Smelting and the Sacred at dos Cruces: Technological and Ritual Activity at a Chimu Era Smelting Site" (Colin Thomas), "Integrated Archaeometric and Spatial Analysis: A Preliminary Report on Spatial Data Mining in the Pre-Hispanic Central Andes of Peru" (Kayeleigh Sharp, Melissa Litschi), "A Novel Method to Hypothesize the Movements of Archaeological Metal: A Case Study on the Bronze Metallurgy in the Central Eurasian Steppe Belt by the Second Millennium BC" (Yiu-Kang Hsu, Peter Bray, Mark Pollard), "Assessing Ancient Vertical Integration: Copper Production in Early Bronze Age Southern Levant" (Aaron Gidding), "Iron and Glass: Reconstructing (Overlapping) Technologies in Early South India" (Praveena Gullapalli, Shinu Anna Abraham, K.P. Rao), "A Technical Study of Casting and Inlay on Chinese Ceremonial Weapons at the Harvard Art Museums" (Ariel OConnor, Katherine Eremin), "Archaeometallurgy, Environment & Landscape in Upland Laos: Its Impact on 'World-Views' during the Transition from the Bronze Age to Early States in SE Asia" (Nigel Chang), "Casting Technology and Craft Production of Bronze Wares in the Central Plains of China in Late Shang Dynasty (13thBC–11th BC)" (Yu Liu, Zhanwei Yue), "The Copper Trade of Hatteras Island" (Charlotte Goudge), "Ring the Bell: A Spatial Comparative Analysis of Copper Bells between the Greater Southwest and Michoacán" (Jose Luis Punzo, Lissandra Gonzalez), "Copper Back Mirrors (Tezcacuitlapilli) as Objects of Political and Religious Authority in the Casas Grandes World (A.D. 1200–1450)" (Michael Mathiowetz), "The Sound of Dancing in the Desert Northwest/Southwest. Copper Bells from Trincheras, and the Casas Grandes Connection" (Elisa

Villalpando), “Copper Bells from the Templo Mayor of Tenochtitlan—Imports or Local Production?” (Niklas Schulze), “Iron Producers, Iron Users” (Louise Iles), and “More Than a Rusty Nail: Archaeometric Analysis of Wrought Iron Nails from Fallen Tree, St. Catherines Island, Georgia” (Nicholas Triozzi, Henry Towbin, Glen Keeton).

Poster presentations included “Provenance of Archaeological Copper Alloys by pXRF” (Alice Hunt, David Hurst Thomas, Robert Speakman), “Iron Grinding Technology in the Kofun Period: New Evidence and Research Techniques” (James Lyons), “Metal Projectile Points of the Interior West: A Synthetic Overview” (John Kennedy), “Corrosion Concerns and Metal Soap Formation in Shea Butter-Containing Forawa Brass Vessels from Ghana” (Sebastian Warmlander, Vanessa Muros, Ellen Pearlstein, Kym Faull, David Scott), and “Transformation by Fire: Human Cremation, Metalworking, and the Transmogrification of Bodies by Flame in the Late Archaic American Southeast” (Matthew Napolitano, Matthew C. Sanger). The full list of presentations and abstracts can be found at the Society for American Archaeology website: <http://www.saa.org/AbouttheSociety/AnnualMeeting/Abstracts2015/tabid/1518/Default.aspx>.

Research and Education Opportunities

The *Prehistoric Metallurgy at Butser (Experimental Archaeometallurgy) Course* will be held July 3 – 6, 2015, at Butser Ancient Farm, near Petersfield, Hampshire, UK. Registration places are available, and can be booked on-line, or through emailing the organizers: Simon Timberlake or Fergus Milton.

This is a practical and theoretical short course on the use of experimental archaeology in examining the production of metals at the beginning of the Bronze Age. Through lectures on prehistoric archaeometallurgy and daily practical workshops, the course will provide valuable experience for anyone working in this field or interested in it (either at undergraduate or postgraduate level). During the practical sessions students will work in small groups to build, operate and record smelting hearths and then use these to produce metals (principally copper and tin). In addition, these groups will make much of the ancillary equipment such as the bellows, tuyeres, crucibles and molds used in the production of metals from ores. Students will finish with the casting of small objects such as bronze or copper axes. During the course there will also be two iron smelts for the entire group to participate in, with one of them taking place during an optional evening stay at the Farm.

The course will be held again at the world-famous Butser Ancient Farm in Hampshire and the tutors will be Dr. Simon Timberlake of the Cambridge Archaeological Unit (University of Cambridge) and Fergus Milton of Butser Ancient Farm. 10 – 12 places available at a cost of £350 (4 days teaching). Food and accommodation costs not included – although reasonably priced Bed & Breakfast or hostel type accommodation exists in Buriton and Petersfield within 3 miles of Butser Ancient Farm. Contact: Simon Timberlake (simon.timberlake@gmail.com), or Fergus Milton (fergus@fingerbuster.com).

The Institute for Archaeo-Metallurgical Studies (IAMS), at the Institute of Archaeology, University College London (UCL), invites applications for a *Summer School in Archaeometallurgy*, which will take place from June 29 to July 10 at UCL, London.

The first week will be devoted to bloomery iron smelting, and will include seminars and handling sessions as well as an experimental iron smelting campaign. The second week will cover the field archaeology of mining and smelting as well as introductions to the scientific analysis of archaeological metal objects. Tutors will include Brigitte Cech, Michael Charlton, Jake Keen and Marcos Martín-Torres. Program and registration details are available on www.ucl.ac.uk/iams. Please note that registration is essential; places are limited and typically oversubscribed!

Obituary

Prof. PhDr. Radomír Pleiner, DrSC.
Magister ferrariarum 1929 – 2015

Radomír Pleiner was born on 26 April 1929. His father Vladimír was a painter and a member of the famous Czech Legion; his mother originated from Russia. He studied prehistory and history at the Faculty of Philosophy of the Charles University in Prague, graduating in 1952. From 1953 to 1955 he carried out postgraduate work at the Institute of Archaeology of the Czechoslovak Academy of Science, for which he obtained the degree of CSc (equivalent to PhD). An equally significant event in this period was his marriage to fellow archaeologist Ivana Hnízdová in 1955. He was able to continue his research at the Institute, into the earliest production of iron and smithing techniques, writing his first three monographs in 1955, 1958 and 1962. He developed considerable skills in metallography, which led to the creation of the laboratory at the Institute in 1963.

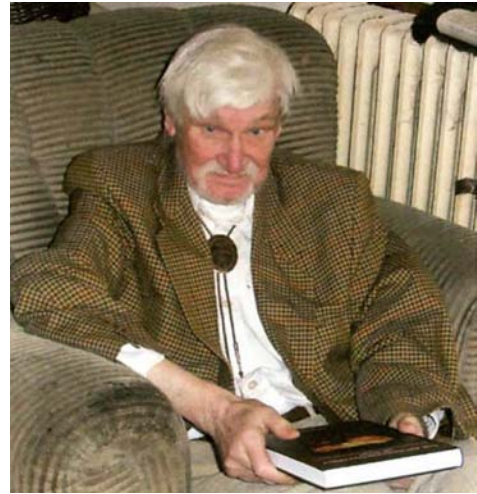
From this time onwards Radomír took part in many excavations and experimental work both in Czechoslovakia and abroad, in countries such as Poland, Russia, England, Scandinavia, Austria, Germany, and France, as well as contributing widely to symposia and conferences. In 1966-68 he participated in American expeditions to Iran and Afghanistan, and three years later he spent six months in the USA on an internship, at M.I.T. and the Universities of Chicago and California. These experiences led to the publication of studies of ironmaking in Persia, Assyria and India and his 1969 monograph on *Iron Working in Ancient Greece*. These works formed the basis of a dissertation for his second doctoral degree, Doctor Scientiarum, DrSc., awarded in 1981.

In 1966 the *Comité Pour la Sidérurgie Ancienne* (CPSA) founded, under the auspices of the International Union of Prehistoric and Protohistoric Science (UISPP), with Walter Guyan as President and Pleiner as Secretary. He held this position for the next forty years, creating a network of international and inter-disciplinary contacts with scholars engaged in study of the archaeology and the archaeometallurgy of iron, who became corresponding members of the CPSA.

During this period he played a vital role in the rapid development of the discipline by collating new research, abstracts of publications, information on conferences and work in progress, published twice-yearly in *Archeologické Rozhledy*. These CPSA *Communications* comprise several thousand items, forming a crucial source of information in the pre-internet age. Key factors in this were Radomír's linguistic skills, enabling him to act as a bridge between the (old) east and the west, combined with his enormous energy. The contacts which he made and encouraged through this work resulted in him being a guiding light for several generations of scholars.

Radomír maintained his connections with the Charles University in Prague: in 1968 he was appointed docent (Associate Professor) of prehistory and in 1992, after the so-called 'Velvet Revolution' he was appointed professor. Unfortunately he had to retire in 1993, along with other colleagues, due to the reduction in the Institute's budget. Although he was no longer in full-time employment his research continued unabated and his output of publications remained prodigious, with more than forty papers and books since 1963, in several languages, including his three classic works, representing the fruits of his many years of research - *The Celtic Sword* (Oxford, 1993), *Iron in Archaeology: The European Bloomery Smelters* (Prague, 2000), and *Iron in Archaeology: Early European Blacksmiths* (Prague, 2006). The latter volume was produced under particularly difficult conditions due

to the loss of his archive of samples and notes, and the library in the basement of the Institute of Archaeology, during the disastrous floods of 2002. This would have destroyed the spirit of a lesser man, but the fact that Radomír was able to complete this volume with little delay is a tribute to his determination and to his thorough knowledge of the source material.



Radomír Pleiner in 2011, presented with the volume for his 80th birthday. Photo courtesy of Jiří Hošek.

In total Radomír wrote 12 books and a remarkable 250 papers, in Czech, German, English and French, an average of nearly 5 per year. Many of these papers were published in the proceedings of conferences held all over Europe, some of which were organized under the auspices of the CPSA. Despite the travel and currency restrictions, at least before 1992, Radomír managed to attend a remarkable number of these conferences, sometimes 3 or 4 per year. His continual presence acted as a bridge across several generations as well as a means of attracting new members of the CPSA.

He was a member of The Historical Metallurgy Society from the 1960s, an Honorary Fellow of the Society of Antiquaries of London, a corresponding member of the Deutsches Archäologisches Institut, Berlin and a member of the Unité propre du CNRS, Sevenans.

In recognition of his life's work, which made a valuable contribution to the development of European science, Radomír was decorated in April 2005 with the 'Knight's Cross of Merit', by the former President of the Republic of Poland, Aleksander Kwaśniewski, for his co-operation with the Polish Republic in the field of science.

It would be no exaggeration to say that the high level of esteem which the study of ancient iron-working now commands is due in large part to the work and influence of Radomír Pleiner. His research and the dissemination of

the results of that research were exemplary, through which he has inspired many young archaeologists to enlarge and refine our knowledge of the making and working of iron in antiquity and to demonstrate its immense significance in the development of human societies. At the same time he has been the most generous of scholars, willing to share his ideas and his results with colleagues and students alike. Above all Rado was the warmest, most welcoming, steadfast, and entertaining friend. It was a conceit of his for many years to complain lugubriously and sonorously that "I am an old man" - often described by his family and friends as proof of his Russian genes. This was, of course, nonsense: even at eighty he was as young in heart and mind as ever.

In 2011 *The Archaeometallurgy of Iron: Recent Developments in Archaeological and Scientific Research* was edited by Jiří Hošek, Henry Cleere and Lubomír Mihok, with papers from many of Radomír's friends, colleagues and admirers. The volume was dedicated to Radomír and was presented to him for his 80th birthday

Radomír is survived by his wife prof. PhDr. Ivana Pleinerová, CSc. and his daughter RNDr. Johana Prokop Brokešová, CSc. We shall never see his like again.

[By Henry Cleere, Peter Crew, Jiří Hošek, Janet Lang, Věra Souchopová, Brian Scott. From *The Crucible* (HMS News) 88, Spring 2015.]

BIOARCHAEOLOGY

Katy Meyers Emery, Associate Editor

Bioarchaeology at the Society for American Archaeology Meetings

Last month I attended the Society for American Archaeology meeting in San Francisco, CA. While there were dozens of fantastic new studies and presentations, I want to highlight some that are using unique methods and approaches in order to interpret funerary behavior in the past.

"Commingled, communal and complex: reconstructing Iberian Copper Age mortuary practices" by Jess Beck

Beck discussed her ongoing research on the mortuary practices of the Iberian Copper Age, a coastal area of Spain. She examined three different necropoli within this region and period, and found that most of the material was commingled. Commingled means that the remains of different individuals were mixed together, either due to disturbance or secondary burial practices. Interpreted

remains that have been mixed together like this can be very difficult, and it changes the way that we interpret the site. Of the three sites and over 700 lbs of material, Beck has analyzed two of the necropoli completely and the dental material at the third one.

The questions Beck addressed for the presentation are 1) are subadults included in same mortuary practices as adults, and 2) can we reconstruct mortuary practices using dentition alone? In regards to her first question, Beck analyzed the percentage of different bones found for both adults and subadults, and determined that the anatomical presence and percentage of bones found supports the interpretation that both subadults and adults received similar primary and secondary burial. To the second question, variation in dentition allowed for some preliminary conclusions to be drawn about these different populations from dental elements alone. She concludes that fragmentary and dental remains can tell us a lot about past populations and we need to create more methods to do this.

"Early Medieval Landscapes of the Dead: The Monumental Pictish Barrows of North-East Scotland" by Juliette Mitchell and Gordon Noble

Mitchell and Noble discussed their ongoing research into the Picts. The Picts were a tribal confederation that lived in Northern and Eastern Scotland, and are ethnolinguistically Celtic (i.e. used Celtic type language). The Picts are best known through the texts written about them by the Imperial Romans, who described them as barbaric and war-like tribal groups, and most famously portrayed them as the painted or tattooed people. However, there is little evidence of what the Picts were like from the 5th to 9th centuries CE. Mitchell and Noble argue that examining their burial structures could help to better understand the social and political structures in this period. The Picts buried their dead in barrows. Barrows are mounds of earth and stone that are raised up over burials. These types of burial take enormous amounts of effort and manpower to create, so it is thought that they were only used for elite members of society. Further, the remains found within them are not numerous enough to represent the full population.

Mitchell and Noble set out to establish the number and distribution of barrow sites within Northern and Eastern Scotland in order to interpret why they were placed on the landscape in specific locations and what monumental role they may have played. They examined 26 certain and probable Pictish barrows for their landscape study using Geographic Information Systems (GIS). The database included location of the barrow, information from the

excavation, descriptions about shape and size, and photos of the barrows. Based on their relative locations on the landscape and proximity to one another, Mitchell and Noble argue that these were used to mark out territories and commemorate elite individuals. They argue that these cemeteries were important political statements on the landscape, likely were used to control trade routes, and marked control over land. Barrows were more than just burials- they were markers of authority.

“Till Death Do Us Part: A Bioarchaeological Investigation of Female Kinship Ties in Early Medieval Ireland” by Niamh Daly

Daly explored the burial patterns of individuals against textual sources in order to better interpret the movement of women in the Early Medieval Ireland (400-1200 CE). She notes that during this period, the region was primarily made up of rural settlements that were enclosed for defensive purposes. These settlements were organized around kinship, and when the power structures expanded, there was still a focus on patrilineal heritage. With the focus so strongly on men, Daly hopes that by examining the burials, we can better understand the roles and behavior of women in this period.

Text from Early Medieval Ireland describes marriage rules, as well as what occurs in the event of a divorce or death. The focus in these documents is kin-based ties that are built through blood, not through marriage. A woman in this period was part of her father's group, and at marriage, would become a member of both her father's and her husband's, although she would reside with her husband. At death, the husband and wife were not buried together, rather than were each buried with their own kin group. Women would be sent back to be buried with the people of her father.

Daly used stable isotope analysis in order to determine whether this movement of women would play out in the human remains. She examined a case study group in Kildare from Corbally. These included earthen unfurnished burials, a common form during this period. She found that from the stable isotope analysis that both men and women seemed to be moving across the landscape at different times in their lives. This means that women were buried in a different location from which they spent their married lives, but what does this mean for men? Daly argues that men would have moved in a process called fosterage, where men would be raised in another settlement in order to develop skills that were appropriate to their rank. The practice of fosterage in medieval Ireland is well-documented, and may account for this movement. It will be interesting to watch these results develop further as Daly continues her research.

In addition to these presentations, there were a number of fascinating posters on bioarchaeology that took interesting approaches towards the subject matter, and will likely prove to be very fascinating and revealing as their research continues.

“Tending the Vines: Biomechanical Evidence of Laterality and Gendered Labor Division in Viticulture at Pessinus, Turkey” by Lana Williams and Jane Masegla

Williams and Masegla examined skeletal remains from the Sankuş Mevkiinde Tomb (Late Roman, A.D. 200–300) at Pessinus, Turkey. This sample included 12 adult males who exhibited with robust definition of skeletal elements on their tarsal bones suggestive of repetitive eversion and plantar flexion of the foot. There were also signs of biomechanical stress in the knee, wrist, and elbow joints of the same individuals. Adult females from this sample did not exhibit this type of variation, suggesting it is related to a gender specific activity. Examination of funerary markers of males from this region reveals depictions of vine-hooks, vines and handpicks, whereas female markers are more related with weaving tools and imagery. Based on this evidence, Williams and Masegla argue that males were likely employed in tending vines in this period and region; an activity which requires repetitive kneeling, and stress in wrists and elbows.

“No Better Angels Here: Bioarchaeology of Non-Lethal Head Wounds in the Greater Southwest (900-1350 AD)” by Debra Martin, John Crandall and Ryan Harrod

Martin, Crandall and Harrod conducted a survey of healed cranial depression fractures from prehistoric Southwest United States collections and found new information regarding demographic patterning of this type of trauma. Previous studies had argued that in general, violence within this region decreased over time due to a decline in warfare and raiding. However, Martin, Crandall and Harrod looked more closely at the variation at specific sites. Their analysis revealed that the injuries vary by age and sex, as well as placement, size, shape and severity on the skull suggesting that violence in this period is more nuanced and complex than previously thought. Comparison with location shows that this behavior also varied over both space and time. Martin, Crandall and Harrod argue that this behavior is more than warfare and raiding, and may indicate a more complex environment of social control and coercion.

In addition to these, there was a fascinating session on the ‘Bioarchaeology of Care’, which focused on the ways that

we examine and interpret disability and care within the archaeological record. Sadly, due to overlapping schedules, I was only able to attend a few brief sections of the session. However, the session did provide digital links to two important resources that may be of interest to readers. The first is 'Digitised Diseases' (<http://www.digitiseddiseases.org/alpha/>), a database of 3D and digitized versions of skeletal remains that present the more severe cases of paleopathology to serve as reference to those who don't have access to these types of collections. The second is the 'Index of Care' (<http://indexofcare.org/>), an online application, which promotes the use of a case study-based approach for identifying and interpreting both giving and receiving of care within the past.

BOOK REVIEWS

David Hill, Associate Editor

Obsidian Reflections: Symbolic Dimensions of Obsidian in Mesoamerica, edited by Marc N. Levine and David M. Carballo. 2014. University Press of Colorado, Boulder. xiv + 331 pp. \$65.00 (cloth), ISBN: 978-1-60732-300-6.

Reviewed by Timothy G. Baugh, University of Oklahoma

In 1944, when Heizer and Treganza published the first statewide description of obsidian sources in California, they noted, by quoting anthropologist Erminie Voegelin's (1942:191) Wintu consultants, that Wintu men "fasted through the duration of their journey since the act of obtaining obsidian was in the nature of a semireligious quest" (Heizer and Treganza 1944: 303). While the purpose of Heizer and Treganza's article was to map and describe 24 California obsidian sources, their recognition that religious beliefs are a part of daily indigenous life is significant (Heizer and Treganza 1944: 315; cf. Hughes 1992).

Through the 1960s and 1970s, archaeologists in both California and Mesoamerica expanded on earlier studies focused purely on source identification and sought to identify chemical differences among obsidian types. Latin American archaeologists were soon defining new approaches for the study of volcanic glass. In 1978, for example, Luis Hurtado de Mendoza (1977) published his dissertation research on the Valley of Guatemala, which advocated a regional approach for the study of obsidian (Hurtado de Mendoza and Jester 1978).

Using Hurtado de Mendoza's regional approach, I launched a study of Jemez Mountains' obsidians in New

Mexico in the 1980s, beginning with a reconnaissance and source identification project, which later branched into trade and exchange studies (Baugh and Nelson 1987). Because of my long-term interest, I was honored and greatly intrigued to review Levine and Carballo's *Obsidian Reflections*, with its applications of artifact biography, embodiment, agency, landscape, and semiotic approaches to the study of Mesoamerican obsidians. These approaches, which bring technical studies together with an appreciation for indigenous world views, go well beyond briefly describing the journeys of the Wintu.

Levine (Chapter 1) provides the landscape for this edited volume by establishing a historical context for its findings with an interesting overview of the development of archaeological theory in light of obsidian studies. In this chapter, the reader is introduced to the book's three divisions: Ethnohistory and Ethnography; Symbolic Dimensions of Obsidian Production and Exchange; and Ritual Offerings and Use.

Using ethnohistorical accounts and ethnographic studies (including Mixtec codices), the three chapters in Ethnohistory and Ethnography discuss obsidian in the context of a profane, ritual, and sacred material that permeates the lives of Tarascan, Nahua, and Mixtec peoples of central Mexico. Using more contemporary data, each author in this division provides some insight into the daily and symbolic lives of these groups as a way of illuminating the archaeological discussions that follow. For example, in their examination of obsidian mines and mining activities, Alejandro Pastrana and Ivonne Athie (Chapter 3) conclude that traditional views for the origin of obsidian can be found in the stars and represent "the union between heaven and earth" (p. 93) thereby linking obsidian with certain deities "that give order to the world" (p. 101). The other authors (Véronique Darras in Chapter 2 and John Monaghan in Chapter 4) in this division support Pastrana and Athie's findings and provide additional, valuable information on cultural perceptions of obsidian.

In the second division (Symbolic Dimensions of Obsidian Production and Exchange), Kazuo Aoyama (Chapter 5) examines the southern Maya of Copán, Pasión, and Petexbatun from 1400 BCE to 1100 CE. By using ritual economy and symbolic dimensions, Aoyama examines diachronic changes in the exchange of Pachuca obsidian, as well as in the production, use, and disposal of obsidian implements and their relationship to ritual. Regarding ritual relationships, he states: "The color of the green obsidian itself may have had a social and ideological significance ..." (p.152).

Indeed, the color of obsidian appears to have been of specific value in ancient Mesoamerica, because of the association of particular colors with specific peoples, places, and deities. Marc Levine (Chapter 6) explores color and other obsidian attributes at Tututepec, a Late Postclassic site in coastal Oaxaca located some 300 km from the closest obsidian source. Levine finds that the Tututepec's preference for two highland obsidian sources, Pico de Orizaba (gray streaked) and Pachuca (green), indicate a strong identity and connection to highland Teotihuacan and Tenochtitlan that distinguishes Tututepec from its lowland neighbors.

The third division, Ritual Offerings and Use, considers obsidian's symbolic importance based on its location within a site and its association with other artifact types. As David Carballo (pp. 215-16, Chapter 7) notes: "Semantic and semiotic analyses are productive venues for interpreting the symbolism of temple offerings in the archaeological record, as they assist us in considering the grammatical conventions of sign arrangement and the conceptual domains of icon classes." James Stemp and Jaime Awe (Chapter 8) demonstrate that obsidian items found in caves can be analyzed functionally (use wear studies) and symbolically. The final chapter (Chapter 9) in this division is by Mari Carmen Serra Puche, Jesús Carlos Lazacano Arce, and Mónica Blanco García Méndez who explore ritual and administrative spaces within domestic contexts at Xochitecatl-Cacaxtla in Tlaxcala.

William J. Parry ties the volume together in the conclusion (Chapter 10) with an excellent discussion of the various papers within the context of what he calls his "own random reflections". Among these is the idea that ritual offerings often represent incomplete cosmograms, as archaeological contexts will not display the perishable elements of the whole. Thus, the models, symbolic approaches, and synthetic analyses within these chapters "should be viewed as pilot studies, experiments in methods" as these ancient cultures are "far removed in time and space" from our contemporary world and expose "only ... glimpses of their material residues" (p. 311). As one born in the fires of cultural materialism and tempered by processual archaeology, I applaud the volume's attempts and await future results.

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UPCOMING CONFERENCES

Rachel S. Popelka-Filcoff, Associate Editor

2015

29-20 May 'Communities, Landscapes, and Interaction in Neolithic Greece'. 'IGEAN – Innovative Geophysical Approaches for the Study of Early Agricultural Villages of Neolithic Thessaly', Rethymno, Crete. General information: <http://igean.ims.forth.gr/conference>.

9-12 June. DIG 2015, Sardinia. General information: <http://www.developinginternationalgeoarchaeology.org/fIRST.html>

17-20 June New Zealand Archaeological Association Conference, Bay of Islands New Zealand. General information: <http://nzarchaeology.org/cms/index.php/conferences>

23-26 June. 8th International Workshop for African Archaeobotany. Modena, Italy. General information: <http://www.palinopaleobot.unimore.it/site/home/8th-international-workshop-for-african-archaeobotany-iwaa.html>

5-10 July. Eighth Lapita Conference. Port Vila, Vanuatu. General information: <http://chl.anu.edu.au/news-events/conferences/details/383/eighth-lapita-conference>

6-10 July. International conference of the Archaeological Association of Southeast Asian Archaeologists, Paris,

France. General information:
<http://www.nomadit.co.uk/euraseaa/euraseaa15/index.shtml>

8-10 July. UK Luminescence and ESR Meeting 2015. Glasgow, Scotland. General information:
<http://www.gla.ac.uk/research/az/suerc/uklum2015/>

26 July - 2 August. INQUA 2015 Congress to be held in Nagoya, Japan Abstract deadline December 20, 2014 Special sessions: "Integrating Holocene Climate And Environmental Records From The High Southern Latitudes", 'Human adaptation to tropical and subtropical desert environments in the Late Pleistocene and Holocene', The Legacy Of Mountain Glaciation General information: <http://www.inqua2015.jp/>.

16-19 August. Canadian Quaternary Association Bi-annual Meeting. St. John's, Newfoundland and Labrador, Canada. General Information: <http://canqua2015.com/>

16-21 August. Goldschmidt Conference, Prague Czech Republic. General information:
<http://goldschmidt.info/2015/>

2-5 September. European Association of Archaeologists 21st Annual Meeting, Glasgow Scotland. Special theme on Science and Archaeology. General information:
<http://eaaglasgow2015.com>

7-9 September. Glass Reflections, "Glass in the Year of Light". Cambridge, UK
 General information: <http://www.glassreflections.sgt.org/>

8-10 September. International Symposium on Knappable Materials 2015. Barcelona, Spain. General information:
<http://www.ub.edu/cherts-symp2015/>

27 September-2 October. SciX Conference 2015. Providence RI USA. General information:
<http://www.scixconference.org>

21- 23 October. 5th Latin-American Symposium On Physical And Chemical Methods In Archaeology, Art And Cultural Heritage Conservation - LASMAC 2015 Quito, Ecuador. General information:
<http://www.lasmac2015.com>

21-23 October. Metrology For Archaeology, Benevento, Italy. General information:
<http://www.metroarcho.com/index.php>
 Deadline 31 July 2015.

1-4 November. The Geological Society of America National Meeting. Baltimore MD USA. General information: <http://www.geosociety.org/meetings/>

5-7 November. Society for American Archaeology (SAA) and the European Association of Archaeologists (EAA): *Connecting Continents: Archaeological Perspectives on Slavery, Trade, and Colonialism*. Curacao. General information:
<http://www.saa.org/Portals/0/SAA/Meetings/Connecting%20Continents%20updated%201.pdf>

6-8 November. From Anthrosphere to Lithosphere (and back again): A Celebration of the Career and Research of Terry O'Connor. The 36th Annual Association for Environmental Archaeology Conference, 2015. York, UK. Abstract deadline 30th April 2015. General information: <https://www.york.ac.uk/archaeology/news-and-events/events/conferences/aea/#tab-4>

18-21 November. American Schools of Oriental Research Annual Meeting. Atlanta GA USA. General information:
<http://www.asor.org/am/index.html>

18-22 November. American Anthropological Association 114th Annual Meeting. "Familiar Strange" Denver, CO USA. General information:
<http://www.aaanet.org/meetings/>

1-3 December. AAA Australian Archaeological Association General information:
<http://australianarchaeology.com/>

11-12 December. Middle Palaeolithic in the Desert II. Bordeaux, France. General information:
<https://sites.google.com/site/middlepalaeolithicdesert/home>

14-18 December. American Geophysical Union Fall Meeting, San Francisco, CA USA. General information:
<http://fallmeeting.agu.org/2014/2015-fall-meeting/>

2016

6-9 January. Society for Historical Archaeology Conference, Washington D.C. USA. General information:
http://www.sha.org/index.php/view/page/annual_meetings

6-9 January. Archaeological Institute of America Annual Meeting, San Francisco, CA USA. General information:
<http://www.archaeological.org/annualmeeting>

13-17 March. 249th National Meeting and Exposition, American Chemical Society. Denver, CO USA. General information: <http://www.acs.org>.

15-20 May. International Symposium on Archaeometry (ISA), Kalamata, Greece.
<http://www.ims.demokritos.gr/ISA/>

29 August-2 September. World Archaeological Congress, Kyoto, Japan.
<http://wac8.org/>

28 Nov- 2 Dec. The Sixth International Congress on Underwater Archaeology (IKUWA6), Fremantle, WA Australia. General information: <http://www.aima-underwater.org.au/ikuwa6-2016/>

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