

SAS BULLETIN

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CALL FOR NOMINATIONS-SAS PRESIDENT-ELECT

Happy New Year and welcome to Vol. 38 of the *Bulletin*! I wanted to start off the first issue with a reminder that we are still accepting nominations for the office of President-elect. The term begins in April and goes through 2017. At the end of this term, the President-elect will assume the office of the President and serve a 2 year term in that position. Serving as President-elect is a great opportunity to contribute to the SAS and help guide the direction of the organization. Those interested should email a letter of intent and a short CV to current President Robert Tykot (rtykot@usf.edu). Elections for this office will be held in March.

We're kicking off 2015 with an issue full of contributions of interest to SAS members. Katy Meyers Emery describes two projects where the study of texts, ancient and archival, has been used to better interpret human remains. Nicolás Ciarlo reports on some new research projects investigating the metal cargo from two shipwrecks providing information on naval activities. There are several book reviews included, as well as conference reviews, announcements regarding new publications and notices of upcoming conferences. We're also interested in the research conducted by SAS members and are looking for notes or short communications describing current projects in archaeological science. If you're looking for a way to share some of your current research, even if it's in progress, consider submitting it to the *Bulletin*.

Vanessa Muros, Editor

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ANNOUNCEMENTS

Awards

T. Douglas Price, University of Wisconsin, was awarded the Archaeological Institute of America's Pomerance Award for Scientific Contributions to Archaeology, for his influence on the field of archaeological science, including his research that has revolutionized our understanding of the European Mesolithic, the transition to agriculture, and human migration throughout the world. Doug Price was President of the SAS in 1989-1990.



SAS Annual Business Meeting

The SAS Annual Business Meeting will be held at this year's Society for American Archaeology 80th Annual Meeting in San Francisco. The business meeting will take place on Thursday, April 16th from 5-6:30pm at the Hilton San Francisco Union Square Hotel, room TBA. Please make sure to check the SAA Annual Meeting final program when published for more details on the location.

Position Announcement - Senior Conservator of Antiquities, J. Paul Getty Museum

The J. Paul Getty Museum is seeking a Senior Conservator of Antiquities to oversee the Getty Villa's conservation department, which is responsible for the long-term preservation of one of the largest and finest collections of Greek and Roman antiquities in the United States. The Senior Conservator of Antiquities oversees

the safekeeping, proper installation, and conservation of all works in the Getty Villa's permanent collection. It conducts an active and influential program of treatments and research, including technical and materials analyses, and as a result attracts a broad range of masterworks from around the globe to the Villa's conservation studios and galleries. The department supports a program of ambitious loan exhibitions through its conservation work and state-of-the-art installation and mount-making procedures. The Senior Conservator represents the institution in the negotiation of joint projects with other institutions and governments while advancing its reputation as a leader on conservation matters internationally. He/she also oversees department staffing, hiring, performance reviews, staff development, and the budget.

The successful candidate will have a Master's Degree and/or Ph.D. degree, ten years' experience as an objects conservator, a record of successful treatments and professional publications, and proven ability as a manager. Frequently working in tandem with the curatorial department, he/she will have the reputation and skills to initiate collaborations and build partnerships internationally. The individual will be equipped to consult with other institutions as appropriate on their conservation needs and to conduct negotiations regarding loans and treatments where required. He/she will contribute to researching, developing, and overseeing innovative methodologies for long-term preservation of works of art in support of the Getty's leadership role among museums and cultural institutions. The Senior Conservator will report to the Associate Director for Collections and work closely and collaboratively with the Senior Curator of Antiquities and with colleagues across the Getty campus.

For more information on the position, or to apply, please visit the J. Paul Getty Trust's Opportunities website: <https://jobs-getty.icims.com/jobs/2446/conservator-sr/job>

ARCHAEOLOGICAL CERAMICS

Charles C. Kolb, Associate Editor

This issue contains four topics: 1) Book Reviews on Ceramics; 2) Informational Items; 3) EMAC Meetings and Publications; 4) Previous Professional Meetings; and 5) Forthcoming Professional Meetings.

Book Reviews on Ceramics

The Evolution of Ceramic Production Organization in a Maya Community, Dean E. Arnold. Boulder: University

Press of Colorado, 2015. xxxii + 323 pp., figures, tables, endnotes, bibliography, index. ISBN: 978-1-60732-313-6 (hardback), \$70.00; ISBN: 978-1-60732-314-3 (eBook). \$56.00. <http://www.upcolorado.com/book/3136>.

Structurally, this volume consists of separate lists of 119 figures and 3 tables, a "Preface" and nine numbered chapters (each with endnotes – totaling 596 entries), a 263-item "Bibliography," and a detailed 11-page double-column "Index" that conflates proper nouns and topics. As many readers of this column likely know, Dean Arnold and I are long-time friends (approaching five decades) and I was asked by the University Press of Colorado to review the manuscript of *Social Change and the Evolution of Ceramic Production and Distribution in a Maya Community* (Boulder: University Press of Colorado, 2008) and the manuscript of this current book in 2010. While employed at the National Endowment for the Humanities, I had no role in securing the two-year research grant that supported his analysis and write-up of some of his field data (grant RK 20191-95).

Dean E. Arnold is an internationally-recognized scholar of ethnographic ceramics and ceramic ethnoarchaeology. His in depth synchronic and diachronic research has benefited the academic community of material culture specialists anthropological/ethnographic as well as archaeological. Indeed, his research has especially benefited and illuminated ceramic ethnoarchaeological investigations in Latin America, the American Southwest and Northeast, the Mediterranean, Southeast Asia, and Africa. I have followed Dean Arnold's research, oral presentations, and written publications since the late 1960s and his investigations and cogent analyses have influenced my own studies and interpretations of ceramic materials. During the past 25 years, archaeologists and anthropologists interested in material culture studies, and especially scholars of ceramics, consistently cite two seminar works which have become "classics," namely, Dean Arnold's (1985) *Ceramic Theory and Cultural Process* (Cambridge University Press, Cambridge and New York) and Prudence M. Rice's (1987) *Pottery Analysis: A Sourcebook* (University of Chicago Press, Chicago). Both began as hardcover volumes and remain in print as paperback editions and are "must" reading by accomplished scholars and students. *Ceramic Theory and Cultural Process* has gone through four editions and is now available as "print on demand" and remains an innovative approach to the archaeological interpretation of ceramics which significantly extends our understanding of the social, cultural, and ecological processes of ceramic production. Arnold's (1993) second book, *Ecology and Ceramic Production in an Andean Community* (Cambridge University Press, Cambridge and New York), followed the theoretical perspective of his

1985 volume. In this ethnoarchaeological study he examined the relationships of ceramic production to society and its environment in the Peruvian Andes. The book traced these contemporary linkages through the production, decoration, and use of pottery and relates them to the analysis and interpretation of ancient ceramic production. Utilizing an ecological approach within a single community (District of Quinua), Arnold expands the scope of previous ceramic theory by focusing on the population as the unit of analysis in production and decoration. *Ecology and Ceramic Production* is also available as “print on demand.” In my judgment, Cambridge University Press did not do a very good job in promoting this work and it did not receive the attention that it deserved.

Social Change and the Evolution of Ceramic Production and Distribution in a Maya Community (University Press of Colorado, Boulder, 2008) is the third volume of what many of us thought was to be a trilogy, but we now have a highly-illustrated companion fourth volume that complements the 2008 volume and provides precise documentation of the individuals, families and social groups. *Social Change* isn’t a traditional ethnographic treatment – it is that and more – and follows the theoretical underpinnings of his 1985 book. A review of the chapter titles tells us that he is tackling significant questions – problems that are perplexing to scholars of material culture as well as ceramics. Herein is the strength of this informative volume – issues that transcend technological and cultural changes in the community of Ticul, the Yucatan, Mexico, and Latin America. The questions and in depth assessments have great value well beyond these geographic and cultural entities. Arnold asks fundamental questions about modifications that have occurred in demand and consumption, pottery distribution, clay procurement, temper procurement, forming technologies, and firing technology and procedures.

The University Press of Colorado has now published his compelling companion to his 2008 volume, making a quartet of salient publications on pottery and pottery-producing communities. In his new work he blends meticulous diachronic field research with keen insight and documented and a substantive theoretical foundation. He draws together the results of many of this previous works, reevaluates and expands upon them and offer fresh, new cogent analyses and explanations of the dramatic changes that have taken place in this pottery-making community through more than four decades. To my knowledge, his is the longest continuous analysis of culture change in any single community and his research has the added benefit of being conducted by the same

person through these decades. This kind of observation by one observer over repeated visits is ethnographically unique. Hence, his synchronic and diachronic observations are informed by an intimate knowledge of the ecology, the physical characteristics of the community, the artisans themselves and their descendants. The impacts of technological changes and rapid cultural change (e.g., “modernization”) are documented and the impact of the influx of non-Maya-speaking entrepreneurs into the community are also characterized and explained in depth. Yet, Arnold’s work isn’t just with the native potters themselves, but is also informed by his interactions with other ethnographers, archaeologists, and archaeometricians. He correctly reminds us that “no one paradigm explains all.” In this new volume, the reader is presented with solid ethnographic reporting documented with valuable diachronic and synchronic data and interpretations. In this new companion volume, we are informed by his informants and treated to many photographic images and floor plans of pottery workshops. The pictures and drawings are extremely significant to those who study craft specialization and demographics. A content review of the volume with direct quotes from the text follows, and I note that there has been a substantial reworking of the structure and content of the volume when compared with the manuscript.

“Chapter 1. Introduction: Craft Specialization and Social Complexity” (pp. 1-33, 9 figures, 1 table, 130 endnotes). Arnold considers a variety of topics including the social organization of pottery production, craft production and specialization (including scale, intensity and production context), production units and social changes, forces of change, continuity, and changes in the organization of production space before outlining the structure of the book. He points out (p. 1) that “...a mass of information exists concerning the ecology, organization, and technical analyses of crafts, but relatively little data exists about the people who make the pots, weave the cloth, or forge the metal. This work aims to help fill this gap. It examines the history of production units and the changes in their organization in Ticul, Yucatán, over a period of almost forty-four years. Using narratives and images to tell the story of changes in personnel and the use of space, this work goes beyond the quantitative summaries used in my previous work, *Social Change and the Evolution of Ceramic Production and Distribution in a Maya Community*, to a more holistic understanding of the people who make the pots, where they do it, and changes in production space through time.” “The subject of this work is the community of potters of Ticul, Yucatán, Mexico, during the last third of the twentieth century and the first eight years of the twenty-first century. Ticul is

one of the largest cities in southern Yucatán and is the administrative center of its municipio. Since 1960, it has experienced a great surge in population and has become the most important producer of pottery in Yucatán” (p. 5).

“Chapter 2. Methodology: How Were the Data Collected?” (pp. 35-55, 42 endnotes) is a MUST read in which he contextualizes the history of his research, the databases he created (genealogical, production unit, and potters’), and considers the important issues of ethics, names, and privacy. Here the reader learns about 12 research visits over four decades, participant observation, research questions and methodologies “my approach to archaeological ceramics is colored by my perspective as an ethnographer in which I focus less on how archaeologists describe and interpret pottery than on how humans engage the environment to make pots and under what conditions. I am less concerned about *a priori* archaeological questions than relating the ethnographic data of making pottery to the behavioral patterns of ancient cultures and how that can be done” (p. 36). He composed 71 separate kinship charts of approximately 1,190 individuals spread out more than five to six generations; approximately 325 of these were potters for at least part of their life. “These charts included those who had taken up pottery making comparatively recently as well as those families that had made pottery for five generations. A large map was constructed showing the location of each production unit so that precise shifts could be detected in residence and production locations since 1968. Smaller sketch maps were drawn showing potters’ residence locations in previous generations based upon informants’ accounts” (p. 41). “My primary purpose in developing this database was to graphically represent the relationships between potters across many generations and provide links among the 1984 kinship charts. Cross-checking verbal data by consulting birth, marriage, and death records of the municipio of Ticul and the marriage records from the Ticul church. “Unlike my 2008 book, this work uses names and some personal details of my informants. I was careful not to use names (with some exceptions) in my previous work in order to focus on the patterns that existed, and I was very careful to avoid using their names where details would embarrass them, violate their privacy, or otherwise harm them. In this work, on the other hand, I use names to put a more personal twist on the data to show that patterns are the result of real people acting in patterned ways. Nevertheless, many details and names were excluded from this description because they would prove to be embarrassing or harmful to current potters” (p. 51).

Three chapters provide a review of traditional potting households and production units derived from them;

social organization of the craft is rooted in families and reproduced in household production units. “Chapter 3. Traditional Households I: The Tzum Family” (pp. 57-119, 31 figures, 103 endnotes) centers on Eusevio Tzum Dzul, 20 other relatives, their descendants and others who learned from them. “More than any other, the history of the Tzum family illustrates how the forces of selection for and against potters affected the ongoing practice of the craft. These forces included the deselection of individuals who were potters from the population because disease, slave labor (debt peonage), warfare, and government policies affected the composition of their families and influenced the transmission of the craft through time” (p. 57). “Chapter 4. Traditional Households II: Six Families” (pp. 121-175, 32 figures, 113 endnotes) focuses on the families of Noberto Ucan, Simón Pech, Timoteo Chan, the Keh family, José María Huicab, and José Gernacio Huicab Ku. These families produced non-cooking pottery. As with the previous chapter, he presents a number of patterns and he compares and contrasts them. “Chapter 5. Production Units Derived from Traditional Households: Cooking Pottery” (pp. 177-196, 5 figures, 61 endnotes) considers the Xiu family, descendants of José Norberto Huicab, the Cruz family, and the Canul. Arnold concludes that “Making cooking pottery was specialized within families in Ticul during the first two-thirds of the twentieth century, but because of social change and the adoption of metal cooking vessels, the demand for cooking pottery had collapsed by the late 1960s” (p. 190). Two effects produced by this collapse are detailed and points out that “Ticul cooking pottery has some similarities to the some of the Puuc Unslipped Ware produced during the Terminal Classic period (Robert E. Smith, *The Pottery of Mayapán*, Part 1, Cambridge, Massachusetts: Harvard University Press, 1971, pp. 145-146)” (p. 191).

“Chapter 6. Entrepreneurial Production” (pp. 197-218, 12 figures, 29 endnotes). “In contrast to the previous chapters, in which the social organization of the craft was rooted in families and reproduced in household production units, this chapter presents a very different kind of organization in which the workshop owners were not traditional potters and did not possess traditional knowledge of the craft about raw materials, vessel shapes, and the processes of forming and firing. They did not come from traditional pottery-making families; most of them were entrepreneurs from outside of Ticul who established their production units in order to take advantage of the tourist market” (p. 197). Enrique Garma was an entrepreneur from within Ticul but most new innovators came from outside Ticul. These included a government-sponsored workshop, Arte Maya, and five other government workshops producing flower pots and

pottery with Maya shapes and motifs. Entrepreneurial production units were established mostly by non-potters (two traditional potters established production units) and the successes and failures of these enterprises are discussed. A large ceramics factory, Productos Cerámicos Real Ticul, S.A. de C.V., was established by a local entrepreneur for sales in Mérida, and employed up to 96 people. Products included vitrified glazed pottery, the use of slip casting, and fabrication of roof tiles made from imported clays. Other entrepreneurial production units were established outside of Ticul: Mérida, Pisté, and Valladolid. “Chapter 7. New Production Units: Nontraditional Potters” (pp. 219-229, 8 figures) documents the period 1965-2008 and the advent of production units established by potters who did not come from traditional pottery-making families, The Antonio Chan family of “new” potters (no relation to the earlier Chan family) illustrates a return to the familial transmission of the craft seen among traditional potters in Ticul. The Ayala and Gonzalez families and short-lived production units are also documented. “Chapter 8. Attached Workshops” (pp. 231-241, 3 figures, 19 endnotes) documents another kind of production unit that was also a response to tourist demand. The establishment and control of this kind of workshop existed outside of the traditional pottery-making families, but it still used the services of these traditional potters. The Workshop at Hacienda Uxmal and the Workshop at Hotel Príncipe are the closest to what Brumfiel and Earle (*Specialization, Exchange, and Complex Societies*, Elizabeth M. Brumfiel and Timothy K. Earle (eds.), Cambridge: Cambridge University Press, 1987, pp. 1-9) call attached workshops, in which production is controlled by elites.

“Chapter 9. Why Did the Spatial Footprint of Production Increase?” (pp. 243-276, 19 figures, 2 tables, 47 endnotes). In this superb analysis, Arnold considers Engagement Theory and Feedback Loops and unique feedback in pottery production. Weather and climate and their effects on pottery production, monthly precipitation, tropical storms and adverse weather, a Case Study from November 1984, potters’ adjustments to adverse conditions (scheduling production activities, constructing storage space for raw materials including fuel, and manipulation of drying rates), and the built environment as an adaptation to weather are detailed. He concludes that “The process of forming clay into pottery is not just the imprint of social and cultural patterns on a plastic media, as one would expect with materialization theory. Rather, pottery production occurs within an environmental context that provides potentialities for, as well as constraints to, the production choices of the potters” (p. 273). “In short, increased production of pottery in the late twentieth and early twenty-first

centuries is closely related to the potters’ choices to change their built environment” (p. 274). In “Chapter 10. Conclusion” (pp. 277-290, 29 endnotes) Arnold returns to the basic question that his work addresses: what happens to the population of potters and the social and spatial organization of their production through time? He has shown that changes in production units are not the result of a simple evolutionary process by which small household units evolve into other types of production units and that production units can produce a considerable amount of pottery and yet be organized on a household basis, and that attached specialization does not occur in Ticul. He also surveys the ethnoarchaeological and archaeological literature that provides floor plans of production space reveals that large areas are devoted to drying pottery, similar to that which occurs in Ticul. In addition, he notes that his “diachronic study of the social and spatial organization of pottery production in Ticul reveals some of the difficulties and limitations of classification of production organization and its meaning” (p. 288). Notably, he centers on some of the work of Penn State archaeologist Ken Hirth: Kenneth G. Hirth (ed.), *Housework: Craft Production and Domestic Economy in Ancient Mesoamerica*, Archaeological Papers of the American Anthropological Association 19, 2009, pp. 1-12, 13-32.

Arnold’s book is unique in the ethnographic and ethnoarchaeological literature of the Old and New Worlds and is a valuable contribution to the study of craft specialization – ceramic or not – in anthropological contexts. Social anthropologists will enjoy the genealogical work presented in Chapters 3-7 and economic anthropologists and archaeologists will delight in the revelations in Chapters 8-10. This 2015 book completes an important quartet of publications begun in 1985 on ceramic production and distribution. Arnold’s elegant diachronic research has informed and challenged us to be better ethnographers, archaeologists, and archaeometricians. Lastly, I note that Dean has dedicated this volume to his two daughters who assisted him in the field, taking photographs, and producing a majority of the illustrations for this volume. Readers should give themselves a 2015 New Year’s present and acquire this important book, another in the University Press of Colorado’s growing list of significant publications.

The Smithsonian Institution Excavation at Tell Jemmeh, Israel, 1970–1990, David Ben-Shlomo and Gus W. Van Beek (eds.), Smithsonian Contributions to Anthropology 50, Washington, DC: Smithsonian Institution Scholarly Press, 2014. xxxiv + 1087 pages, 941 figures, 77 tables. ISSN: 0081-0223 (print), 1943-6661 (online)

<http://opensi.si.edu/index.php/smithsonian/catalog/book/36>. The monograph describes the results of the archaeological excavation at the site of Tell Jemmeh, Israel, undertaken by the Smithsonian Institution and directed by Gus W. Van Beek during the years 1970-1990. All the artifacts from the excavations were shipped from Israel to Washington, D.C., and have been restored, studied, and analyzed in the National Museum of Natural History, Smithsonian Institution, for the past four decades. The site is a strategic and large mound located several kilometers from Gaza and the Mediterranean coast, hence, within the region of the Philistine material culture. It was inhabited continuously for at least 1,400 years during the Middle and Late Bronze Age, the Iron Age, and the Persian period. The highlights of this excavation are the findings of a large and affluent courtyard house from the Late Bronze Age, a sophisticated well-preserved pottery kiln from the early Iron Age, a complex of Assyrian-related administrative buildings during the late Iron Age, and a complete granary of the Persian period. The volume contains 34 chapters and there is a single set of references (pp. 1067-1087). This is a detailed and final report on all of the excavation results, including the architectural remains, stratigraphy, pottery, and other finds. In addition, several more detailed and focused studies of certain aspects of the site's material include chapters on imported, decorated, Philistine, Assyrian-style and Greek pottery and chapters on figurines, sealings, jewelry, amulets, scarabs, cylinder seals, flint, coins, ostraca, and fauna. The volume is illustrated showing field photographs, plans, sections, and drawings and photographs of artifacts: List of figures (pp. ix-xxvii). List of Tables (pp. xxvii-xxviii), and Preface and Acknowledgments (pp. xxix-xxxiii). The report is divided into six parts: Introduction and Background (2 chapters); The Architecture, Stratigraphy and Finds from the Different Excavation Fields (7 chapters; Chapter 7 concerns a pottery kiln); Pottery Studies (7 chapters); Small Finds (16 chapters; four on ceramic artifacts); Subsistence Studies (1 chapter); and Conclusion (1 chapter). In this review, I provide basic references to all 34 chapters but supply details on the contents of the 11 chapters concerning ceramics.

Introduction and Background: 1 "Introduction" by David Ben-Shlomo and Gus W. Van Beek (pp. 1-15) and 2 "Environmental Background of Tell Jemmeh" by Gus W. Van Beek (pp. 16-20). The Architecture, Stratigraphy and Finds from the Different Excavation Fields: 3 "Field III: The Southeastern Step Trench" by David Ben-Shlomo (pp. 21-161); 4 "Field II: The Northwestern Stepped Trench" by David Ben-Shlomo (pp. 162-197); 5 "The South Trench (ST1)" by David Ben-Shlomo (pp. 198-208) [typo in the Table of Contents: p. 198 instead of p.

198]; 6 "Field I: The Late Bronze Age" by David Ben-Shlomo (pp. 209-336); 7 "Field I Furnace (the Kiln), Square KB, and FUR 2-FUR 3" by David Ben-Shlomo (pp. 337-402); 8 "Results from Field IV: The Iron II and Later Periods" by David Ben-Shlomo (pp. 403-641); and 9 "Bread Ovens and Related Installations" by Alexander Zukerma (pp. 642-650). Chapter 7 "Field I Furnace (the Kiln), Square KB, and FUR 2-FUR 3" by David Ben-Shlomo (pp. 337-402). The furnace, an updraft pottery kiln, is one of the best-preserved kilns in the Levant during the Bronze and Iron Ages. It lies in the same low area of the tell as Field I but lies 20-25 m northeast of the eastern edge of Field I and is not connected to it and not combined in the same grid. It is treated separately in this report. Earlier and later remains were also recovered. The lower part of the kiln and the fire box were probably built within a pit or natural cavity in the ground, whereas the outer walls of the kiln, appearing above ground from the level of the floor, were made of flat-lying bricks, with the northern side of the kiln set into the existing sloping land contour. An element from the Tell Jemmeh kiln that is very rarely found in other Bronze and Iron Age kilns are the divided ventilation flues. Seven tables and 91 illustrations (color images and monochrome line drawings components) illustrate the kiln excavations, components, and associated artifacts. Ben-Shlomo writes that "All the pottery found in the kiln area gives a rather narrow dating, as no early LBII or Iron II pottery appears. The kiln, however, might have been short-lived and not used for more than a generation or so (possibly less)... it was not used for a very long time, possibly because of its maintenance, which was not simple, and therefore, it was abandoned after a short period" (p. 369).

Pottery Studies (Chapters 10-16): 10 "Decorated Canaanite Pottery" by Gwanghyun Choi (pp. 651-656). In the repertoire of Canaanite pottery, the biconical jug is one of the most beautifully decorated vessel types and is characterized by the marked carination which divides the biconical body into two parts, each of which tapers toward its end. The painted decoration on one complete biconical jug shows a variation of the Canaanite tree of life motif, a typical example that consists of a tree (mostly a date palm) accompanied by two attribute animals on either side or one side only. The attribute animals are usually quadrupeds or birds. Twenty specimens of decorated pottery are described and illustrated: the complete jug, a closed vessel, 14 craters, and 5 decorated sherds. 11 "Imported Cypriot and Mycenaean Wares and Derivative Wares" by Celia J. Bergoffen (pp. 657-720). The imports include approximately 340 vessels, of which 130 are detailed, among them 84 White Painted vessels. Forty-five imported Cypriot wares and 84 derivative wares, White Slipped II Painted wares from the Bronze

and Iron Ages, are also described and illustrated. Black Slip II, Ring Base, and Bucchro Wares were also recovered. A descriptive catalog (pp. 671-691) provides details on 548 specimens. Appendix 11.1 (pp. 682-720) illustrates most sherds. There are metric scales but no grey scale or color bars for image fidelity control.

12 “Decorated Philistine Pottery” by David Ben-Shlomo (pp. 721-731). Philistine Monochrome pottery (also termed Mycenaean IIIc:1b or Philistine 1) does not appear at Tell Jemmeh. Philistine Bichrome pottery (also termed Philistine 2; Dothan et al., 2006) is characterized by black and red decoration on chalky white slip in most cases. This pottery dates probably to the late 12th century and the 11th century BCE, or the Iron IB (possibly also early 10th century). Bichrome Ware appears in bell-shaped bowls and kraters and closed vessels. A few specimens of Late Philistine Decorated Ware (LPDW, or Ashdod ware) and Hybrid Red-Slipped Bowls are noted. The Philistine decorated pottery at Tell Jemmeh can be seen as a reflection of a second level of distribution of this pottery in the Philistine core area; the first level would be the five Philistine city sites. 13 “Assyrian-Style Pottery (Palace Ware)” by David Ben-Shlomo (pp. 732-748). One of the more distinct phenomena at Tell Jemmeh is the large amount of what is often termed Assyrian palace ware, or “palace ware” (a luxury ceramic of the Neo-Assyrian Empire). It is termed here Assyrian-style pottery and is in Iron IIIc or later contexts. It is defined by fabric (generally light-colored highly levigated clay) and shape characteristics (globular bowls, open bowls, and beakers). Of the 2,157 sherds, five beakers and 176 bowls were reconstructed to complete or partial form (from which three beakers and eight bowls were complete). A selection of 134 items is illustrated and discussed in this report. Fabric characteristics detailed include Munsell colors, and previous unpublished thin-section and XRF studies on 13 sherds (p. 740) and petrographic studies by Engström (2004) on 17 sherds. XRF data from 8 Tell Jemmeh vessels (Melson, unpublished data, Table 13.1) is included and Ben-Shlomo includes a new thin-section analysis of 24 Assyrian-style vessels (see Chapter 15. The data suggest local production but likely by more than one workshop. Contexts, at the site and distribution of the ware in the Levant and Near East (notably southern Levant, Philistia, the Negev, Jordan) are detailed and he concludes that Tell Jemmeh was a major center of production of Assyrian-style pottery for a short period during the late 8th and early 7th centuries BCE. The manuscript of this chapter dates to April 2013 but there is no mention of the recent work by Alice Hunt, *And I Called Them Assyrians: An Archaeological and Archaeometric Analysis of Neo-*

Assyrian Palace Ware, Unpublished Ph.D. thesis, London: University College London, 2012.

14 “‘East Greek’ and Greek Imported Pottery of the First Millennium BCE” by S. Rebecca Martin (pp. 749-775). The author studied 396 fragments and complete vessels of East Greek and Greek ceramics dating from the 7th-2nd centuries BCE. Sometime in the first quarter of the 5th century BCE, Greek imports became a regular trade item at Jemmeh. The Attic imports that occur in the site’s assemblage include Black figure, Red figure, Black glaze (the most common), and Over-painted ceramics comprising a total of 26 shapes. “The majority are either fine wares for drinking, eating, and storing perfume or lamps.” The history and characteristics of East Greek ceramics are documented, including pottery imported from “an unknown number of probably Greek sources that cannot be grouped with the East Greek and Attic material.” The descriptive catalog (pp. 760-775) is organized by vessel form and includes all 396 selected items. 15 “Petrographic Analysis of Pottery: Chalcolithic to Persian Period” by David Ben-Shlomo (pp. 776-794, photomicrographs p.787, 789, 791). This is an initial petrographic study of the Tell Jemmeh pottery using thin-section petrographic analysis (TSPA) on the Tell Jemmeh pottery 145 samples were selected for analysis (Table 15.1), including 5 samples from the Chalcolithic period, 29 from the MBIIB-C, 41 from the LBII, 14 from the Iron I (all Philistine Bichrome), 13 from the Iron IIA, 39 from the Iron IIB-C (of these, 24 are Assyrian style), and 4 from the Persian period. The major periods are analyzed (i.e., the MBII, LBII, and Iron II) and included the main pottery types and classes. The major goal was to investigate the development of pottery production throughout periods attested in the site, to compare the MBIIB-C, LBII, and Iron Age pottery assemblages and document local production vs. ceramic imports and potential trade patterns for Philistine Bichrome ware and the Assyrian-style pottery. Thin-section petrography was carried out by the author using standard methodologies included sectioning to ca. 30 µm and examination using a petrographic polarizing microscope (Nikon with Zeiss for photographs) at 25x and 400x, and fabrics are described as to general characteristics of the matrix, optical activity, spacing, voids and (when applicable) type of local soil. The geological and pedological settings and prior research are reported, including Melson’s assessment of 13 soil samples by thin-section petrography XRD, and XRF. Twenty-four petrographic groups are documented. There is a high variability in the production centers of the MBIIB pottery in both decorated and plain pottery, even though most are probably locally made. No ceramic wasters or raw clay deposits from Iron Kiln I were identified and, hence, not included in the analysis.

Noteworthy is the restricted nature of the pottery sources during the Iron IIB-C period. 16 “Computerized Documentation and Analysis of Pottery Vessels” by Avshalom Karasik (pp. 795-803). About 950 non-decorated, fairly large rim fragments or base fragments were selected for 3-D scanning and a computerized drawing was produced for each sherd; the vast majority of these appear in this volume. The total number of pottery sherds and vessels presented in graphic form is about 2,400. Decorated pottery, body sherds, very small rims, handmade vessels, and completely or nearly completely reconstructed vessels were drawn manually. Rim sherds with handles were scanned in some cases. A selection of about 84 Assyrian-style pottery sherds (see Chapter 13), mostly bowl rims that were scanned and documented using the computerized method. The author states that Tel Jemmeh is one of the first excavation reports that included such a large proportion of 3-D documented ceramics.

Small Find Studies (Chapters 17-32): 17 “Ceramic Figurines and Figurative Terra-cottas” by David Ben-Shlomo, Ron Gardiner, and Gus Van Beek (pp. 804-827). A total of 127 items are included, of which 27 are anthropomorphic (mostly female) figurines, and 53 are clearly zoomorphic figurines. Twenty-two additional items are fragments of zoomorphic figurines or vessels, and the other 24 items are other types of figurative terra-cottas. The typology is explained and includes plaque figurines, hollow and standing pillar figurines, Late Iron Age horse figurines, camels, parts of libation vessels, a zoomorphic rhyton, masks, and vessels with figurative elements. There is a catalog presented as descriptive tables. The assemblage from Tell Jemmeh is composed mostly of Canaanite-style figurines from the LBII (and possibly earlier) and Iron IIB-C to Persian period objects. 18 “Worked Sherds” by David Ben-Shlomo and Ron Gardiner (pp. 828-837). A large assemblage of about 1,700 items from Tell Jemmeh includes sherds of pottery vessels that were subsequently worked, especially on their edges, by various tools to create various shapes. Various perforated sherds (after firing) are also included in this group. Disks, worked bases, and perforated sherds are described in tabular catalogs (provenance, dimensions and period when known) and illustrated. 19 “Ceramic Objects: Marked Pottery, Mud Objects, and Various Ceramic Artifacts” by David Ben-Shlomo (pp. 838-856). This report includes various classes of finds all made from fired or unfired clay. These include “marked pottery items (mostly by incised marks on vessels or sherds, notably on handles) and various ceramic objects. Unfired, sun dried, or partly baked (“mud” objects) such as loom weights, spindles, wheels, jar stoppers, and gaming pieces. Other categories of finds (although

discussed in other chapters as well) are metallurgic artifacts made of clay, including four crucible and four tuyère fragments, stoppers, weights, and spindle whorls. Data on provenance, object descriptions, phases, and contexts are presented in tabular form and examples are illustrated. 20 “Clay Sealings and Seal Impressions” by David Ben-Shlomo and Othmar Keel (pp. 857-875). A group of up to 82 items may be defined as clay sealings; 52 can be dated and 60 are from unclear contexts. A catalog of 48 objects provides information on provenance, impression styles/dates, and dimensions; all are illustrated. The characteristics, iconography, and suggested functions are reported.

The other chapters are: 21 “Nonjewelry Metal Objects” by David Ben-Shlomo and Ron Gardiner (pp. 876-888); 22 “Metallic and Nonmetallic Jewelry Objects” by Amir Golani (pp. 889-916); 23 “Stone Artifact Assemblage from Tell Jemmeh” by Yorke M. Rowan (pp. 917-969); 24 “Egyptian Amulets from Tell Jemmeh” by Christian Herrmann (pp. 970-976); 25 “Various Finds: Faience, Glass, Bone, Ivory, and Pumice” by David Ben-Shlomo (pp. 977-986); 26 “Chipped Stone Assemblage from Tell Jemmeh” by Steven A. Rosen and Jakob Vardi (pp. 987-1003); 27 “Scarabs and Stamp Seals” by Othmar Keel (pp. 1004-1016); 28 “Cylinder Seals: A Clay Cylinder with Cuneiform Signs” by Wayne Horowitz and Tallay Ornan (pp. 1017-1019); 29 “Cylinder Seals: A Mitannian Cylinder Seal with a Worshipper and Divine Images” by Tallay Ornan (pp. 1020-1022); 30 “Coins: Coins from the 1970–1990 Excavation Seasons at Tell Jemmeh” by Donald T. Ariel (pp. 1023-1025); 31 “Coins: The Crusader Purse from Tell Jemmeh” by Robert Kool (pp. 1026-1030); and 32 “Ostraca from Tell Jemmeh” by Haggai Misgav (pp. 1031-1037). Subsistence Studies: 33 “Temporal Trends in Animal Exploitation: Faunal Analysis from Tell Jemmeh” by Edward F. Maher (pp. 1038-1053) and Conclusions: 34 “Synthesis and Conclusions: The Significance of Tell Jemmeh” by David Ben-Shlomo (pp. 1054-1065). “References” (pp. 1067-1087).

Informational Items: Recent Publications

Social Dynamics of Ceramic Analysis: New Techniques and Interpretations: Papers in Honour of Charles C. Kolb, Sandra L. López Varela (ed.), British Archaeological Reports International Series S2683, Oxford: Archaeopress, 2014. 107 pp., 60 figures, 7 tables; preface and 9 chapters. ISBN 978 1 4073 1329 0. £24.00 (paperback). A copy of this volume was presented to Charlie Kolb by Sandra L. López Varela (Universidad Nacional Autónoma de México) and Kostalena Michelaki (Arizona State University) – Ceramic Ecology organizers and chairs, at the Ceramic

Ecology XXVIII symposium held at the American Anthropological Association annual meeting, Washington, DC, USA on 6 December 2014. "Preface: A professional and personal view of Charles C. Kolb" by Dean E. Arnold (pp. 1-3). Chapter 1: Ceramic ecology XXVII: Celebrating more than a quarter century of ceramic ecology" by Sandra L. López Varela, Dean E. Arnold, and Christopher A. Pool (pp. 4-12). "Chapter 2: Cross-cultural ceramic analysis: Albania and Yucatan in the Keck Lab at Millsaps College" by Michael L. Galaty, George J. Bey III, and Timothy J. Ward (pp. 13-21). Chapter 3: Pottery, people, and pXRF: Toward the development of compositional profiles for southeast Mesoamerican ceramics" by David Rafael McCormick and E. Christian Wells (pp. 22-35). "Chapter 4: The conundrum of volcanic ash in the Maya Lowlands, an essay in honor of Charlie Kolb and international and interdisciplinary ceramic ecology" by Anabel Ford (pp. 36-49). "Chapter 5: Investigating the production and circulation of pottery vessels in peripheral Tikal during the Classic period" by Kirk Damon Straight (pp. 50-63). "Chapter 6: Of polychromes and politics in Southern Veracruz, Mexico" by Philip J. Arnold III (pp. 64-74). "Chapter 7: Building landscapes of memory with pots: Hermeneutic expressions of *Tlaloc* in a festivity of the Valley of Morelos, Mexico" by Sandra L. López Varela and Daniel Aguilar Escobar (pp. 75-86). "Chapter 8: Using traditional pottery as a tool for strengthening local cultural identity in Poland" by Aleksandra Wierucka and Magdalena Sacha (pp. 87-94). "Chapter 9: Clay griddles, analytical techniques, and heritage: An ethnoarchaeological perspective of economic developments in Mexico" by Sandra L. López Varela (pp. 95-107).

Ryzewski, Krysta, Hassina Bilheux, Susan Herringer, Jean-Christophe Bilheux, Lakeisha Walker, and Brian Sheldon (2014). The use and refinement of neutron imaging techniques for archaeological artifacts. *Advances in Archaeological Practice* 2(2):91-103. (May 2014). Plus supplementary data. Abstract: Neutron imaging is a nondestructive application capable of producing two- and three-dimensional maps of archaeological objects' external and internal structure, properties, and composition. This report presents the recent development of neutron imaging data collection and processing methods at Oak Ridge National Laboratory (ORNL), which have been advanced, in part, by information gathered from the experimental imaging of 25 archaeological objects over the past three years. The dual objectives of these imaging experiments included (1) establishing the first methodological procedures for the neutron imaging of archaeomaterials involving the CG-1D beamline and (2) further illustrating the potential of

neutron imaging for archaeologists to use in the reverse engineering of ancient and historical objects. Examples of objects imaged in two and three dimensions are provided to highlight the application's strengths and limitations for archaeological investigations, especially those that address ancient and historic technologies, materials science, and conservation issues.

<http://saa.publisher.ingentaconnect.com/content/saa/aap/2014/00000002/00000002/art00003>

Reedy, Chandra L., Jennifer Anderson, Terry J. Reedy, and Yimeng Liu (2014) Image analysis in quantitative particle studies of archaeological ceramic thin sections. *Advances in Archaeological Practice* 2(4):252-268. (November 2014). Abstract: Thin-section petrography is a crucial tool for the study of archaeological ceramics, and in recent years, image analysis has emerged as a powerful quantitative enhancement of that tool. Exploratory applications of image analysis to archaeological ceramic thin sections, and related work by sedimentary geologists, have indicated its usefulness to the field. In this paper, we first present the results of experimental work testing the consistency and reproducibility of image analysis. We identify procedures for fast and reliable analysis of thin sections using laboratory-prepared ceramic specimens of simple clay-sand systems. We then show how those procedures can be slightly modified to accommodate more complex archaeological specimens. We conclude with a discussion of the role of image analysis within the overall context of thin-section petrography of ceramic materials, as one among a repertoire of techniques, adding quantitative data and increasing the usefulness of ceramic thin sections for addressing archaeological research questions.

<http://saa.publisher.ingentaconnect.com/content/saa/aap/2014/00000002/00000004/art00002>

Goren, Yuval (2014). The operation of a portable petrographic thin-section laboratory for field studies. *New York Microscopical Society Newsletter* September 2014):1-17, 17 color illustrations. (The author is at the Department of Archaeology and Ancient Near Eastern Cultures, Tel Aviv University, Israel, and well-known to members of the ceramics community). "Abstract: This article presents a procedure for petrographic and micromorphological thin-section preparation and examination in extra-laboratory and field conditions. Employing basic, frequently-improvised, off-the-shelf equipment, standard petrographic thin sections of rocks, sediments, ceramics, mortars, and plasters can be produced and examined. Use of the newly-introduced Goren portable microscope enables laboratory-grade examination and recording of such materials during field expeditions. Examples are adduced from the field of

material analysis in art and archaeology.” The author has developed and patented the “Goren Portable Petrographic Microscope,” commercially available from MCR Ltd. Laboratory Equipment:

<http://www.mrclab.com/htmls/home.aspx> . This issue of the newsletter is available online:

https://www.academia.edu/8376802/THE_OPERATION_OF_PORTABLE_PETROGRAPHIC_THIN-SECTION_LABORATORY_FOR_FIELD_STUDIES

EMAC Meetings and Publications

The EMAC series of conferences, initiated in Rome in 1991, meets every two years in a European city and brings together specialists carrying out research on ancient ceramics using archaeological sciences. EMAC provides the opportunity to present and debate recent advances in this field of research, from methodological aspects to archaeological studies with fully integrated laboratory approaches. The published proceedings appear in a number of different volumes. As noted, some programs and agendas and published volumes are available gratis on the Internet.

1st European Workshop on Archaeological Ceramics, Rome (10-12.10.) 1991. Published as *1st European workshop on archaeological ceramics*, F. Burrigato, O. Grubessi, and L. Lazzarini L. (eds.), Roma: Università degli studi La Sapienza, Dipartimento di Scienza della Terra, 1994. (661 pp.).

2nd EMAC: Barcelona 1993. Published as *Estudis sobre ceràmica antiga. Actes del simposi sobre ceràmica antiga, Barcelona, 1993: EMAC 2*, Marius Vendrell-Saz, Maurice Picon, Ninina Cuomo di Caprio (eds.), Barcelone: Generalitat de Catalunya, 2191/ 1995. ISBN 84-393-3525-3. (264 pp.).

3rd EMAC: Riccione, 1995 (10.02-06). Published as *Fourth Euro-Ceramics: The Proceedings of the Fourth European Ceramic Society Conference held on October 2-6, 1995 in Riccione, Italy* Vol. 14: *The Cultural Ceramic Heritage: 3rd European Meeting on Ancient Ceramics: Proceedings of the European Ceramic Society Conference*, B. Fabbri (ed.), Faenza, 1995. ISBN 88-8138-018-8. (410 pp.).

4th EMAC: Andorra, 1997. Published as *4th European Meeting on Ancient Ceramics - Archaeological and Archaeometric Studies: Andorra, 1997*, Govern d'Andorra, Ministeri de Turisme i Cultura, 1999.

5th EMAC: Athens, 1999. The *Provisional Programme* is available at:

<http://www.ims.demokritos.gr/archae/emacprogram.html>
Published as *Modern trends in scientific studies on ancient ceramics. Papers presented at the 5th European Meeting on Ancient Ceramics, Athens, 1999*, V. Kilikoglou, A. Hein, and Y. Maniatis (eds.), British Archaeological Reports International Series 1011, Oxford: Archaeopress, 2002. ISBN 1-84171-289-2. (iv + 402 pp).

6th EMAC: Fribourg, 2001. Published as *Ceramics in the Society: Proceedings of the 6th European Meeting on Ancient Ceramics (Fribourg, Switzerland, 3-6 October 2001)*, S. Di Pierro, V. Serneels, and M. Maggetti (eds.), Fribourg, Switzerland: Department of Geosciences, Mineralogy and Petrography, University of Fribourg , 2003. (vii + 349 pp.). Reviewed in *SAS Bulletin* 27(1-2):12-15 (Spring-Summer 2004)

<http://www.socarchsci.org/bulletin/SAS2712.pdf> and *Old Potter's Almanack: Joint Newsletter of the Prehistoric Ceramics Research Group and The Ceramic Petrology Group (British Museum, London)* 12(2):2-4 (July 2004).

7th EMAC: Lisbon, 2003. Published as *Understanding People Through Their Pottery: Proceedings of the 7th European Meeting on Ancient Ceramics (EMAC'03): October 27-31 2003 Lisbon, Portugal*, M. Isabel Prudencio, M. Isabel Dias, and J. C. Waerenborgh (eds.), *Trabalhos de Arqueologia* 42, Lisbon: Instituto Portugues de Arqueologia, 2005. ISBN 972-8662-25-4. (321 pp).

EMAC '05 - 8th European Meeting on Ancient Ceramics, Lyon, France, 2005. Twenty-seven select papers are published in *Archaeometric and Archaeological Approaches to Ceramics Papers presented at EMAC '05, 8th European Meeting on Ancient Ceramics, Lyon, 2005*, S. Y. Waksman (eds.), British Archaeological Reports International Series 1691, Oxford: Archaeopress, 2007, ISBN 9781407301297, (204 pp.). <http://www.archaeopress.com/archaeopressshop/public/displayProductDetail.asp?id=%7B846E3E54-13F3-4AB7-A731-331489FAFDC5%7D>. Reviewed in *SAS Bulletin* 34(4):2-6 (Winter 2011)

<http://www.socarchsci.org/bulletin/SAS3404.pdf> . This volume contains a selection of papers delivered at the 8th European Meeting on Ancient Ceramics (EMAC) which took place in Lyon (France) in 2005. 1) Assessment of ancient vessel design with the Finite Element Method (FEM) (A. Hein, V. Kilikoglou); 2) Contribution for a mineralogical thermometer to be applied to low fired and/or non-carbonate ceramics (P. Ricciardi, L. Nodari, B. Fabbri, S. Gualtieri, U. Russo); 3) Investigating the substrate-glaze interface of ceramics with SEM-EDS and Raman spectroscopy (C. Pacheco, R. Chapoulie, F. Daniel); 4) Ceramic sequence of 7000 years:

archaeometrical study of pottery finds from Vörs, Máriaasszonyisziget (SW Hungary) (K.T. Biró, K. Gherdán, G. Szakmány); 5) Production and use: Temper as a marker of domestic production: The case of two Middle Neolithic villages in Concise (VD, CH) (E. Burri); 6) Early and Middle/Late Neolithic pottery production in Northern Calabria (Italy): Raw material provenance, paste preparation and firing techniques (I.M. Muntoni, P. Acquafredda, R. Laviano); 7) Pottery production in the Neolithic and Copper Age village of Maddalena di Muccia (Marche, Central Italy): Raw material provenance and manufacturing technology (R. Laviano, I.M. Muntoni); 8) Black-on-red painted pottery production and distribution in Late Neolithic Macedonia (Z. Tsirtsoni, D. Malamidou, V. Kilikoglou, I. Karatasios, L. Lespez); 9) Bell Beakers bone based decorations from Guadiana River Middle Basin (Badajoz, Spain) (C. Odriozola, A. Justo Erbez, V. Hurtado Pérez); 10) Archaeometrical investigations of Impasto pottery from Terramara of Gorzano (Modena, Italy) (A. Cardarelli, G. Carpenito, S.T. Levi, S. Lugli, S. Marchetti Dori, G. Vezzalini); 11) Exploring patterns of intra-regional pottery distribution in Late Minoan IIIA-B East Crete: the evidence the petrographic analysis of three ceramic assemblages (E. Nodarou); 12) Preliminary results of archaeometric analysis of amphorae and Gnathia-type pottery from Risan (M. Daszkiewicz, P. Dyczek, G. Schneider, E. Bobryk); 13) Tiles from the Lyon area in the 2nd century BC: Local products or imports? (N. Cantin, A. Desbat, A. Schmitt); 14) Lyon amphorae in the North: studies in distribution, chronology, typology and petrology (P. Monsieur, P. De Paepe, C. Braet); 15) Archaeometric characterisation of Roman wine amphorae from Barcelona (Spain) (V. Martínez Ferreras, J. Buxeda i Garrigós, J.M. Gurt i Esparraguera, V. Kilikoglou); 16) A late Roman pottery and brick factory in Sicily (Santa Venera al Pozzo) (S. Amari); 17) The first Byzantine “Glazed White Wares” in the early medieval technological context (S.Y. Waksman, A. Bouquillon, N. Cantin, I. Katona); 18) The “polished yellow” ceramics of the Carolingian Period (9th century AD): samples from Zalavár, South-West Hungary (H. Herold); 19) Lead-glazed slipware of 10th-11th century Akhsiket, Uzbekistan (C. Henshaw, Th. Rehren, O. Papachristou, A.A. Anarbaev); 20) Archaeometric investigation on 13th century glazed and slipped pottery found in Liguria and Provence (C. Capelli, R. Cabella, S.Y. Waksman); 21) The archaeometric study of white slips: A contribution to the characterisation of the Medieval Mediterranean productions (C. Capelli, R. Cabella); 22) From furnace to casting moulds: an exceptional 14th century copper-metallurgy workshop studied in the light of refractory ceramic materials (I. Katona, D. Bourgarit, N. Thomas, A. Bouquillon); 23) The decorative and architectural

terracottas in Ferrara (R. Fabbri, S. Ciliani, M. Bagatin, F. Bevilacqua); 24) Archaeometric characterization of Middle Age and Renaissance tin lead glazed pottery from Barcelona (J. Garcia-Iñáñez, J. Buxeda i Garrigós, M. Madrid i Fernández, J.M. Gurt i Esparraguera, J.A. Cerdà i Mellado); 25) Compositional studies on Iznik ceramics pigments (R. Bugoi, A. Climent-Font, B. Constantinescu, A. D’Alessandro, P. Prati, A. Zucchiatti); 26) Turkish ceramics in the Crimea on the eve of the Porta invasion (problems of chronology of a certain group of vessels) (I. Teslenko); 27) Preliminary comparative archaeometric results on Inka and Colonial ceramics from Paria (Oruro, Bolivia) (V. Szilágyi, J. Gyarmati, G. Szakmány, M. Tóth).

EMAC '07 - 9th European Meeting on Ancient Ceramics was held *Vessels: Inside and Outside: Proceedings of the Conference* was held 24-27 October 2007 at the Hungarian National Museum, Budapest. The *Conference Proceedings* (307 pp.) are posted at https://www.academia.edu/1420753/Vessels_inside_and_outside_Proceedings_of_the_conference_EMAC_07_9th_European_Meeting_on_Ancient_Ceramics_24-27_October_2007_Hungarian_National_Museum_Budapest_Hungary_Vessels_Inside_and_Outside_Proceedings_of_the_Conference, Katalin Biró, Veronika Szulágyi, and Attila Kreiter (eds.), Budapest: 2009, is reviewed in *SAS Bulletin* 33(1):9-10 (Spring 2010) <http://www.socarchsci.org/bulletin/SAS3301.pdf>.

EMAC '09 - 10th European Meeting on Ancient Ceramics was held 9-13 September 2009, The British Museum, London. *The Conference Program and Abstracts* are posted at <https://www.ucl.ac.uk/EMAC09/Programme090907v2> (8 pp.) and <http://www.ucl.ac.uk/EMAC09/Abstractbook> (103 pp.). The selected presentations (lectures and posters) have just been published as *Craft and Science: International Perspectives on Archaeological Ceramics*, Marcos Martínón-Torres (ed.), UCL Qatar Series in Archaeology and Cultural Heritage, Volume 1, Doha: Bloomsbury Qatar Foundation, 2014, (xiv + 279 pp.) hardcopy and online: <http://www.qscience.com/page/books/uclq-cas>

EMAC 2011 - 11th European Meeting on Ancient Ceramics was held 29 September to 1 October 2011 at the Natural History Museum, Vienna, Austria. *The Conference Program and Abstracts* (71 pp.) are posted at <http://emac2011.univie.ac.at/index.php?id=96669> Selected conference proceedings are published in the *Journal of Applied Clay Science* 82: 1-134 (September 2013) Special Issue: Ancient Ceramics – Analysis. The issue is edited by Irmgard Hein, Katalin Biro, Jaume

Buxeda i Garrigós, Peter Day, Corina Ionescu, Vassilis Kilikoglu, Marino Maggetti and Yona Waksman. *Applied Clay Science: An International Journal on the Application and Technology of Clays and Clay Minerals* is an international publication medium for research papers, reviews, and resource and technical notes in the field of applied clay science and technology in a broad sense. The 17 selected contributions may be accessed at <http://www.sciencedirect.com/science/journal/01691317/82>

EMAC 13 - 12th European Meeting on Ancient Ceramics was held 19-21 Sept. 2013 at the University of Padua, Italy emac2013.geoscienze.unipd.it. The *Conference Program and Abstracts* (203 pp.) are posted at: https://www.academia.edu/5786601/Fornacelli_C_Memmi_Turbanti_I_Grassi_F_Sienese_Archaic_Maiolica_continuity_and_changes_in_the_production_technologies_of_the_coatings. Selected proceedings of the meeting will be published in a special issue of the *Periodico di Mineralogia* www.periodicodimineralogia.it, an open access ISI journal which also covers applied topics on archaeometry and cultural heritage. The *Periodico di Mineralogia* is property of Università degli Studi di Roma "La Sapienza" and is published three times a year as printed papers and online pdf. All submissions for the special issue are peer reviewed by a panel of specialists, formed of the Scientific Committee and other scientists chosen according to their specific expertise. A number of papers (15-20) papers (oral or poster) are to be chosen for publication.

Previous Professional Meetings

Archeologia delle produzioni ceramiche nel Mondo Antico spazi delle prodotti, strumenti e tecniche was held in Genoa, Italy, 1-2 December 2014; sessions were at Aula Magna della Scuola di Scienze Umanistiche, via Balbi 2. Presentations were by Ilaria Caloi (Université Catholique de Louvain-la-Neuve) "La Creta minoica dal medio al tardo bronzo (XX-XII secolo a.C.): Tradizione e innovazione nella tecnologia ceramica"; Francesco Tomasello (Università di Catania) "Alcune fornaci della Messarà (Creta): La lunga sperimentazione tecnologica tra il periodo minoico e la protostoria egea"; Eleni Manakidou (Aristotle University of Thessaloniki) "Pottery imports and local production in ancient Macedonia during the archaic and classical periods"; Anne Segbers (Rheinische Friedrich-Wilhelms-Universität Bonn) "Siti di produzione ceramica in Magna Grecia: Tipi, scambi e organizzazione del lavoro"; and Daniele Malfitana and Giuseppe Cacciaguerra (Consiglio Nazionale delle Ricerche – IBAM, Catania) "Ricerche multidisciplinari sul quartiere artigiano di Siracusa ellenistica e romana"; followed by Discussion.

Presentations on the second day were given by Luigi Gambaro (Soprintendenza per i Beni Archeologici della Liguria) and Lucia Mordegli (Soprintendenza Archeologica della Lombardia) "Indicatori di produzione ceramica in area ligure tra seconda età del Ferro e la romanizzazione: Alcuni casi tra Liguria, Piemonte e Lombardia"; Daniela Gandolfi (Istituto Internazionale di Studi Liguri, Bordighera) "La ceramica romana in Liguria. Produzioni, tradizione artigianale, importazione e circolazione"; Corinne Rouse (Université Marseille-Aix-en-Provence), Valerio De Leonardis (Vrije Universiteit Amsterdam), Vladimir Kovačić (Zavičajni muzej Poreštine) and Claudio Taffetani (Université Marseille-Aix-en-Provence) "L'alimentation en eau du complexe artisanal de Loron (Tar-Vabriga, Croatie): Analyse technique et fonction d'un grand réservoir d'eau et sa fontaine au sein de l'atelier d'amphores"; Adolfo Fernández Fernández (Universidad de Coimbra) "La producción y la comercialización de ánforas tardoantiguas del alfar de San Martiño de Bueu (Galicia, España)"; Michel Bonifay (Centre Camille Jullian, Aix Marseille Université/CNRS/MCC/INRAP, UMR 7299, 13090 Aix-en-Provence) and Claudio Capelli (Dipartimento di Scienze della Terra, dell'Ambiente e della Vita, Università degli Studi di Genova) "Problemi archeologici e archeometrici della produzione ceramica nell'Africa romana"; and Eleni Hasaki (University of Arizona) and Kostantinos Raptis (9th Ephoreia of Byzantine Antiquities, Thessaloniki) "Roman and Byzantine ceramic kilns in Greece (1st-15th c. CE): continuities and changes in kiln typology and spatial organization of production"; followed by Discussion.

Integrated Approaches to Ceramic Analysis and Methodology from a Trans-regional Perspective / NPAP Final Conference Amsterdam, 11-13 December 2014. The invited speakers were Peter Attema, Giovanna Bagnasco Gianni, Jan Paul Crielaard, Kostalena Michelaki, John Papadopoulos (keynote), and Valentine Roux. See https://www.academia.edu/8938690/Integrated_approaches_to_ceramic_analysis_and_methodology_from_a_trans_regional_perspective_NPAP_Final_Conference_Amsterdam_11-13_December_2014

The 2015 Society for Historical Archaeology Annual Meeting was held in Seattle, WA, USA, 6-11 January 2015. Only a "Preliminary Program"- lacking paper titles and authors' names - has been posted: http://www.sha.org/index.php/view/page/annual_meeting_s <http://www.sha.org/assets/documents/Conference%20pages.pdf>.

The 2015 Archaeological Institute of America Annual Meeting was held in New Orleans, LA, USA, 8-11 January 2015 includes four entire sessions devoted to ceramic materials and additional papers on pottery and related materials. The larger sessions included: SESSION 2B: Bronze Age Greek Pottery Studies: “Consuming style: Decoration and consumption in Late Neolithic Northern Greece” by Teresa Silva (Demokritos University of Thrace), Dushka Urem-Kotsou, (Demokritos University of Thrace), Kostas Kotsakis (Aristotle University of Thessaloniki, and Areti Chondrogianni-Metoki, (30th Ephorate of Prehistoric and Classical Antiquities); “Recovering’ Anatolian drinking sets from the Middle Minoan ceramic assemblages of Knossos and Phaistos on Crete” by Tanya McCullough (AIA Member at Large); “Fine Ware pottery as an indicator of social stratification in the Mirabello Area during the Middle Minoan II” by Georgios Doudalis (University of Heidelberg); “Stylistic regions and cultural regions? Contextualizing Neopalatial Myrtos-Pyrgos within the southeast of Crete” by Emilia Oddo (University of Cincinnati); and “The banquet and the feast: Social complexity and ceramic elaboration in second millennium Egypt and Minoan Crete” by Anna Panagiotou (University College London). SESSION 6C: Colloquium: The Consumers Choice: Uses of Greek Figure-Decorated Pottery: “Interpreting a giant pitcher from Marathon” by Vicky Vlachou (CREA-Universite Libre de Bruxelles); Gordian cups and other Attic Black-figure cups at Gordion in Phrygia” by Kathleen M. Lynch (University of Cincinnati); “Too young to fight (or drink): A warrior krater in a child burial at Ancient Sindos” by Vivi Saripanidi (CREA-Universite Libre de Bruxelles); “Reconsidering hand-loomed Athenian vases” by Shermay Bundrick (University of South Florida St. Petersburg); and “Unexpected uses of Greek shapes in Central Apulian funerary contexts” by Bice Peruzzi, (University of Cincinnati).

SESSION 2H: Workshop: Hellenistic Pottery beyond the Euphrates: Regional Connections and Local Traditions from Northern Mesopotamia to the Caucasus, from Iran to Central Asia: Moderators: Hilary Gopnik (Emory University) and Rocco Palermo (Università di Napoli Federico II). Panelists: Rocco Palermo (Università di Napoli Federico II); L. De Jong (University of Groningen); Bertille Lyonnet (EPHE, Paris); Carlo Lippolis (Università di Torino); Giulio Maresca (Università di Napoli L’Orientale); Lara Fabian (University of Pennsylvania); Susannah Fishman (University of Pennsylvania); Charlotte Maxwell Jones (University of Michigan); Stephan Kroll (Ludwig-Maximilians-Universität München); and Hilary Gopnik (Emory University). SESSION 8I: Greek Ceramics: “Put

a bird on it! Multiple agency in the consumption of the Etrusco-Corinthian kylix” by Haley Bertram (University of British Columbia) and Bryan E. Burns (Wellesley College); “A case for late Attic Black-Figure” by Ross Brendle (Johns Hopkins University); “More than just cups: Multicultural influence on the production and decoration of Attic Black-Figure beakers or ‘kalathoi’” by Lisa Çakmak (Saint Louis Art Museum); “Data mining and Athenian Red-figure vases in context” by Shannon O’Donovan (University of Denver); “Rhetoric and narrative in Beazley’s connoisseurship” by Eric Driscoll (University of California, Berkeley); and “Local ceramic production at the Hellenistic panhellenic sanctuary of Nemea: New evidence through petrographic analysis” by Heather Graybehl (University of Sheffield) and Kim S. Shelton (University of California, Berkeley).

Individual presentations included: “Ceramic evidence for societal changes at Mitrou in the Middle Helladic and Late Helladic I phases, and the Impact of inter-regional interactions” by Christopher Hale (Melbourne University); “Wining and dining at Mitrou, East Lokris: Ceramic consumption and political context from the Early Prepalatial to the Final Palatial Period: by Salvatore Vitale (University of Calabria); “Palatine East Pottery Project: Approaches to the dissemination of results” by J. Theodore Peña (University of California, Berkeley) and Victor M. Martínez (University of North Carolina at Chapel Hill); “Ceramic evidence from Caesarea’s South Bay in the Late Roman and Byzantine Periods” by Alexandra Ratzlaff (University of Haifa), Ehud Galili (Israel Antiquities Authority) and Assaf Yasur-Landau (University of Haifa); “Pre- and proto-Historic pottery production and exchange in the Central Mediterranean: The use of non-destructive pXRF” by Robert H. Tykot (University of South Florida), Craig Alexander (Cambridge University), Keri Brown (University of Manchester), Kyle Freund (McMaster University), Sarah McClure (Pennsylvania State University), Erin Mckendry (University of South Florida), Andrew Moore (Rochester Institute of Technology), Frederick Pirone (University of South Florida), Emil Podrug (Šibenik City Museum), Davide Tanasi (Arcadia University), Melissa Teoh (University of Oregon), Martijn van Leusen (University of Groningen), Andrea Vianello (University of Oxford), and Patrick Woodruff (University of South Florida).

“Bronze Age terracotta statues of Ayia Irini, Kea: An experimental reconstruction and technical examination” by Rachel DeLozier and Eleni Hasaki (both University of Arizona); “Forgotten terracottas: Free standing spouted funnels from Poggio Civitate (Murlo)” by Fredrik G. Tobin (Uppsala University); “Cooking pots and politics at Petsas House” by Debra A. Trusty (Florida State

University); “Pots of clay in the age of bronze: The production of undecorated Fine Ware Vessels from Petsas House, Mycenae” by Lynne A. Kvapil (Butler University); “The maintenance of identity: Prehistoric pottery from Idalion, Cyprus and 19th /20th Century Cypriot Pottery Traditions” by Rebecca M. Bartusewich (University of Massachusetts Amherst); “Medieval ceramics and 3D models: A case study from the Nemea Stadium, Greece” by Effie Athanassopoulos (University of Nebraska-Lincoln) and Kim Shelton (University of California-Berkeley); “Women gone wild: The iconography of female susceptibility on two Attic vases” by Lillian B. Stoner (Institute of Fine Arts, NYU); “The methodology and ceramic study of the Keros Island Survey 2012-13” by Jill Hilditch (University of Amsterdam), Michael Boyd (University of Cambridge), Neil Brodie, University of Glasgow, and Joshua Wright (Oberlin College); and “Different vessels, different meals: Phoenician dining habits in the fifth through first centuries B.C.E.” by Barak Monnickendam-Givon (The Hebrew University of Jerusalem).

Significant awards: The Gold Medal Award for Distinguished Archaeological Achievement was presented to C. Brian Rose (University of Pennsylvania) “for his work in the field at Troy, the Granicus River Valley Survey Project, and Gordion; his visionary and energetic efforts to provide cultural heritage training to the members of the US military serving in Iraq and Afghanistan; and his highly influential role as an educator, formerly at University of Cincinnati and now at University of Pennsylvania.” The AIA Pomerance Award for Scientific Contributions was awarded to T. Douglas Price (University of Wisconsin) “for his influence on the field of archaeological science, including his research that has revolutionized our understanding of the European Mesolithic, the transition to agriculture, and human migration throughout the world.” The Outstanding Work in Digital Archaeology Award went to The Ancient World Online, Charles E. Jones cejo@uchicago.edu (Pennsylvania State University) “for its work on open access material relation to the ancient world, serving archaeological information to more than 1.1 million unique visitors to the site since its inception in 2009.”

Ceramic Identities at the Frontiers of Empires: The Regional Dimension of Pottery Production in Late Bronze Age Northern Syria and Anatolia was the title of a conference held 14-16 January 2015 the University of Florence, Florence, Italy. This meeting aimed to be an opportunity for scholars involved in the study of this period to share information by comparing pottery data, focusing on morphological, behavioral and cultural points of view, and by debating. Topics related to LBA II on

different interpretative levels. For information please contact Marina Pucci marina.pucci@unifi.it or Fabrizio Venturi fabrizio.venturi@email.it

The period between the 15th and the 13th century BC, corresponds in Northern Levant to the so-called "International period": Syrian provinces were affected by imperial military expansion and their territories became the battleground of Mitannian, Egyptian, Hittite and Assyrian political ambitions. At the same time the eastern Mediterranean became the center of a crossroad of commercial routes, which linked the coastal ports of Syria and Lebanon to Cyprus and to the Mycenaean world. Therefore Northern Levant, in particular during the LBA II period, played two different geopolitical roles: it was the focal place of interconnection of a wide political and economic network, and, at the same time, its territory, fragmented in local polities, represented the peripheral fringes of the international empires. If on the one hand, thanks to abundant textual sources, we know the diplomatic relationships and the military campaigns which modified the political scenario of this territory, on the other hand, cultural interactions among Northern Levantine provinces and their relationships with central powers are still elusive. Pottery, an item reflecting daily habits and the most abundant archaeological object in excavations, is the most suited element among archaeological objects to analyze social behaviors and to define cultural changes.

During the last twenty years, recent excavations carried out in the Northern Levant, and the reanalysis of assemblages excavated in the past, have greatly increased our knowledge on LBA II pottery horizons in this area. Although pottery assemblages related to each site have been published fully or in part, little has been done in comparing pottery traditions and consequently behavioral patterns from different sites. In order to achieve this goal, both the typological features of the pottery production and the functionality of the vessels, are key elements to better understand the LBII: classic typological analysis, phases chronological and economic features of the pottery production while functional/morphological investigations on pottery point out towards the cultural environments behind their use. As a matter of fact, different ways of fulfilling the same function (e.g. table sets for eating and drinking) may suggest different habits and consequently different cultural contexts, providing scholars with a unique tool for the analysis of domestic contexts.

Wednesday, 14 January: A. Benvenuti “Opening” and S. Mazzone “General Introduction.” The Archaeological Sites and Their Occupational Sequence: D. Beyer “Zeyve Höyük/Porsuk”; V. Matoian “Ras Shamra/Ugarit”; J. P.

Thalmann “Tell Arqa/Irqa”; E. Ünlü “Gözlükule/Tarsus”; M. Ovak “Sirkeli Höyük”; M. H. Gates “Kinet Höyük/Izziya”; S. Mazzoni “Tell Afis”; P. Pfälzner “Tell Mishrife/Qatna”; A. Cubet “Meskene/Emar”; B. Einwag “Tell Baz”; and D. Bonatz “Tell Fekheriye.”

Thursday, 15 January: M. Pucci and F. Venturi “Introduction.” *Anatolia* (Chair: S. Mazzoni). A. Tibet (Zeyve Höyük/Porsuk) “Le site de Zeyve Höyük-Porsuk au Bronze Récent”; A. C. Gunter “(Yassihöyük/Gordion) “Late Bronze Age ceramics from Gordion/Yassihöyük”; and F. Manuelli (Arslantepe/Malitya) “Regional dimension and external influences in the Late Bronze Age II pottery horizon at Arslantepe”; followed by Discussion. *Cilicia* (Chair: D. Bonatz). S. T. Karacic (Gözlükule/Tarsus) “Painted pottery among Hittite-Style vessels in Late Bronze IIA Tarsus-Gözlükule”; E. Kozal (Sirkeli Höyük) “Late Bronze II pottery assemblages and traditions in Sirkeli Höyük”; and M.-H. Gates (Kinet Höyük/ Izziya) “Late Bronze Kinet Höyük, and the dynamics of its Hittite ceramic industry”; followed by Discussion. *Amuq and Coastal Syria* (Chair: P. Pfälzner). M. T. Horowitz (Tell Atchana/Alalakh) “Local ceramics in the battleground of empires: Tell Atchana in the 14th century BC”; M. Pucci (Chatal Höyük) “Chatal Höyük: Small-scale local changes in the economy of a village during the political turmoil of the 13th century BC”; V. Matoian (Ras Shamra/Ugarit) “Ceramics identities in Late Bronze Age Ugarit: An approach of the decorated pottery.”; and H. Charaf (Tell Arqa/Irqa) “Ceramic manufacture traditions at Tell Arqa, Lebanon during the Late Bronze Age: From Autarkic traditions to regionalism”: followed by Discussion.

Friday, 16 January: *Inner Syria* (Chair: M. Novak). F. Venturi (Tell Afis) “The 13th century BC pottery production at Tell Afis”; S. Döpper (Tell Mishrife/Qatna) “Analyzing LBA pottery assemblages with correspondence analyses”; and E. R. Jensen (Tell Qarqur) “Tell Qarqur: Settlement stability in the midst of Late Bronze Age turmoil”; followed by Discussion. *Middle Euphrates* (Chair: E. Ünlü). A. Caubet (Meskene/Emar) “The Late Bronze Age pottery assemblage from Ancient Emar (French Excavations 1972-1976)”; and B. Einwag (Tell Bazi) “Public versus private: Analysis of the Late Bronze Age pottery horizon at Tall Bazi”; followed by Discussion. *Upper Mesopotamia* (Chair: J. P. Thalmann) C. Coppini (Tell Fekheriye) “The Mittani and Middle Assyrian ceramic assemblages and their socio-economic context in Tell Fekheriye/ Syria”; A. D’Agostino (Upper Mesopotamia) “Local tradition and external innovation in pottery making process at the time of the middle Assyrian control in Upper Mesopotamia”; and S. Mühl (Eastern

Tigris) “Late Bronze Age regionalization in the pottery traditions of the Eastern Tigris Region”: followed by Discussion and a “Round Table.”

Forthcoming Professional Meetings

The Society for American Archaeology, 80th Annual Meeting, is scheduled for 15-19 April 2015, San Francisco, CA, USA. The following information comes from the “Preliminary Program” which has session titles and lists of participants but not poster or paper titles. Hence, it is not possible to discern some ceramic papers that are embedded within larger symposia contexts. Of particular note is the SAS Business Meeting, Thursday, 16 April, 5:00-6:30 pm. Nine poster sessions and a significant two-part symposium on ceramic petrography are meeting highlights. Two poster sessions likely have papers on ceramic topics: 16 April, Thursday Morning: “Poster Session- Remote Sensing and Geophysical Survey” and “Poster Session- Geoarchaeology and Geochemistry.” Also on 16 April, Thursday Morning are a poster session and two symposia on ceramic materials: “Poster Session- XRF in Archaeology” Participants: Mark Durante; Jonathan Crise; Alice Hunt, David Hurst Thomas and Robert Speakman; Alicia Sawyer and Justin Holcomb; Aviva Finkelstein; Ursel Wagner, Benilde Costa, Werner Häusler, A. Silva and Friedrich Wagner; Kevin Nolan and Mark Hill. “Sponsored Symposium- Advances in the Method and Application of Ceramic Petrography: International Perspectives on Key Archaeological Questions, Part I” (Sponsored by Geoarchaeology Interest Group). Chair: Peter Day. Participants: Jennifer Meanwell; Jill Hilditch; Vassilis Kilikoglou and Anno Hein; Suzanne Eckert and Tiffany Clark; Lane Fargher, Marc N. Levine and Flor Arcega-Cabrera; Wesley Stoner; Marta Tenconi, Peter Day, Elina Kardamaki, Joseph Maran and Alkestis Papadimitriou; Ioannis Iliopoulos and Albert J. Ammerman; John Millhauser; Ian Whitbread, Jeremy Taylor, Mark Williams, Ian Wilkinson and Ian Boomer; Jason Sherman and Leah Minc; John Moody, Linda Howie and Lisa Hodgetts; Linda Howie. “Symposium- Photons in the Field: New Approaches to the Use of Portable X-ray Fluorescence (pXRF) in Archaeological Fieldwork” Chairs: Mark Horton; Charlotte Goudge. Participants: Mark Horton; Charlotte Goudge; Alexis Ohman; Cory Look, Erin Friedman, Matthew Brown and Reg Murphy. 16 April, Thursday Afternoon: “Symposium- Capital, Craft, and Consumption in Mesoamerica after the Spanish Invasion” Chair: Rani Alexander. Participants: Cynthia Otis Charlton and Patricia Fournier; Patricia Fournier and Bridget M. Zavala; Veronica Velasquez; Krista Eschbach; Elizabeth Newman; Aileen Balasalle and Judith Zeitlin; Luisa Escobar and Guido Pezzarossi; Hector Hernandez; James Meierhoff and Joel Palka; Tracie Mayfield; Rani

Alexander Discussant: Anthony Andrews. “Sponsored Symposium- Advances in the Method and Application of Ceramic Petrography: International Perspectives on Key Archaeological Questions Part II” (Sponsored by Geoarchaeology Interest Group of the SAA). Chairs: Wesley Stoner; Lane Fargher. Participants: Gareth Perry; Donna Roper; Roberta Montesana, Peter M. Day, Vassilis Kilikoglou and Simona Todaro; Robert Mason; William Gilstrap and Peter M. Day; John Lawrence, Kathleen Marsaglia, Scott Fitzpatrick and Thomas Wake; Maria Masucci and Hector Neff; Clare Burke, Peter Day, Eva Alram-Stern and Katie Demakopoulo; Lori Reed and Mary Ownby; Ann Cordell, Neill Wallis and Thomas Pluckhahn; Isabelle Druc; David Killick and Edwin Wilmsen; Edyta Marzec, Peter Day and Katherine Grillo; Veronica Testolini. 16 April, Thursday Evening: “Poster Session- Developments in Fired Clay Ceramic Rehydroxylation Dating (RHX Dating)” Chairs: Timothy James Scarlett; Kostalena Michelaki. Participants: Timothy James Scarlett, Jaroslaw Drelich, Carl Lipo, Elizabeth Niespolo and Shan Zhao; Shan Zhao, Jaroslaw Drelich and Timothy James Scarlett; Steven Sarich and Timothy James Scarlett.

17 April, Friday Morning: “Poster Session- Zooarchaeology and Ceramic Studies in the Caribbean” Participants: Jillian Hendrix, Steven Hackenberger, Diane Ward, Amanda Kaminski and Timothy Ward; Diana Azevedo and David Byers; Meagan Clark, Scott Fitzpatrick, Frances White and Christina Giovas; John Krigbaum, Christina M. Giovas and George D. Kamenov; Amanda Guzman; Jenny Riley and Kevin Hunt. 17 April, Friday Afternoon: “Symposium- Mapping Out Pottery Production and Exchange in the Late Classic Valley of Oaxaca, Mexico” Chairs: Leah Minc; Jeremias Pink. Participants: Leah Minc; Robert Markens, Cira Martínez López and Marcus Winter; Ronald Faulseit, Gary Feinman and Linda Nicholas; Sarah Walker, Leah Minc and Christina Elson; Jeremias Pink. Discussant: Jeffrey Blomster. “Poster Session- Ceramic Analysis in South America” Participants: Hannah McAllister, Rebecca Bria and Elizabeth Katherine Cruzado Carranza; Erick Casanova Vasquez, Rebecca E. Bria and Elizabeth K. Cruzado C.; Andrew Roddick; Nuria Sugrañes and Fernando Franchetti; Ester Echenique; Joseph Cronin and Rebecca E. Bria. “Poster Session- Comparative Approaches to Postclassic Mesoamerican Ceramics” Chairs: Angela Huster; Anna Cohen. Participants: Anna Cohen and Elsa Jadot; Angela Huster; Kea Warren; Kirby Farah; Lisa Overholtzer; Jamie Forde.

18 April, Saturday Morning: “Poster Session- Ceramic Analysis from Sites in the Southwestern United States” Participants: Ashton Satterlee and Andrew Duff;

Elizabeth Newcomb; Matthew Taliaferro, Bernard Schriever, Jeff Speakman and Elizabeth Toney; Michael Pool; Shannon Horton and Karen Harry; Lydia Pittman; James Allison and Jeffrey Ferguson; Victoria Sluka, Chase M. Anderson, Donna M. Glowacki and Edward J. Stech; Hunter Burgess and Judith Habicht-Mauche. “Poster Session- Ceramics as Means to Ends and Means of Expression in Terminal Classic Northwestern Honduras” Chair: Edward Schortman. Participants: Jacob Griffith-Rosenberger, Reagan Neviska and Chelsea Katzeman; Edward Schortman and Patricia Urban; Caroline Del Giudice, Patricia Urban and Edward Schortman; Patricia Urban; Marne Ausec, Patricia Urban, Jacob Griffith-Rosenberg, Reagan Neviska and Chelsea Katzeman.

19 April, Sunday Morning: “Symposium- The Imperial Craft: Comparative Perspectives on Production and Society in Empires” Chairs: Bradley Sekedat; Steven Karacic. Participants: Bradley Sekedat; Cathy Costin; Amanda Aland and R. Alan Covey; Sonia Alconini; Johanna Pacyga and François Richard; Steven Karacic; Bradley Parker; Elizabeth Murphy; Sarah Craft Discussant: Carla Sinopoli. “General Session- Studies of Technology, Ecology, and Craft Production in South, Central, and Western Asia” Chair: Yiu-Kang Hsu. Participants: Ian Jones; Kyle Olson; Yiu-Kang Hsu, Peter Bray and Mark Pollard; Alexis Torrano, Andreas Angourakis, Veronica Martinez and Josep Maria Gurt; Siavash Samei and Karim Alizadeh; Yukiko Tonoike; Aaron Gidding; Praveena Gullapalli, Shinu Anna Abraham and K.P. Rao; Nicholas Ames; Jonathan Baines.

21st Annual Meeting of the European Association of Archaeologists (EAA) will be held in Glasgow, Scotland 2-5 September 2015. Shira Gur-Arieh, Domingo Carlos Salazar García, and Cynthia Debono Spiteri are organizing a session that will present topics on fermented foods and beverages, focusing mainly on methods used to identify fermentation products and their cultural significance. The session theme is “Science and Archaeology” and the session title is “Exploring the production and consumption of fermented beverages and foods in pre- and protohistoric communities” (SA9). The call for abstracts is open until 16 February 2015, and they invite submissions of paper/poster abstracts. Abstracts may be submitted by following this link: <http://eaaglasgow2015.com/call-for-papers/>. The session abstract follows: “Fermentation is an important process in the production of some of the staple food products and beverages in the human diet. It is brought about by the action of yeast, enzymes and bacteria, which convert carbohydrates into alcohols, organic acids and gas. Examples of these are the leavening of bread, the

production of beer, wine, mead, cider, yoghurt and the souring of milk. These fermented products are not only important for their nutritional value, their potential to store otherwise perishable foodstuffs, their increased digestibility (e.g. yoghurt for lactose intolerant individuals), but also for their social aspect. Indeed, they play a central role in cultural, celebratory and ritual aspects of different human communities around the world. Identifying the production and consumption of fermented foods and beverages is not straight forward since they rarely preserve in the archaeological record, especially in pre- and protohistoric periods. Attempts to identify these dietary products often require a multidisciplinary approach, including the use of macroscopic (e.g. charred grains) and microscopic (e.g. phytoliths and starches) plant remains from archaeological finds including stone tools and sediments, or directly from skeletal remains such as dental calculus and stomach content. Fermented food and drink products can also be identified using spectroscopic techniques to identify residual biomolecules trapped in porous, unglazed pottery vessels. Other lines of evidence are derived from the study of historical references such as art and decoration, ancient texts, typological pottery studies, and ethnographic or ethnoarchaeological studies. This session will focus on research carried out at identifying fermented food and beverage products, and their dietary and cultural significance to the communities that produced them.”

EMAC 2015 - 13th European Meeting on Ancient Ceramics is scheduled for 24-26 September 2015 in Athens, Greece. The meeting will be co-organised by the Laboratory of Archaeological Materials, N.C.S.R. “Demokritos” and the Fitch Laboratory, British School at Athens. EMAC is a biennial conference convening scholars and young researchers with diverse academic backgrounds both from humanities and science. The scope of the meeting is to promote interdisciplinary and integrated studies of ancient ceramics covering various aspects from the production over the dissemination and use up to post-depositional alteration and conservation. Methodological developments, new approaches and scientific progress are presented in terms of analytical and measuring techniques, data processing and interpretation. The main topics, but not exclusive, are: 1) methodological developments 2) dating of ceramics, 3) production, dissemination and consumption, 4) slips and glazes, 5) technical ceramics, 6) ceramics as building materials, 7) vessel function and vessel use, 8) raw material studies, 9) pottery kilns, and 10) alteration and conservation. The conference will be held at the auditorium of the New Acropolis Museum, which is situated in the ancient centre of Athens. Participants are

invited to submit abstracts for oral presentations as well as for poster presentations until 13 February 2015 via the conference webpage. Language of the conference will be exclusively English. The submitted abstracts will be reviewed by the Scientific Committee, which also will decide eventually about the form of presentation. Notification of acceptance or rejection of abstracts will be made by 10 April 2015. Arrangements for accommodation in hotels or at the foreign archaeological institutes in Athens will be announced very soon, in next circular. For further information, please visit the EMAC2015 website: www.emac2015.gr, which will be updated regularly, or contact them by e-mail: info@emac2015.gr

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) Doctoral and Master Theses; and, 4) Forthcoming Meetings.

New Books

Early Iron in Europe, edited by Birgitte Cech and Thilo Rehren, 2014, *Mongraphies instrumentum* 50, Éditions Monique Mergoïl, Montagnac, France, ISBN: 9782355180415 (pbk.), 300 pages, col illus, 20 plates, 56€. This volume represents a limited proceedings from the international conference “Early Iron in Europe: Prehistoric, Roman and Medieval Iron Production” held September 8-12, 2008, at Hüttenberg, Carinthia, Austria. More information, including purchase details, can be found at the website: <http://www.editions-monique-mergoil.com/index.html?menu=57509&id=&entree=1&c1=2&c2=&produit=67988>.

Contributions to the volume include “Early iron in Europe. An introduction and overview” (Thilo Rehren, Brigitte Cech; p. 7), “The production of *ferrum Noricum* at Hüttenberg, Austria. The results of archaeological excavations carried out from 2003 to 2010 at the site Semlach/Eisner” (Brigitte Cech; p. 11), “Early iron production in Germany – A short review” (Guntram Gassmann, Andreas Schäfer; p. 21), “Early iron production in the Central German Highlands. Current research in the Lahn Valley at Wetzlar-Dalheim (Lahn-Dill-District, Hessen)” (Andreas Schäfer; p. 33), “The Siegerland as an iron production area during the first millennium BC: A regional approach to a famous mining region” (Thomas Stöllner in collaboration with Jennifer Garner, Guntram Gassmann, Klaus Röttger, Ursula

Tegtmeier, Ünsal Yalçın, Manuel Zeiler; p. 43), “Heeten revisited – Germanic iron production in the Netherlands (150-350 AD)” (Patrice de Rijk, Ineke Joosten; p. 65), “The Roman bloomery workshop of “Roche Brune” (Pezé-le-Robert, Sarthe, France)” (Florian Sarreste; p. 81), “Tentative chemical characterization of a Roman smelting workshop (Oulches, France): From the ore to the finished product” (Marie-Pierre Coustures, Nadine Dieudonné-Glad, Philippe Dillmann, Didier Béziat; p. 93), “Levroux “Les Arènes” (Indre – France): Organization and specialization of post-reduction activities in an open agglomeration of the Late Iron Age (2nd century – beginning of the 1st century BC)” (Marion Berranger, Philippe Fluzin; p. 117), “Organization of forging activities in Northern Paris Basin agglomerations (France) during the final La Tène” (Sylvain Bauvais, Philippe Fluzin; p. 133), “An aspect of the Celtic iron trade: The “Spitzbarren”. The deposit from Bellmund (canton Bern, Switzerland)” (Marianne Senn, Maren Kraack, Alexander Flisch, Adrian Wichser, Michael Obrist; p. 147), “Ironworking in Roman Switzerland: An interpretation of the archaeological evidence” (Vincent Serneels; p. 161), “Iron production in Lombardy from the 2nd century BC until the 6th century AD” (Costanza Cucini, Marco Tizzoni; p. 173), “The Aithale Project: Men, earth and sea in the Tuscan Archipelago (Italy) in antiquity. Perspectives, aims and first results’ (Alessandro Corretti, Laura Chiarantini, Marco Benvenuti, Franco Cambi; p. 181), “Fragments of iron slags in pottery mortars from Este” (Irene Calliari, Katya Brunelli, Emilio Ramous, Catarina Canovaro; p. 197), “Iron and the Parisi – socio-economic and ritual aspects of the iron industry in Roman East Yorkshire, UK” (Peter Halkon; p. 203), “Roman military control on iron-making in South Wales” (Tim Young; p. 215), “Waste heaps as a potential indicator of regional iron production and organisation: An example from south-east Roman Britain” (Jeremy Hodgkinson; p. 227), “Iron bloomery in South and Central Norway, 300 BC-500 AD” (Jan Henning Larsen, Bernt Rundberget; p. 231), “Norwegian Roman Age blooms and their origin. Properties and processes shared with ‘*ferrum Noricum*’?” (Arne Espelund; p. 249), “A Roman Iron Age bloomery site in Gästrikland, Sweden. Evidence of a widespread trade?” (Eva Hjärthner-Holdar, Svante Forenius, Annika Willim; p. 261), “The reconstruction of smithing activities through an ethnoarchaeological and archaeometric approach on metallic wastes” (Raphaëlle Soulignac, Vincent Serneels; p. 277), and “Steelmaking in a bloomery furnace: behaviour of manganese. Research on the *Ferrum Noricum* process” (Edmond Truffaut; p. 285).

Metalle der Macht - Frühes Gold und Silber : 6. Mitteldeutscher Archäologentag vom 17. bis 19. Oktober

2013 in Halle (Saale) = Metals of Power - Early Gold and Silver : 6th Archaeological Conference of Central Germany, October 17-19, 2013 in Halle (Saale), edited by Harald Meller, Roberto Risch, and Ernst Pernicka, 2014, Tagungen des Landesmuseums für Vorgeschichte Halle Nr. 11/1+2, Landesamt für Denkmalpflege und Archäologie Sachsen-Anhalt, Landesmuseum für Vorgeschichte, Halle (Saale), ISBN: 9783944507132 (hd.bd.); 3944507134 (hd.bd.), 2 v. (941 p.), numerous ill. (chiefly col.), 119€. This 2 volume set represents the proceedings of 6th Central Germany Archaeological Conference with the theme “**Metalle der Macht - Frühes Gold und Silber**” held October 17-19, 2013, at the *Martin Luther University Halle-Wittenberg*, Halle (Saale), Germany. More details and purchase information can be found at: http://www.la-lsa.de/de/tagungen/archiv_tagungen/6_mitteldeutscher_archaeologentag_2013/.

The two volumes are divided into three thematic sections with several subsections. Contributions to Volume I consist of a “Preface of the editors” (p. 11), followed by a **General Perspectives** section including “Die Sprache des Glanzes: Wert und Werte als Kontext von Gold” (Hans Peter Hahn; p. 21), and “Gold: pursued, desired, cursed – Reverence for a precious metal” (Hans-Gert Bachmann; p. 33). The **Procurement and Craft** section comprised the remainder of Volume I with the subsection *Mining* including “»Gold is where you find it« - Zeitgenössischer artisanaler Goldbergbau in Afrika als Analogie (prä-) historischer Goldgewinnung” (Gregor Borg; p. 53), “Gold in the Caucasus: New research on gold extraction in the Kura-Araxes Culture of the 4th millennium BC and early 3rd millennium BC” (Thomas Stöllner; p. 71), “Gegharkunik - Neue Quellen für altes Gold aus Südkaukasien?” (Danilo Wolf, Rene Kunze; p. 111), and “Früher Goldbergbau in Ägypten und Nubien” (141 Rosemarie Klemm und Dietrich Klemm; p. 141), while the subsection *Archaeometry* includes “Possibilities and limitations of provenance studies of ancient silver and gold” (Ernst Pernicka; p. 153), “Chalcolithic gold from Varna - Provenance, circulation, processing, and function” (Verena Leusch, Ernst Pernicka, Barbara Armbruster; p. 165), “Silver vessels in the Mycenaean Shaft Graves and their origin in the context of the metal supply in the Bronze Age Aegean” (Zofia Anna Stos-Gale; p. 183), “New insights into the source of Irish Chalcolithic and Early Bronze Age gold through lead isotope analysis” (Christopher D. Standish, Bruno Dhuime, Chris J. Hawkesworth, Alistair W. G. Pike; p. 209), “Archaeometallurgical investigations of Early Bronze Age gold artefacts from central Germany including gold from the Nebra hoard” (Nicole Lockhoff, Ernst Pernicka; p. 223), “Modern metal analysis of

Bronze Age gold in Lower Saxony by using laser ablation mass spectrometry (ns-LA-ICP-QMS and fs-LA-ICP-MCMS) and portable X-ray fluorescence (pXRF)” (Robert Lehmann, Danlei Fellenger, Carla Vogt; p. 237), “Zur Frage der Echtheit der Bernstorfer Goldfunde” (Ernst Pernicka; p. 247), “Native silver resources in Iberia” (Mercedes Murillo-Barroso, Ignacio Montero Ruiz, Martin Bartelheim; p. 257), “New data on the origin of silver in the Argaric Culture: The site of Perialosa” (Francisco Contreras-Cortes, Auxilio Moreno-Onorato, Martin Bartelheim; p. 269), “Provenance of the prehistoric silver set of Antas de Ulla, north-western Iberia, using lead stable isotope ratios” (Beatriz Comendador Rey, Jorge Millos, Paula Alvarez-Iglesias; p. 285), and “Was bleibt ... Der Metallurg und sein Handwerk im archäologischen Befund” (Katja Martin; p. 309), and the subsection *Experimental Archaeology* includes “Ethnoarchäologie und experimentelle Archäologie in der Forschung prähistorischen Goldes” (Barbara Armbruster; p. 323), “Goldworking techniques in Mycenaean Greece (17th/16th-12th century BC): Some new observations” (Eleni Konstantinidi-Syvridi, Nikolas Papadimitriou, Anna Philippa-Touchais, Akis Goumas; p. 335), “Wie golden war die Himmelscheibe von Nebra? Gedanken zur ursprünglichen Farbe der Goldauflagen” (Christian-Heinrich Wunderlich; p. 349), and “De Cementatione oder: Von der Kunst, das Gold nach Art der Alten zu reinigen” (Christian-Heinrich Wunderlich, Nicole Lockhoff, Ernst Pernicka; p. 353).

Contributions to Volume II consist of the section **Context and Interpretation** with the subsection *East* including “Statistical and anthropological analysis of the Varna necropolis” (Raiko Krauß, Steve Zäuner, Ernst Pernicka; p. 371), “Gold and silver in the Maikop Culture” (Svend Hansen; p. 389), “Silver in the early societies of Greater Mesopotamia” (Barbara Helwing; p. 411), “Bronze Age Syrian gold jewellery - Technological innovation” (Romain Prevalet; p. 423), and “Der Anfang des Goldhandwerks in Südostasien. Zur Verknüpfung archäologischer Befunde und metallanalytischer Ergebnisse” (Andreas Reinecke; p. 435), while the subsection *Mediterranean Sea* includes “So rich and yet so poor: Investigating the scarcity of gold artefacts in Bronze Age northern Greece” (Stelios Andreou, Michael Vavelidis; p. 451), “The role of gold in south Aegean exchange networks (3100-1800 BC)” (Borja Legarra Herrero; p. 467), “Silver in Neolithic and Eneolithic Sardinia” (Maria Grazia Melis; p. 483), “Preliminary remarks on the gold cup from Montecchio Emilia, northern Italy” (Maria Bernabo Brea, Filippo Maria Gambari, Alessandra Giunilia-Mair; p. 495), “The golden sun discs from Roca Vecchia, Lecce, Italy: Archaeological and cultural context” (Teodoro Scarano,

Giovanna Maggiulli; p. 505), “Goldworking processes and ontologies at the inception of metallurgy in the western Mediterranean” (Alicia Perea; p. 527), “Early gold remains in the north-east of the Iberian Peninsula” (Maria Carne Rovira Hortala, Ferran Borrell, Monica Oliva, Maria Safia, Oriol Vicente, Gabriel Aleaide; p. 541), “The funerary »treasure« of Montilla, Cordova, Spain” (Maria Carne Rovira Hortala, Ignacio Montero Ruiz, Alicia Perea; p. 547), “The social value of silver in El Argar” (Vicente Lull, Rafael Micó, Christina Rihuete Herrada, Roberto Risch; p. 557), “Die Silberschmiede von Tira del Lienzo, Totana, Prov. Murcia, im Kontext der El Argar Metallurgie” (Selina Delgado-Raack, Vicente Lull, Katja Martin, Rafael Micó, Cristina Rihuete Herrada, Roberto Risch; p. 577), and “The treasures of Villena and Cabezo Redondo, Alicante, Spain” (Mauro S. Hernandez Perez, Gabriel Garcia Atienzar, Virginia Barciela Gonzalez; p. 593), and the subsection *Central Europe* includes “Die neolithischen und bronzezeitlichen Goldfunde Mitteldeutschlands - Eine Übersicht” (Harald Meller; p. 611), “Goldene Schleifen- und Lockenringe - Herrschaftsinsignien in bronzezeitlichen Ranggesellschaften Mitteldeutschlands. Überlegungen zur Gesellschaft der Aunjetitzer Kultur” (Ralf Schwarz; p. 717), “Dieskau Revisited I: Nachforschungen zur »Lebensgeschichte« des Goldhortes von Dieskau und zu einem weiteren Grabhügel mit Goldbeigabe bei Osmünde im heutigen Saalekreis, Sachsen-Anhalt” (Juliane Filipp, Martin Freudenreich; p. 743), “Dieskau Revisited II. Eine mikroregionale Betrachtung” (Martin Freudenreich, Juliane Filipp; p. 753), “Das Gold von Bernstorfer-Authentizität und Kontext in der mittleren Bronzezeit Europas” (Rupert Gebhard, Rüdiger Krause, Astrid Röpke und Vanessa Bähr; p. 761), “Der Goldhort von Gessel” (Henning Haßmann, Andreas Niemuth, Mario Pahlow, Bernd Rasink, Stefan Winghart, Friedrich-Wilhelm Wulf; p. 777), “»Nordisch by nature«. Die jungbronzezeitlichen, goldenen Eidringe Sachsen-Anhalts an der südlichen Peripherie des Nordischen Kreises in ihrem Kontext” (Franziska Knoll, Harald Meiler, Juliane Filipp; p. 789), and “Gemeinsamkeiten und Unterschiede der goldenen Eidringe von Schneidlingen, Könnern, Hundisburg und Klein Oschersleben hinsichtlich ihrer Herstellungs- und Abnutzungsspuren” (Christian-Heinrich Wunderlich; p. 873), while the section *West and North* included “Bronze Age gold from Denmark” (Flemming Kaul; 885), and “Chalcolithic and Early Bronze Age goldwork from Britain: New finds and new perspectives” (Stuart Needham, Alison Sheridan; p. 903).

New Book Chapters/Articles

From the book *Stone Age of Armenia: A Guide-book to the Stone Age Archaeology in the Republic of Armenia*, edited by Boris Gasparyan and Makoto Arimura, 2014,

Monograph of the JSPS-Bilateral Joint Research Project, Center for Cultural Resource Studies, Kanazawa University, Japan, comes “Transition to extractive metallurgy and social transformation in Armenia at the end of the Stone Age” (Arsen Bobokhyan, Khachatur Meliksetian, Boris Gasparyan, Pavel Avetisyan, Christine Chataigner, Ernst Pernicka; pp. 283-313).

From the book *Is there a British Chalcolithic? People, place and polity in the later 3rd millennium*, edited by Michael J. Allen, Julie Gardiner and Alison Sheridan, 2012, Prehistoric Society Research Paper No. 4, The Prehistoric Society and Oxbow Books, Oxford, UK, comes “Before ^{29}Cu became copper: Tracing the recognition and invention of metallurgy in Britain and Ireland during the 3rd millennium BC” (Peter Bray; pp. 56-70), and “Working copper in the Chalcolithic: A long term perspective on the development of metallurgical knowledge in central Europe and the Carpathian Basin” (Tobias Kienlin; pp. 126-143).

From the book *Cyprus, An Island Culture: Society and Social Relations from the Bronze Age to the Venetian Period*, edited by Artemis Georgiou, 2012, Oxbow Books, Oxford, UK, comes “Copper and cult in Bronze Age Cyprus: (Matthew D. Spigelman; pp. 133-152), “Hathor, la Grande Déesse et l’industrie du cuivre chypriote” (Aurélie Carbillet; pp. 161-176), and “Some notes on the jewellery of Cyprus and Greece: The art of goldsmiths and coppermiths from the Late Bronze Age to the Early Iron Age” (Anna Paule; pp. 210-223).

The most recent edition of *The Crucible* (Issue 87, Autumn 2014) is available from *The Historical Metallurgy Society (HMS)*. The issue includes 16 pages of news, correspondence, interviews, meeting notes, book reviews, and more. A PDF version of the issue is at: <http://hist-met.org/images/hmsnews.87.pdf>.

The most recent issue of *Historical Metallurgy* (2013, Vol. 47, Part 1) is a dedicated issue entitled “The origins of metallurgy in Europe” deriving from the Historical Metallurgy Society’s 50th Anniversary Conference held in London June 14-16, 2013. The contributions to the issue originate mainly from a session on the origins of metallurgy and form a coherent group on the investigation of the earliest smelting in Europe. The papers comprise “Archaeometallurgy 1962-2013: The establishment of a discipline” (Paul T. Craddock; pp. 1-12), “Archaeometallurgy of the Vinča culture: A case study of the site of Belovode in eastern Serbia” (Miljana Radivojević; pp. 13-32), “Early metallurgy in the central Mediterranean: Goals for the next decade” (Andrea Dolfini; pp. 33-50), “Prehistoric copper metallurgy in the

Italian Eastern Alps: Recent results” (Gilberto Artioli, Ivana Angelini, Paolo Nimis, Anna Addis, Igor M. Villa; pp. 51-59), “Technological aspects of the earliest metallurgy in France: ‘Furnaces’ and slags from La Capitelle du Broum (Péret, France)” (Paul Ambert, Florian Balestro, Marie Laroche, Valentina Figueroa, Salvador Rovira; pp. 60-74), “The beginnings of metal production in Britain: A new light on the exploitation of ores and the dates of Bronze Age mines (Simon Timberlake, Peter Marshall; pp. 75-92), and “Linking Bronze Age copper smelting slags from Pentwyn on the Great Orme to ore and metal” (R. Alan Williams; pp. 93-110).

From the *Journal of Archaeological Science* (2015, Vol. 54) comes “Metallurgical traditions under Inka rule: A technological study of metals and technical ceramics from the Aconcagua Valley, Central Chile” (María Teresa Plaza, Marcos Martinon-Torres; pp. 86-98), and from (2015, Vol. 53) comes “Technological tradition of the Mongol Empire as inferred from bloomery and cast iron objects excavated in Karakorum” (Jang-Sik Park, Susanne Reichert; pp. 49-60), “Slag remains from the Na Slupi site (Prague, Czech Republic): Evidence for early medieval non-ferrous metal smelting” (Vojtěch Ettler, Zdenek Johan, Jan Zavřel, Michaela Selmi Wallisová, Martin Mihaljevič, Ondřej Šebek; pp. 72-83), “Consolidation or initial design? Radiocarbon dating of ancient iron alloys sheds light on the reinforcements of French Gothic Cathedrals” (Stéphanie Leroy, Maxime L’Héritier, Emmanuelle Delqué-Kolic, Jean-Pascal Dumoulin, Christophe Moreau, Philippe Dillmann; pp. 190-201), “Using airborne LiDAR sensing technology and aerial orthoimages to unravel Roman water supply systems and gold works in NW Spain (Eria valley, Leon)” (Javier Fernández-Lozano, Gabriel Gutiérrez-Alonso, Miguel Ángel Fernández-Morán; pp. 356-373), and “Copper processing in the oases of northwest Arabia: Technology, alloys and provenance” (Siran Liu, Thilo Rehren, Ernst Pernicka, Arnulf Hausleiter; pp. 492-503).

From *Open Journal of Archaeometry* (2014, Vol. 2, No. 2) comes “Characterisation of copper alloy antique ornamental accessories found in Northern Albania” (*Olta Çakaj, Edlira Duka, Zamir Tafilica, Frederik Stamati, Nikolla Civici, Teuta Dilo*; pp. 129-133), and from (2014, Vol. 2, No. 1) comes “A workshop for the king” (*Arne Jouttijärvi*; pp. 102-108), and “The metal production at Düzen Tepe (Southwest Turkey): An archaeological and archaeometric study” (Kim Vyncke, Branko Mušič, Patrick Degryse, Marc Waelkens; pp. 109-113), and from (2013, Vol. 1, No. 1) comes “Negotiating a colonial Maya identity: Metal ornaments from Tipu, Belize” (Bryan Cockrell, Marcos Martín-Torres, Elizabeth Graham;

pp. 115-121), “Prehistoric copper from the Eastern Alps” (Joachim Lutz, Ernst Pernicka; pp. 122-127), “Early copper metallurgy in Northern Chile” (Blanca Maldonado, Thilo Rehren, Ernst Pernicka, Lautaro Núñez, Alexander Leibbrandt; pp. 128-130), “Copper-based alloy artefacts from the Témiscamingue fur trade post (Quebec, Canada)” (Jean-François Moreau, Ron G.V. Hancock, Marc Côté; pp. 131-134).

From *The Old Potter's Almanack* (2014, Vol. 19, No. 2) comes “The brazing of iron and the metalsmith as a specialised potter” (Anders Söderberg; pp. 23-29), and from (2014, Vol. 19, No. 1) comes “Refractories with a purpose II: Ceramics for casting” (Paul T. Craddock; pp. 2-17), and from (2013, Vol. 18, No. 2) comes “Refractories: Ceramics with a Purpose” (Paul T. Craddock; pp. 9-20). From the *Journal of Field Archaeology* (2015, Vol. 40, No. 1) comes “Identifying stone tools used in mining, smelting, and casting in Middle Bronze Age Cyprus” (Jennifer M. Webb; pp. 22-36).

Doctoral & Master Theses

The Coins of the Swahili Coast c. 800-1500, by Matthias John Perkins (Doctoral thesis, University of Bristol), 2013, x+367 pages, 40 figures, 3 maps, 7 tables, 2 appendices. Includes bibliographical references.

The stone towns of the Swahili Coast are a visible reminder of once prosperous kingdoms that had built their wealth on the Indian Ocean trade. From the nineteenth century onward the numerous coins found at some of these towns intrigued European travelers and scholars alike. Initially, it was believed that they were remnants, like the stone towns themselves, of a colonial Arab or Persian culture. At first, only copper coins were known, with the majority coming from stray finds from the beaches of the eroding settlements. These copper coins had Arabic writing on them spelling out a rhyming legend which continued from one side to the other. They were ascribed to the sultans of Kilwa, while similar coins were believed to originate in Zanzibar. Little, though, was understood regarding their origin and they were primarily seen as a means to better understanding of the chronology of Kilwa. It is now clear that these copper coins were preceded by minute silver coins, similar in their designs and legends to the copper coins.

Although it is clear that the silver and copper coins form an inter-related coinage, many issues remain regarding their chronology and development. There is no detailed study that has looked at this East African coinage as whole.

It is here that this thesis finds its place. In the light of new archaeological material and with the results of XRF analysis carried out on the copper coins, it investigates the issues surrounding the origin, chronology and purpose of this coinage. It tries to understand the coinage not only from the perspective of the Indian Ocean, but also in its much neglected African context. [Abstract by thesis author]

Forthcoming Meetings and Conferences

The *Historical Metallurgy Society (HMS) Annual Conference* will be held June 12-14, 2015, at the Falcon Hotel, Stratford-upon-Avon, Warwickshire, UK. The focus of the conference is **Celebrating Street Furniture**, which will emphasize streetscape metalwork from drain covers, post boxes, ornate railing, statues and everything in between. The scope of the conference is not limited to any particular period, and any relevant contribution will be considered. However, the organizers are particularly hoping for papers on the following themes:

1. What is street furniture? - case studies, artifact types and development.
2. How was it made? - manufacturing and manufacturers.
3. Exploring the past - contextualizing street furniture in its contemporary environment.
4. The future of our street furniture - issues such as recording, repair, preservation and conservation, now and in the future.

Abstracts for papers and posters should be submitted by 28th February 2015. Abstracts should be sent by e-mail to HMSannualconf@hist-met.org in Word format and should be no longer than 250 words. Please include the name and affiliation of all authors and indicate the presenting author in bold letters. Alternatively you can send abstracts by mail to: Rachel Cubitt, York Archaeological Trust, 47 Aldwark, York, YO1 7BX, UK. More information about the conference can be found at: <http://hist-met.org/meetings/hms-annual-conference-and-agm.html>.

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. Submissions (oral and poster presentations) are open until 16 February 2015 at: <http://eaaglasgow2015.com/call-for-papers/>.

The first is “The Social Context of Metallurgy: Material and Identity”, Organisers: 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”, Organisers: 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/>.

The conference *Metal España 2015* will be held October 1-3, 2015 at the Royal Mint, Segovia, Spain. The 2nd Congress on Conservation-Restoration of Metal Heritage will host the following topics: techniques of metal heritage research; archaeological, industrial, scientific, historical and religious metal heritage conservation-restoration, and promotability, value and spread of this heritage. For more information go to the website: <http://www.metalespana2015.es/>.

The 19th *International Congress on Ancient Bronzes* will be held October 13-17, 2015 at the J. Paul Getty Museum, Los Angeles, USA. The theme for the meeting is “Artistry in Bronze: The Greeks and their Legacy”. Archaeologists, art historians, conservators, curators, scientists, and students will convene at both the Getty Villa in Malibu and the Getty Center in Brentwood to investigate the artistry, craftsmanship, production, conservation, and science of ancient bronzes. For more information go to the website: http://www.getty.edu/museum/symposia/bronze_congress.html.

BIOARCHAEOLOGY

Katy Meyers Emery, Associate Editor

Using Text to Better Interpret Human Remains in the Past

Text is important to archaeologists- both the contemporary texts of the past, and the texts that we produce as part of the excavation process. When we use

text to interpret human remains and burials, we need to be careful that we acknowledge the bias that can enter into the text, understand the context in which they were written, and carefully use them to create better interpretations. Recently, there were two great examples of using two very different types of texts to re-interpret burials and human remains in the past.

A new study by Austin (2014) compared the written evidence for health care in Ancient Egypt against the skeletal evidence for disease, trauma, and care of individuals. She specifically examines the site of Deir el-Medina, located on the west bank of the Nile, across the river from modern day Luxor. The site of Deir el-Medina has been investigated since the mid-19th century, and was first excavated in 1905. The site was a village for the artisans who worked on the tombs in the Valley of the Kings from the 18th to 20th dynasties of the New Kingdom period (approximately 1550–1080 BCE). At that time, the settlement was named Set Maat, meaning the place of truth. From 1922 to 1951, a French Egyptologist named Bernard Bruyère excavated the human remains from the settlement. However, at this time, bioarchaeology was only a fledgling field- so many of the mummies and skeletons were left unstudied within their tombs. It is these remains that Austin used during her dissertation study to examine health care and occupational stress within the artisans of this village.

Texts from this period note that the artisans working to build the tombs in the Valley of the Kings were under large amounts of occupational stress and grueling conditions. However, they also had access to free medical checkups and had the ability to take paid sick days. For decades, evidence was found in texts for the presence of government supported health care systems, but it was unknown whether this was simply propaganda to make work conditions seem better or whether artisans truly could take advantage of a health care system. Austin (2014) is the first to undertake a detailed study of the human remains from this site to assess whether these textual claims were true.

Austin (2014) found clear evidence of occupational stress in the human remains. She notes that it was a hard climb from the village to the Valley of the Kings, evidenced today by the presence of one thousand stone steps from one to the other. The human remains clearly show arthritis in the knees and ankles in many of the male skeletons at a much higher rate than that found in similar working populations. One male individual had evidence of osteomyelitis, an inflammation in the bone due to infection. The severity of the inflammation shows that event with paid sick leave, the individual most likely

continued to work throughout the infection. The pressure to work overshadowed the necessity to heal. In numerous texts, she found that artisans were under immense social pressure to take care of their family and friends for fear of public shaming, divorce or disinheritance. Austin (2014) will continue to study these remains in an attempt to get more detailed information about what types of diseases were present in this community and how this relates to the medical texts from the period.

Second, a new article by Mariotti, Condemi and Belcastro (2014) investigates previous work done on the Iberomaurusian necropolis collection, and compares this against the new archival evidence provided by Roche. In the 1950s, Jean Roche excavated the Iberomaurusian necropolis of Taforalt, Morocco. The area was occupied by an Upper Paleolithic group associated with the necropolis between 15,000 and 12,500 years ago. The site had 28 multiple burials, and based on the presence of sepulchral structures, wild ram horns and the use of ochre, Roche argued that there was a complex mortuary program in place here. Due to a lack of published reports, previous interpretations of the site have primarily used the human remains from 40 individuals as the basis for their study. However, recently Roche made some of his unpublished maps and photographs from the excavation available for study.

Excavations at the cave necropolis were completed in the 1950s and the 2000s, and the results from these vary. The 1950s excavation found evidence for secondary burial of individuals in a number of graves, whereas the 2000s excavation did not find evidence for movement of bones into different graves after burial. Due to differences, they propose to address three questions using the new archival evidence: 1) is there both intentional secondary and primary burial present at the site, 2) were the bones of individuals divided between graves, and 3) is the movement of bones between graves intentional? Mariotti, Condemi and Belcastro (2014) compared the collection of human remains, available excavation notes, with the new evidence of the sites' maps and photographs. Each grave is individually compared to determine what bones were originally present, what bones are present in the collection, and how this can be used to understand the funerary behavior occurring.

Based on their assessment, they argue that there was a specific chain of events associated with the death of an individual. First, the deceased was buried in the cave near other individuals. Second, the grave was re-opened after a period long enough to allow for decomposition to have removed the majority of flesh and soft tissue. Third, bones of this individual would be removed from the

burial in a ritual that involved the use of ochre. During this, bones from other graves that had been removed would be placed in the newer burial. Finally, the grave would be closed and capped with a large stone or wild ram trophy horn. Mariotti, Condemi and Belcastro (2014) propose that this fits the tripartite rite of passage sequence as defined by Van Gennep: separation from the group through death and primary burial, a liminal period where the body decomposes, and representing the transitional phase between two states, and reincorporation whereby the deceased's remains are divided into other burials, and their burial is given bones from others-making them part of a new group of ancestors.

Mariotti, Condemi and Belcastro (2014) conclude that while primary excavation records provide the best source of information, the new evidence provided by Roche has allowed them to create a more nuanced interpretation of the mortuary behavior of the Taforalt population. "We propose that death became a recognized social condition, and that the funerary rites became true rites of passage necessary to accompany the transition of individuals to their new social status."

Both of these articles critically use text in order to create better-evidenced arguments and interpretations of the past. Austin (2014) helps us better understand what the working class was experiencing in this time period, and gives us a fuller and more balanced presentation of what life was like in the past. Mariotti, Condemi and Belcastro (2014) wrote a really interesting article based on the fact that they used new evidence to challenge old interpretations- while they come to a similar conclusion; it is a more appropriate and better-evidenced one. Despite the bias, text is important and when critically assessed, can be used to develop a more nuanced understanding of the past.

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BOOK REVIEWS

David Hill, Associate Editor

Sharing Archaeology: Academe, Practice and the Public, edited by Peter G. Stone and Zhao Hui. Routledge Press. New York 2015. 281 pp. contents, figures, tables, forward, contributors, index \$140.00 (paper ISBN: 978-0-415-74402-7, e-book: ISBN 978-1-315-81324-0).

Reviewed by Todd C. McMahon, Office of the State Archaeologist, History Colorado.

Sharing Archaeology is a collection of chapters analyzing the discipline of archaeology's need to share academic information with the public at large. The book is published as part of the Routledge Studies in Archaeology series and is based on papers from the 2008 Sharing Archaeology conference held in Beijing. The conference and these proceedings were initiated by Li Bogian from Peking University and the late Professor Peter Ucko from the Institute of Archaeology in London.

Due to Peter Ucko's untimely death, he was not able to attend nor see the fruits of this publication although he definitely left the program in good hands. The editors, Peter Stone and Zhao Hui have done a grand job in gathering, translating and making the conference papers both understandable and informative, which I am sure, must have been a challenging task. Peter Stone's premise is that "Sharing archaeology is an obligation and not a choice." Stone cites the best practices of well-known interpreters and educators like Freeman Tilden who stressed that proper outreach should do more than inform but should focus on provocation. Here he uses as an example the site of Avebury in England. No one knows exactly what a "Neolithic man" looked like, so the archaeologists and interpreters decided to show a mannequin with one side of his body in fine beautifully woven clothes and nicely groomed hair while on the other side the public are greeted with a rather stereotypical poorly woven, dirty, matted and clothed "Hollywood caveman" figure. Interpretive panels in front of the mannequin provoke the public to choose which they think is the most appropriate reconstruction.

While the book has a fair number of Chinese archaeology site examples, it is varied in both topics and global locations (from Australia to Zimbabwe) which should make this book appealing to practitioners around the world. Some interesting topics include Thilo Rehren's essay on archaeology being like a giant jigsaw puzzle and that in order to understand the past more fully we need to incorporate as many views as possible. Researcher Li

Ling expresses how excavation reports particularly in China, should include accessible public elements as well as raw data so others can frame new hypotheses and new studies can be developed. Both authors Shan Jixiang and Jogen Tang cover the value and needs of site conservation in China. In contrast to the unique publically well-received examples from Tang's chapter, archaeologist Rui Pang details how the site of Xi'an presents a political challenge since the local populations see this archaeological preserve as nothing but a daily hindrance and don't value its preservation.

Switching to the site of Çatalhöyük, in Turkey, author Shahina Farid explains the challenges and pressures of the Turkish government wishing to attract tourist dollars to the site while the most successful efforts have also been invested in educating the local surrounding population. Education is another theme nicely summarized by K. Anne Pyburn and George S. Smith in talking about the Society for American Archaeology's (SAA) directive of advocating for the stewardship of archaeological sites and to include descendant communities' views as well as the public's in the education of students in archaeology. Other chapters in the book include examples of public outreach and research through websites in China, how archaeology provides a post-colonial lens to better engage and understand Africa today and how decedent communities in Australia are using archaeological evidence for identity and tourist purposes.

Two other notable chapters by Dominic Perring and Jialing Fan advocate for public engagement in archaeological fieldwork and on-site interpretation. Perring makes a case for defending "digging" activities, stating that "we are sometimes at risk of forgetting that the very act of excavation has a benefit." For Perring, he argues that it is at excavation sites that archaeologists first discuss and interpret their findings. To impress these concepts more, community archaeology projects are advocated and the need for archaeological sites to be evaluated in terms of today's social impact are advanced.

These and other chapters are sure to spark further discussion. My only criticism of the book is that the examples presented are mostly from large-scale sites with potential tourist value and the book lacks explicit clear guidelines on what a current archaeologist should do to facilitate more day to day routine exchanges with the public. Yet, the wide-ranging examples will surely provide enough to the reader about aspects of successful outreach and sharing to develop their own strategies. All the authors in some way or another advocate that archaeology cannot be confined to itself and must be

better integrated with the larger society within which we all work. Something that I think we all must aim to do.

MARITIME ARCHAEOLOGY

Nicolás Ciarlo, Associate Editor

Interdisciplinary approaches have proven to be powerful means to interpret the material evidence recovered from ships. They have shed light on several questions about the sites themselves and naval activities, but have also allowed contributions to be made to wider topics that lie beyond the maritime scenario. Cargo from ships plays an outstanding role in this regard, for the artifacts transported aboard many vessels can be a vehicle to the knowledge of technology, economics, politics and the ideology of societies from which they came or those to where they were destined. Remarkable results can be obtained based on comparative studies, which consider different ships and include data from land sites. This issue presents the advances of two investigations heading this route.

Current Research

The Gresham Ship Project: Analysis of the metal cargo (iron, lead and tin)

An Elizabethan Merchant vessel was rediscovered in the Thames Estuary in 2003, resulting in an extensive rescue operation. Initial reports indicate that the cargo included some 2,700 ingots, lead pigs and iron bars, although only a small portion of this was recovered during recent excavations. *The Gresham Ship Project* (2007-2012), led by Gustav Milne, has finally concluded as two book volumes, published as part of the Nautical Archaeology Society's monograph series (*British Archaeology Reports* 2014). The interdisciplinary research conducted included appraisals of historical records, conservation studies and heritage management, as well as an archaeometric study coordinated by Marcos Martín-Torres, which focused entirely on the ship's mixed metal cargo (see Milne and Sully 2014: Chapter 4).

The lead ingots weigh up to 60 kg and are 'boat'-shaped (60 x 20 x 10 cm), whilst the tin ingots are 'strip'-like (60 x 1.5 x 1 cm). The complete iron bars could weigh up to 65 kg and represent a total unfolded length of 6 m, though all examples were repeatedly folded down to a pack-size of roughly a 2 m breadth. The dimensions closely fit that of 'voyage iron' (used in the slave trade), with two types of bar iron discerned in the cargo: 'squares' (4 x 4 cm) and 'flats' (2 x 9 cm), named after their respective cross-sections. Whilst the lead and tin ingots were cast, the iron bars were produced by welding multiple iron blooms

together, shaped by automated hammer, and in some cases probably rolling (flats).

Some metals, such as lead, silver, copper and tin, can be provenanced by analyzing for their specific lead isotope signature, and then comparing/matching this to lead isotope signature(s) from known mines and ore sources. Elemental and lead isotope analyses revealed the ingots to be English, with the lead deriving from Derbyshire and the tin from Cornwall. Iron bars were compared to potential iron production sources via slag inclusion analysis, using novel multivariate statistical methods to suggest the Rhineland as a likely origin. The findings indicate that the ship was headed outbound from London, carrying English lead and tin whilst re-exporting Dutch bloomery bar iron. The intended voyage would no doubt have reflected the dynamism in trade during the late 16th century, including destinations such as West Africa, the Levant and even the New World.

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Cast iron production for artillery: The analysis of shot from early Modern shipwrecks

The ordnance of early modern main maritime powers, i.e. Great Britain, France, and Spain, played an important role in conflicts for the supremacy of seas. Within this context, the obtention of cannons and cannonballs, along with other manufactures destined to naval construction and equipment, demanded much of the iron production of the time. Iron ordnance received special attention and capital investment, and was subjected to diverse innovation processes in manufacturing techniques and materials, aiming to improve their efficiency.

As for cannonballs, according to documentary evidence, their making did not require the same care and attention as cannons, given the function to which they were destined. In turn, the use of poor quality iron—obtained in the first blast furnaces castings— seems to have been common practice for ammunition production in some European foundries. It is likely that cannonball quality was markedly heterogeneous. The discrepancy in the weight-diameter relationship of similar projectiles belonging to each navy partly responded to the fact that the material used had different characteristics.

The progressive employment of gray iron (carbon in graphite state) instead of white iron (with carbon in the form of cementite) for cannonballs has been widely acknowledged. Technical advantages were the following: the risk of fracture of shot made with gray iron was lower given the superior tenacity of the material, thus they could withstand a larger load of powder charge; and they were ca. 5 to 10 % lighter, varying according to the carbon content in the gray iron, so vessels cargo would be less heavy, and ultimately the ships themselves easier to maneuver. Both aspects seem to have been well understood by the practical metallurgists.

Nowadays, the dynamic of this innovative process is being evaluated through a comparative study of iron projectiles recovered from 18th to early 19th century European warships. New data obtained by the application of light microscopy and scanning electron microscopy coupled with an energy dispersive x-ray detector, allowed assessing the quality of the raw material and the manufacturing methods used. Together, these results and the historical and archaeological information available, made it possible to appreciate a more complex image than the (linear) trend stated so far.

This research is focused on artifacts from the Spanish 74-gun ship *Triunfante* (1795), the French 80-gun ship *Bucentaure* (1805), and the Deltebre I (1813), a site identified as a cargo ship belonging to the Royal Navy, among other vessels. A wide variety of spherical projectiles (round shot, used primarily to produce damage to the hull, aiming to sink the ships, as well as grape shot and case or canister shot, very effective in producing casualties in the crew) were analyzed. Samples and comparative material considered cover a time span of ca. a century.

Based on metallographic analyses, it was determined that the shots here analyzed were made by casting (individual molds were generally used). The microstructural characteristics allowed mainly three types of materials to be differentiated: white, gray and, to a lesser extent, mottled iron (some artifacts have a core of gray iron, a band of white iron on their periphery, and a zone of mottled iron in between). Leaving aside early sites, where white iron shot predominates, the artifacts recovered from the shipwrecks analyzed here exhibit some variability regarding their microstructures.

Although a certain tendency can be appreciated when artifacts from different periods are compared, such as an increasing use of gray iron for shot, this was not a regular process. Indeed, the evidence analyzed indicates that the use of gray iron shot does not seem to have been

homogeneous up to (at least) the early 19th century. For instance, artifacts from the Deltebre I site (even those projectiles of similar size) present different microstructures. Along with samples that have a microstructure of gray pearlitic iron with steadite, shot with a structure of cementite, pearlite and to some extent of steadite were recovered, so far appearing in similar quantity.

The variability observed suggests that, despite the well-known advantages of grey iron in the 18th century, a regular introduction of ammunition produced with this material was partially constrained by a number of factors. Some concerns (immediate) such as technical issues, the characteristics of the blast furnace technology and the variability associated with the manufacturing methods (e.g. the use of different molds and a relative poor control of the quality during the process) can be highlighted.

A diachronic analysis of artifacts from shipwrecks of different provenance stands as a remarkable means to contribute to the knowledge of technological changes within the maritime scenario, and even beyond its limits. In this case, it is being applied to elucidate the complexity of a still not well understood feature of early modern metallurgy and artillery.

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Recent Publications

International Journal of Nautical Archaeology From Vol. 43, No. 2: “The Newport Medieval ship, Wales, United Kingdom” (N. Nayling and T. Jones); “Iberian dendrochronology and the Newport Medieval ship” (N. Nayling and J. Susperregi); “A needle assemblage from a Roman shipwreck off the Israeli coast” (B. Rosen and E. Galili); “The 7th–9th Century Tantura E Shipwreck, Israel: Construction and reconstruction” (E. Israeli and Y. Kahanov); “The post Medieval Gravellona Toce boat: An inland watercraft from north-west Italy assembled using locked dowels” (G. Boetto and F. Tiboni); and “The application of aerial magnetometers in maritime archaeology” (J. Green).

Journal of Maritime Archaeology From Vol. 9, No. 2 (2014): “Changing water depths in the eastern part of Sydney Harbour due to human impacts” (P. Mulhearn); and “Evaluation of structure from motion software to

create 3D models of late nineteenth century Great Lakes shipwrecks using archived diver-acquired video surveys” (J. Mertes et al.).

Journal of Archaeological Sciences From the second half of 2014, the following papers can be highlighted: *JAS*, Vol. 47: “The history of settlement on the coastal mainland in Southern Finland. Palaeoecological, archaeological, and etymological evidence from Lohjansaari Island, Western Uusimaa, Finland” (T. Alenius et al.); Vol. 48: “Activities at final Pre-Pottery Neolithic (PPNC) fishing village revealed through microwear analysis of bifacial flint tools from the submerged Atlit-Yam site, Israel” (R. W. Yerkes et al.); Vol. 49: “Integrating geoarchaeology and magnetic susceptibility at three shell mounds: A pilot study from Mornington Island, Gulf of Carpentaria, Australia” (D. Rosendahl et al.); “A GIS model for predicting wetland habitat in the Great Basin at the Pleistocene–Holocene transition and implications for Paleoindian archaeology” (D. Duke and J. King); and “Using non-dietary gastropods in coastal shell middens to infer kelp and seagrass harvesting and paleoenvironmental conditions” (A. F. Ainis et al.); Vol. 50: “Response: ‘The Discovery of New Zealand’s oldest shipwreck’” (D. Wildeman); and “A dendrochronological reassessment of three Roman boats from Utrecht (the Netherlands): Evidence of inland navigation between the lower-Scheldt region in *Gallia Belgica* and the limes of *Germania inferior*” (E. Jansma et al.); and Vol. 52: “Coastal paleogeography of the California–Oregon–Washington and Bering Sea continental shelves during the latest Pleistocene and Holocene: Implications for the archaeological record” (J. Clark et al.); “Variability in late Holocene shellfish assemblages: The significance of large shore barnacles (*Austromegabalanus cylindricus*) in South African West Coast sites” (A. Jerardino); and “No man is an island: Evidence of pre-Viking Age migration to the Isle of Man” (K. A. Hemer et al.).

Archaeometry From 2014, Vol. 56, No. 5: “The use of neutron analysis techniques for detecting the concentration and distribution of chloride ions in archaeological iron” (D. Watkinson et al.); and published online this year: “Cargoes of iron semi-products recovered from shipwrecks off the Carmel Coast, Israel” (E. Galili et al.); “Phenol formaldehyde revisited–Novolac resins for the treatment of degraded archaeological wood” (M. Christensen et al.); “Metal use and production among coastal societies of the Atacama Desert” (V. Figueroa et al.); and “For whom the bells fall: Metals from the Cenote Sagrado, Chichén Itzá” (B. Cockrell et al.).

Geoarchaeology From 2014, Vol. 29, No. 5: “Hydrodynamic modeling of the Roman harbor of Portus in the Tiber Delta: The impact of the North-Eastern channel on current and sediment dynamics” (B. Millet et al.); “Shell middens, cultural chronologies, and coastal settlement on the Rhode River sub-estuary of Chesapeake Bay, Maryland, USA (T. C. Rick et al.); and “Experimental micromorphology on burnt shells of *Anomalocardia brasiliensis* (Gmelin 1791) (Bivalvia, Veneridae) and its potential for identification of combustion features on shell-matrix sites (X. S. Villagran). Other papers with valuable information about site formation processes in coastal and river settlements were published this year.

British Archaeological Reports (BAR) The following book published in the late 2014 by Archaeopress is of particular interest: “The Gresham Ship Project - A 16th century merchantman wreck in the Princes Channel, Thames Estuary (G. Milne & D. Sully, eds.), Vol. II (Contents and Context), iv + 144 pages, BAR No. 606 (British Series) / Nautical Archaeology Society Monograph Series No. 5 (see note by T. Birch et al., in this issue).

Among other articles published during the second half of 2014 which contain archaeometric results that could be useful for maritime archaeologists, the following can be highlighted: **Anthropocene**, Vol. 6: “Mapping past and recent landscape modifications in the Lagoon of Venice through geophysical surveys and historical maps” (F. Madricardo and S. Donnici); **Engineering Geology**, in press (available online): “A novel method of surveying submerged landslide ruins: Case study of the Nebukawa landslide in Japan” (S. Yamasakia and T. Kamai); **Forensic Science International**, Vol. 245: “An old dog and new tricks: Genetic analysis of a Tudor dog recovered from the *Mary Rose* wreck” (G. D. Zouganelis et al.); **Journal of Anthropological Archaeology**, Vol. 36: “A redefinition of waste: Deconstructing shell and fish mound formation among coastal groups of southern Brazil” (X. S. Villagran); **Journal of Cultural Heritage**, Vol. 15, No. 4: “Different methods for soluble salt removal tested on late-Roman cooking ware from a submarine excavation at the island of Pantelleria (Sicily, Italy)” (G. Montana et al.); **Journal of Human Evolution**, Vol. 77 (special issue: *The Role of Freshwater and Marine Resources in the Evolution of the Human Diet, Brain and Behavior*); **Journal of Marine Systems**, Vol. 139: “Modelling tsunamis in the Eastern Mediterranean Sea. Application to the Minoan Santorini tsunami sequence as a potential scenario for the biblical Exodus” (R. Periáñez and J. M. Abril); **Mediterranean Archaeology & Archaeometry**, Vol. 14, No. 2: “Woods

of Byzantine trade ships of Yenikapi (Istanbul) and changes in wood use from 6th to 11th century” (Ü. Akkemik & U. Kocabaş); ***Metallography, Microstructure, and Analysis***, Vol. 3, No. 5: “Archaeometallurgical investigation of joining processes of metal objects from shipwrecks: Three test cases” (D. Ashkenazi et al.); ***Ocean & Coastal Management***, Vol. 99: “Insights from archaeological analysis and interpretation of marine data sets to inform marine cultural heritage management and planning of wave and tidal energy development for Orkney Waters and the Pentland Firth, NE Scotland” (E. Pollard et al.); ***Proceedings of the Geologists’ Association***, Vol. 125, No. 5-6: “Holocene fluvial geomorphology of the River Exe (UK) from archaeological and historical data and implications for urban form” (J. A. Bennett et al.); ***Quaternary International***, Vol. 336: “Sea level changes and geoarchaeology between the bay of Capo Malfatano and Piscinni Bay (SW Sardinia) in the last 4 kys” (P. E. Orrù et al.); Vol. 345 (special issue: *Caspian-Black Sea-Mediterranean Corridors during the last 30 ka: IGCP 521-INQUA 501*); and papers in press (available online): “Paleoenvironmental investigations, chemical analysis and characterization of underwater strata of Marigondon Cave” (C. Rocha et al.); “A staged geogenetic approach to underwater archaeological prospection in the Port of Rotterdam (Yangtzehaven, Maasvlakte, The Netherlands): A geological and palaeoenvironmental case study for local mapping of Mesolithic lowland landscapes” (P. C. Vos et al.); and ***Review of Palaeobotany and Palynology***, in press (available online): “Archaeobotany in Italian ancient Roman harbours” (L. Sadori et al.).

The recently published book ***Science, Technology and Cultural Heritage***, edited by M. A. Rogerio-Candelera (Taylor and Francis Group, London), compiles the majority of conferences presented at the *Second International Congress of Science and Technology for the Conservation of Cultural Heritage* (Sevilla, Spain, 2014). The book covers a wide diversity of themes, among which the following should be noted here: “Air quality assessment and protection treatments impact on the collection of the Museo Naval (Madrid, Spain)” (J. Peña-Poza et al.); “Establishing the relationship between underwater cultural heritage deterioration and marine environmental factors. A comparative analysis of the Bucentaure and Fougueux sites” (T. Fernández-Montblanc et al.); “Physical characterization of super-fragile materials in underwater archaeological sites” (L. C. Zambrano et al.); and “Underwater cultural heritage risk assessment related to mean and extreme storm events: A modeling case study in the Bay of Cadiz” (T. Fernández-Montblanc et al.).

Previous Meetings and Conferences

HMS Annual Conference. Metallurgy in Warfare – A Spur to Innovation and Development. This meeting was held from 3rd to 5th October 2014, at the City Hall in Salisbury, England. Some presentations dealt with topics that include analysis of materials from different ships: “What cannonballs can tell us about cast iron production: evidence from mid-18th to early 19th centuries European warships” (N. C. Ciarlo et al.); “Liberty Ships: winning the logistics war” (E. Birch); and “Challenging the times of technical innovation: the traditional production of musket balls after the introduction of shot towers” (N. C. Ciarlo and A. Castelli).

5th International Conference on Remote Sensing in Archaeology. From Space to Place initiative – The Age of Sensing. This conference took place from 13th to 15th October 2014 at Duke University, Durham, USA. A wide range of aspects related to the applications of remote sensing in archaeological sites were presented. The following paper stands out: “Applications of acoustic, magnetometric and topographic submarines devices for an underwater archaeological method research in preventive archaeology” (P. Pelgas). See other presentations at: <http://space2place.classicalstudies.duke.edu/program>

5th International Congress on Underwater Archaeology. A Heritage for Humanity. The IKUWA V was held at the Museo Nacional de Arqueología Subacuática (ARQUA), Cartagena, from 15th to 19th October 2014. Papers and posters were distributed in the following thematic areas: new technologies; conservation and analysis; management; research project; maritime cultural landscape; *in situ* protection; legislation and rescue archaeology; prehistoric and protohistoric period; inland waters; Classical harbours; shipwrecks and projects in Classical period; Classical navigation; trade and fishing; Medieval shipwrecks and harbours; Medieval ship construction; projects and trade; Modern Period – 16th-17th centuries; Modern and Contemporary Period – 17th, 18th, 19th centuries; harbours, material culture and life on board; and public access and awareness.

The following papers are worth mentioning: “Side-Scan sonar and wreck location in Swedish waters” (J. Lindstrom and J. Hansson); “Photogrammetry for underwater archaeology” (J. McCarthy and J. Benjamin); “Avances en el estudio paleobiológico del registro orgánico rescatado en los pecios Delta I y Delta II de la bahía de Cádiz (España)” (E. Bernáldez-Sánchez et al.); “Multi-slice computer tomography (MSCT) as a non-destructive diagnostic method in the field of conservation-restoration of underwater archaeological

objects” (T. Katunaric and F. Mihanovic); “About the Roman ingots: Shield particle detector vs. nuclear tomography” (P. Tisseyre); “Study of the *Fougueux* wreck (1805) and the remains of the fort Lacy (1813) as indicators of palaeocoastlines (T. Fernández et al.); and “Arqueomonitor: study of the influence of physical, chemical and biological conditions in the damage and protection of underwater historical heritage. Constructing the bases to in situ protection” (A. Izquierdo). The section of posters also contained many interesting works: “Hydroacoustic survey on shallow water archaeological sites, examples from northern Poland” (A. Pydin); “New approaches to maritime visibility: A comparative study of traditional mathematical methods, GIS application and experimental archaeology” (C. M. Mauro and F. Cerezo); “Biological damage and methods for *in situ* conservation of the underwater mosaic pavement of the Villa dei Pisoni (Baiae, Naples, Italy)” (S. Ricci); “Cuestiones paleobiológicas: Primeros resultados de un estudio bioestratigráfico de huesos en la costa de Cádiz (España)” (E. García-Viñas); “Tree-rings, timbers and trees: A dendrochronological survey of the 14th-century cogs, Doel 1 and Doel 2 (De Kogge-project)” (K. Haneca); and “Paleogeographic reconstruction of the submerged prehistoric landscapes of the Farasan continental shelf, Saudi Arabia, South Red Sea: preliminary results” (D. Sakellariou), among others. For further information, see:

<http://museoarqua.mcu.es/actividades/ikuwa/>

Courses and Seminars

Coastal and Offshore Archaeological Research Services (COARS) hosted a three day training event at the National Oceanography Centre Southampton (University of Southampton) between the 13th and 15th January 2015. The event focused on providing knowledge, skills and practical experience in marine geoarchaeology, in relation to offshore geotechnical investigations, to national and local curators, and those working in, and engaging with, the wider archaeological sector.

The three day event consisted of two stages: A two day Continuing Professional Development course (13th and 14th Jan), consisting of a series of lectures, computer and laboratory-based sessions, that provided attendees with sufficient knowledge to identify the nature and archaeological potential of offshore deposits and make informed decisions over project designs. The second stage (15th Jan) consisted in a discussion meeting entitled ‘Dating of marine sediments for archaeological purposes’. Dating technique specialists attended to stimulate discussions on developing a better practice and advancing methodologies.

For more information about the course, contact Dr. Michael J. Grant to University of Southampton, European Way, Southampton, SO14 3ZH, United Kingdom, Tel: +44 (0) 23 8059 9610.

Call for papers

14th International Symposium on Boat and Ship Archaeology. The Programme Committee of the International Symposium on Boat and Ship Archaeology welcomes submissions for papers as well as posters for the 14th symposium (ISBSA 14), to be held at the National Maritime Museum in Gdańsk, Poland, from the 21st to the 25th of September 2015. Submissions should consist of a title as well as an abstract of about 300 words submitted online. The deadline for submissions is 1st February, 2015.

The main subject of the meeting will be the technological changes in the Baltic Sea region. There were periods and areas that witnessed rapid changes in boat construction, whilst at the same time traditional vessel forms endured. Many issues concerning the causes and factors affecting this situation remain unclear and open to debate. Other subjects may also be addressed at the symposium. Contributions on experimental archaeology, progress in methodology, and on the remains or recording of seagoing vessels are equally welcome, as are papers on Mediterranean ship design or technical standards of historical ship construction in Central and Northern Europe. Finally, ISBSA 14 is open to every notice of significant finds from other parts of the world.

Further information about ISBSA 14 can be found in www.isbsa.org, or by emailing Waldemar Ossowski to isbsa14@isbsa.org, w.ossowski@nmm.pl. Narodowe Muzeum Morskie ul. Ołowianka 9-13, 80-751 Gdańsk, Tel: +48 58 329 87 42.

UPCOMING CONFERENCES

Rachel S. Popelka-Filcoff, Associate Editor

2015

22-26 March. 249th National Meeting and Exposition, American Chemical Society. Denver, CO USA. General information:

<http://www.acs.org/content/acs/en/meetings/spring-2015.html>

25-28 March. American Association of Physical Anthropologists Annual Meeting. St. Louis, MO. General information: <http://physanth.org/annual-meeting>

30 March-3 April. 43rd International Conference on Computer Applications and Quantitative Methods in Archaeology (CAA). General information: <http://caaconference.org>

8-11 April UK Archaeological Sciences conference, Durham, UK. General information: <https://www.dur.ac.uk/archaeology/conferences/current/ukas/>

15-19 April. Society for American Archaeology. 80th Annual Meeting, San Francisco, CA USA. General information: <http://www.saa.org/AbouttheSociety/AnnualMeeting/tabid/138/Default.aspx>

21-25 April. Association of American Geographers Annual Meeting, Chicago. IL USA. Special session: New Perspectives in Paleoenvironmental Change and Geoarchaeology: Matt Peros (mperos@ubishops.ca), Tim Beach (beacht@austin.utexas.edu), Sam Munoz (semunoz@wisc.edu). General information: <http://www.aag.org/cs/annualmeeting>

27-30 April. TECHNART 2015 Conference on “Non-Destructive And Microanalytical Techniques In Art And Cultural Heritage” Catania, Italy Abstracts due 16 January 2015. General information: <http://technart2015.lns.infn.it/>

27-30 April. GMPCA congress – Archeometry 2015. Besançon, France. Abstract deadline 30 October 2014 General information: <http://chrono-environnement.univ-fcomte.fr/spip.php?article1967>

3-7 May AGU-CGU-GAC-MAC Joint Assembly. Montreal, Canada. General information: <http://ja.agu.org/2015>. Special session: “Combining archaeology and geosciences: the challenges of variable time and spatial scales”- contact Dr Agathe Lisé-Pronovost agathe_lp@hotmail.com Dr Adrian Burke adrian.burke@umontreal.ca

18-22 May. ASMOSIA XI International Conference: Association for the Study of Marble & Other Stones in Antiquity Split, Croatia. Abstract deadline: December 15th, 2014. General information: <http://asmosiaxi.wix.com/split>

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/departments/archaeology/lapita8/>

July 27 - August 2, 2015 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/>.

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

17-20 August. Canadian Quaternary Association Bi-annual Meeting. St. John's, Newfoundland and Labrador, Canada. General Information: <http://canqua2015.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 ISA. General information: <http://www.scixconference.org>

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>

18-22 November. American Anthropological Association 114th Annual Meeting. "Familiar Strange" Denver, CO USA. General information:

<http://www.aaanet.org/meetings/>

18-21 November. American Schools of Oriental Research Annual Meeting. Atlanta GA USA. General information:

<http://www.asor.org/am/index.html>

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

Spring 2016. International Symposium on Archaeometry (ISA), Kalamata, Greece.

<http://www.ims.demokritos.gr/ISA/>

29 August-2 September. World Archaeological Congress, Kyoto, Japan.

<http://www.worldarchaeologicalcongress.org/component/content/article/67-headlines/627-wac-8-kyoto><http://www.worldarchaeologicalcongress.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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SAS BULLETIN

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