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ANTHROPOLOGY IS MORE THAN A DISCUSSION ABOUT SCIENCE

By Sandra L. Lopez Varela

SAS President Sandra Lopez Varela, second from left, at a recent meeting in Mexico focused on interdisciplinary research and integration of academic and industrial sciences.

Along my professional career, I have been given the responsibility to represent the values and interests of academic organizations committed to the advancement of science, technology, and education. Profoundly rewarded by the experience of leading their goals, I have come to the realization that societies require more than ever of archaeology to build their own futures. Archaeology, given its long relationship with science, technology and the humanities, is the perfect interlocutor to unite academic worlds of knowledge to approach modern social inquiries and problems solving of climatic change, health, migration, security, or development planning. Archaeology as anthropology is increasingly and strongly demonstrating the advantage of placing human beings as the cause of any scientific research and institutional policies, and the favorable impact of considering their voices and rights in designing their own future. This dialogue is favorable to us all involved in archaeology as it not only constitutes a route to advance and to share our knowledge with other disciplines, including anthropology, of how societies in the past have confronted similar issues and how they are responding presently, but also, it creates innovative career opportunities for archaeologists-in-training who can help make a difference.

Still, to my dismay, the relationship of anthropology with science has once more come under scrutiny as a result of the presentation of the long-range plan (LRP), prepared exclusively by the Executive Board of the American Anthropological Association, at the end of 2010. Most of the discussion has surrounded around the removal of the word science and the new mission of the AAA of "promoting a public understanding" of humankind. As my term as President of the Society for Archaeological Sciences is coming to an end, the discussion is meaningful to me, not only because of the still unnoticed concerns I raised during my short lived participation in the AAA LRP committee in 2008, as it was dissolved by the Executive Board in the spring of 2009, but also, for the relevance it has to SAS, an international society, fostering an ethical use of science and technology for the benefit of humankind.

Being an international society, such as SAS, requires an understanding that there are diverse and shifting ways of approaching archaeology around the world. This understanding stands for challenges in serving the needs of its members, for example, finding financial support to bring those less fortunate to travel to meetings, both faculty and students. Equally important in building SAS as an international society is the awareness that archaeological sciences develop in the academia, the applied private and public sectors, even in a free-lancing context. Despite that several countries, such as the US and Mexico, shared the same disciplinary forefather, the growth of anthropology in my country encompasses a greater number of disciplines of what anthropology is currently to the AAA. In many instances, archaeological research has extended its limits of studying humans in the past and the present to the future, by getting involved in heritage preservation or by planning and developing future cities.

This inclusive perspective that SAS promotes was a main factor for my vote against the first draft of the LRP (the only one in opposition), as was the realization that this forecasting tool of strategic management is inadequately understood, as it is the actual mixing of concepts involved in it, and its lack of mechanisms and clear financing to evaluate the rate of success. Much in the same way physicists have established the difference between energy and electricity, business experts have defined a strategic management tool that is very different from an operational plan. Thus, the current discussion goes beyond the word science. It is about a society understanding the

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richness and diversity of its members and realizing that it leadership cannot build a common future without reflecting the thoughts and dreams of its members, as these are key elements to define its mission.

During my term as President of SAS, I have strived too for these ideals, for my firm belief that archaeology is the strategic direction in building a better world. Gracias! It has been a great honor to work with the current and past members of the Executive Board and Bulletin Staff, as it has been the privilege of representing our distinguished members of the Society for Archaeological Sciences.

ANNOUNCEMENTS

The 2011 Pomerance Award for Scientific Contributions to Archaeology was given by the Archaeological Institute of America to Michael D. Glascock, University of Missouri in recognition of his distinguished record of contribution to the advancement of archaeological science. Dr. Glascock, Research Professor and Group Leader of the Archaeometry Lab at the University of Missouri, is renowned worldwide for his application of methods of elemental analysis to determine the source of archaeological ceramics and obsidian and to reconstruct ancient trade and socioeconomic systems.

The Proceedings of the 37th International Symposium on Archaeometry are now available. The publication, edited by Isabela Turbanti-Memmi, contains papers dealing with the development and application of scientific techniques for extracting information related to human activities of the past. More information can be found at http://www.springer.com/earth+sciences+and+geography/mineralogy+%26+sedimentology/book/978-3-642-14677-0?changeHeader.

As always, please visit the SAS blog (http://socarchsci.blogspot.com/#uds-search-results) and the SAS wiki (http://sites.google.com/site/saswiki/) for all the latest news and positions.

ARCHAEOLOGICAL CERAMICS

Charles C. Kolb, Associate Editor

The column in this issue includes five topics**:** 1) Reviews of Books on Archaeological Ceramics; 2) Online Resources; 3) Previous Meetings; 4) Pottery Summer School; and 5) A Good Read.

Reviews of Books on Archaeological Ceramics

An Introduction to Archaeological Chemistry, T. Douglas Price and James H. Burton, New York: Springer, 2011. xxxii + 311 pp., 47 illustrations (27 in color) New York, Dordrecht, Heidelberg, London: Springer. ISBN-10: 1441963758, ISBN-13: 978-1441963758, $169.00, 128,35 €. and it is already accessible via Google Books: http://books.google.com/books?id=Eerby6a_kD0C&printsec=frontcover&dq=introduction+to+archaeological+chemistry&source=bl&ots=OnLxbIRHu7&sig=nQQzDoz5UmnOqUvzUSjVpS7m4gA&hl=en&ei=IObiTNqDJoSClAectK3bAw&sa=X&oi=book_result&ct=result&resnum=2&ved=0CB0Q6AEwAQ#v=onepage&q&f=false Both authors are well-known to the members of the archaeological community and the Society of Archaeological Sciences, and are affiliated with the Laboratory for Archaeological Chemistry, University of Wisconsin at Madison, Madison, WI, USA. Doug Price has been at Madison since 1974 and is Weinstein Professor of European Archaeology and directs the laboratory while Jim Burton, who holds a doctorate from Arizona State University in geology, has been at Madison since 1988 and is Senior Scientist and Associate Director, Laboratory for Archaeological Chemistry. Price is also author of a major textbook, *Principles of Archaeology* (New York: McGraw-Hill Higher Education, 2006). Price and Burton have collaborated in teaching a course on archaeological chemistry for 20 years and are ideally suited to prepare *An Introduction to Archaeological Chemistry* which is designed as a beginning orientation to the subject for both professional archaeologists and students. They cover a variety of materials but caution that they do not discuss animal bones or plant remains (p. vi).

The publisher's blurb provides an overview of the subject and context of this volume: "Archaeological chemistry is a subject of great importance to the study and methodology of archaeology. This comprehensive text covers the subject with a full range of case studies, materials, and research methods. With twenty years of experience teaching the subject, the authors offer straightforward coverage of archaeological chemistry, a subject that can be intimidating for many archaeologists who do not already have a background in the hard sciences. With clear explanations and informative illustrations, the authors have created a highly approachable text, which will help readers overcome that intimidation." Following the contextual "Preface," the authors provide valuable information on vocabulary and concepts, the basic history of archaeological chemistry, archaeological questions, archaeological materials, the primary methods of analysis and laboratory instruments employed and in Chapters 5 through 8 valuable case studies. They also define new words and phrases on the pages on which these appear. The illustrations have been carefully selected and the 27 color images add to the value of this volume. In addition, a number of the images feature students performing the analyses. Brief summaries of the content of the chapters appear below.

In "Chapter 1: Archaeological Chemistry" (pp. 1-24, 10 figures [4 in color], 6 tables, 14 suggested readings), the authors note that archaeological chemistry is a subfield of archaeometry (p. 2) and that archaeological chemistry "sits at the juncture of two branches of the tree of knowledge," provides an "exciting interface" between them, but also has to "cover a lot of ground" (p. 1). This chapter provides background on atomic weights, the periodic table, isotopes, organic and inorganic compounds, ancient DNA, the electromagnetic spectrum, measurements, samples, specimens and aliquots. The brief history (pp. 15-18) covers the period 1860s to date, and there is a selected list of 23 laboratories that conduct archaeological chemistry (pp. 19-20),

plus a "lab tour" of the University of Wisconsin facility that emphasizes research activities over the past decade. "Chapter 2: What Archaeologists Want to Know" (pp. 25-39, 3 figures, 10 suggested readings; typo p. 35: king = kings) focuses on the "bigger" research questions related to archaeological cultures in time and space. Absolute chronology, environment, technology, economics and social organization, settlement patters, households, and ideology and ritual are discussed. "Chapter 3: Archaeological Materials" (pp. 41-72, 16 figures [3 in color], 3 tables, 11 suggested readings) provides an overview of the kinds of materials (rock, pottery, bone, and metals) than can be analyzed. Rock types and rock-forming minerals are reviewed. The discussion on pottery (pp. 47-49) considers clay, temper, and compositional paste reference units (CPU), and discusses the MURR facility and provenience postulate. Sediments and soils, categories of sediments and sizes criteria, and a sediment triangle are also considered. The authors remind us that "ceramics are the products of diverse human technologies, not geological materials, and their compositions reflect human choices rather than simply that of geographic provenience" (p. 49). Bone, metals, metal technologies and other materials (glass, pigments, dyes, mortars, cement, and shells) are reviewed briefly; Table 3.5 is a useful summary of the conditions of preservation and survival rates of archaeological remains. Limestone plaster from Teotihuacán, Mexico serves as an example of a research question that employed SEM-EDS and LA-ICP-MS analyses. There are no suggested readings on pottery.

In "Chapter 4: Methods of Analysis" (pp. 73-126, 45 figures [6 in color], 6 tables, 8 suggested readings; typo p. 97: pounds = pounds) Price and Burton provide an overview of five different kinds of elemental or molecular analyses and the instruments used in archaeological chemistry. 1) Magnification (pp. 74-78) and levels of magnification: binocular microscopy, optical microscopy, and petrographic and metallographic microscopy; SEM (25 to 25,000 x). 2) Elemental Analysis (pp. 78-90) measuring presence and amount of various elements: spectroscopy (absorbed vs. emitted, absorption vs. emersion); ICP-OES (commonly used today); XRF (nondestructive, portable equipment), an example is mineral grains in pottery (p. 88); CN analysis; and very brief summary of NAA or INAA and a ceramic example. 3) Isotopic Analysis (pp. 90-102): Oxygen isotopes, Carbon and Nitrogen isotopes, Strontium isotopes, and the use of Mass spectrometers and ICP-MS. 4) Organic Analysis (pp. 102-114): the focus is on the methods of biomolecular archaeology, notably residues in potsherds (p. 102, 106-109, 109), lipids, and LC-MS, and GC-MS (p. 110 has a pottery example). 5) Mineral and Inorganic Compounds (pp. 115-122): microscopy (thin-section petrographic studies and optical mineralogy), X-ray methods (XRD), and molecular spectroscopy (IR spectroscopy and Raman scattering). The limitations of IR and XRD are noted and SEM and X-ray detection are emphasized. Tables 4.5 and 4.6 provide useful summaries of 11 instruments and their sensitive's, sample sizes, and a cost analysis.

"Chapter 5: Identification and Authentication" (pp. 127-154, 17 figures [4 in color], 4 suggested readings and 17 "key" references) documents what archaeological chemistry can and cannot do. Examples of the use of SEM include the identification of starch grains from Ecuador and the Pacific, charcoal on the Keatley Creek house floor, and coco in ceramic cylinder jars from Chaco/Pueblo Bonito. For authentication, NAA, XRD, and XRF studies on a Getty Museum *kouros* are reported; the Vineland Map analysis used XRD, SEM-EDS, TEM, PIXE; the Maya crystal skull studies employed SEM, XRF, and Raman spectroscopy; and the shroud of Turin analyses used OAD, AMS, and Radiocarbon Dating from multiple laboratories. "Chapter 6: Technology, Function, and Human Activity" (pp. 155-186, 27 figures [7 in color], 1 table, 10 suggested readings and 16 "key" references) provides case studies on technology (pp. 156-163): the discovery of fire (SEM analysis), and the characterization of Maya Blue (SEM and GC/MS); function (pp. 164-172): microwear analysis (binocular microscopy, SEM, and AFM), Danish pottery residue analysis (GC/MS); and human activities (pp. 173-186): phosphate analysis of sediments (Çatalhöyük and Uppåkra), ritual sacrificial activities at the Templo Mayor (ICP, GC-MS), and the Lejre house floor study of soil chemistry, residues, and activity areas (stables, dwellings, and food preparation areas via GC/MS). "Chapter 7: Environment and Diet" (pp. 187-211, 16 figures [1 in color], 1 table, 8 suggested readings and "7 "key" references) has case studies on speleotherms, tree rings, ice cores, and temperatures. The environment (pp. 188-198) focuses on Greenland Viking studies using light isotope-MS while the Maya "collapse" employs ICP-MS and AMS. Five studies examine diets (pp. 199-211): Carbon isotopes and C_3 and C_4 plants and terrestrial vs. marine proteins; Nitrogen isotopes and leguminous plants; and survival cannibalism at the Anasazi Mancos pueblo, 5TUMR-2346, Arizona with coprolite analysis and ELIAS assay testing. [See also Charles C. Kolb. Review of Turner, Christy G., II; Turner, Jacqueline A., *Man Corn: Cannibalism and Violence in the Prehistoric American Southwest*. Salt Lake City: Utah State University Press, 1999. H-NEXA, H-Net Reviews. October, 1999. URL: http://www.h-net.org/reviews/showrev.php?id=3512] The "Last Danish hunters" examines dietary changes and a hunting to agriculture subsistence shift seen in bone collagen via MS, while "Cape Town Slaves" uses light isotope MS on teeth and long bones to determine the origin of enslaved peoples.

"Chapter 8: Provenience and Provenance" (pp. 213-242, 22 figures [1 in color], 6 suggested readings and 13 "key" references) differentiated the usage of these terms using analogies of an artifact's "birthplace" vs. "resume," the preferential use of "provenience" by U.S. archaeologists and by archaeological chemists, and the provenience postulate. Seven case studies are presented: Ecuadorian pottery (pp. 219-221) using petrographic and electron microscopy to determine basaltic glass; lead glaze on Mexican ceramics (pp. 221-224) to differentiate Spanish from Mexican provenience through ICP-MS; European copper in North America (pp. 224-226) through NAA; Turkish obsidian (pp. 227-229) to differentiate Anatolian from Armenian sources using NAA; pottery from Pinson Mound, Tennessee, USA (pp. 229-234) to distinguish local and non-local materials through petrographic analysis and NAA; the non-local origins of Teotihuacán, Mexico sacrificial victims through Strontium isotope studies (pp. 234-237); and Copán, Honduras Maya "kings" through MS. Lastly, "Chapter 9:

Conclusions" (pp. 243-258, 10 figures [2 in color], 3 tables, 8 suggested readings and 1 "key" reference), focuses on examples of multiple investigations: 1) an Egyptian ceramic jar (using SEM-EXD, XRD, DE-MS, GC-MS, and FTIR); and 2) the origin of the Neolithic Italian "Iceman" ca. 4300 BC (employing XRD, light isotope-MS, TIMS, GC-MS, and aDNA on the body, artifacts, and raw materials). Ethical considerations (following the Society for American Archaeology's eight principles), destructive analyses (potential knowledge vs. damage or loss of cultural materials), the study of human remains (NAGPRA and the Kennewick Man are reviewed), and the future of archaeological chemistry (new instrumentation and a new range of analytical techniques) are considered. An "Appendix: An Introduction to Archaeological Chemistry" (pp. 259-260) lists six relevant journals; five books, reports and newsletters; and three scientific conferences [Archaeometry, SAS, and ACS]). "Weights and Measures" (p. 261) provides information about equivalents, volumes, cubic weight measures such as MMO, PPB, and PPT). The "Glossary" (p. 263-274) has 228 entries ranging from absolute dating to XRF. In addition, the volume has 561 "References" (pp. 275-300) and a double-column topical and proper noun "Index" (pp. 305-311).

	Pollard et al (2007)	Pollard & Heron (2008)	Goffer (2007)
Topics:			
Optical -	■	24-33	-
Chem. analysis	-	-	29-43
Spectroscopy etc.	70-92/160-190	-	-
AAS	48-56	25-29	34-35
OES	47	-	-
AES	57-58 + ▲	34-38/45-59	-
ICP-AES	57-58 + ▲	29-33	-
AMS	-	271	208
ICP-MS	195-214 + ■	31-33	-
MC-ICP-MS	201-202	-	-
LA-ICP-MS	58-61 + ▲	60-61/324-325	
GC-MS	174-176 + ▲	-	-
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XPS	101-102 + ■	39-40	-
FTIR	-	-	32, 378
X-ray etc.	92-122		
XRD	113-116 + ▲	-	■
XRF	101-109/118-120	38-45/207-209	■
EDXRF	102 + ■	42-45	-
WDXRF	104 + ■	43-47	-
PIXE	116, 121, 131	49-50	-
SEM	-	-	254
NAA	123-136/200-201	50-56	-
FNAA	-	51-52	-
History of Archaeo. Chem.	-	1-17	-
Clays/Pottery/Ceramics	67, 119, 132	98-143/	231-260/ 429-430

Legend
■ topic mentioned
▲ substantive scattered references

The detailed coverage and clear language will make this volume a useful introduction to the study of archaeological chemistry, as well as a basic resource. The addition of interesting case studies and he references to the original studies are a plus. There are a few typographical errors and some inconsistencies (hyphens versus slashes): p. 85: ICP-OES becomes ICP/OES; pp. 109-114: GC/MS and LC/MS rather than GC-MS and LC-MS; pp. 177-186: GC-MS and GC/MS. The only drawback is the cost of the volume ($169.00 US) although it is accessible via Google Books. The coverage compares favorably with three other volumes on the subject reviewed previously in this column. See Charles C. Kolb. Comparative Review of Three Books on Archaeological Chemistry*: Analytical Chemistry in Archaeology* (A. M. Pollard, C. M. Batt, B. Stern, and S. M. M. Young; Cambridge Manuals in Archaeology, Cambridge and New York: Cambridge University Press, 2007; *Archaeological Chemistry*, 2nd ed. (A. M. Pollard and C. Heron; 2nd ed., Cambridge, UK: RSC Publishing (The Royal Society of Chemistry), 2008; and *Archaeological Chemistry*, 2nd ed. (Zvi Goffer, Hoboken, NJ: Wiley-Interscience, a John Wiley & Sons, Inc. Publication; Volume 170 in Chemical Analysis: A Series of Monographs in Analytical Chemistry and Its Applications, 2007). *SAS Bulletin* 32(1):22-25 (Spring, 2009). See the table of reviews above.

Scientific Research On Historic Asian Ceramics: Proceedings of the Fourth Forbes Symposium at the Freer Gallery of Art, Blythe McCarthy, Ellen Salzman Chase, Louise Allison Cort, Janet G. Douglas, and Paul Jett (eds.), London: Archetype Publications with the Freer Gallery of Art, 2009. xiii + 234 pp., 263 figures, 43 tables; ISBN: 978-1-904982-46-3, $80.00 (hardback). This volume consists of the papers presented at the Forbes Symposium on Ceramics at the Arthur M. Sackler Gallery, 27-29 September 2007. A report on the oral presentations appeared in *SAS Bulletin* 30(4):19-28 (Winter, 2007). The volume begins with a "Forward" (p. v) by Julian Raby (Director of the Freer and Sackler Galleries) and an "Introduction" by Blythe McCarthy (Freer and Sackler). The 21 chapters are grouped under five topics: Technology and Provenance; Stoneware and Porcelain; Han, Tang, and Contemporaneous Ceramics; Production and Distribution; and Khmer Ceramics. Each of the 21 contributions has its own references. A brief synopsis of the papers follows.

Technology and Provenance (4): "Scientific Analysis of Glazed Tile from the Seljuq Palace of Kubad-Âbâd, Lake Beyşehir, Turkey" by Ian C. Freestone, Zehra Yegingil, and Rüçhan Arik (pp. 3-8, 7 figures, 1 table, 15 references). The authors report the results of their analyses on about 50 decorated glazed wall tiles, typically in the "star and cross" pattern, dating ca. 1220-1237 CE using ICP-AES for major elements and ICP-MS for trace elements; EDS and XRD studies were also conducted. Selected tiles were also studied through petrographic thin-section analysis (polarized light microscopy = PLM) and SEM-ESX-RP for glazes and pigments. All of the specimens were stonepaste bodies with alkali-silica glaze. Crushed chromite was used in black underglaze decoration, while turquoise was derived from copper and deep blue from cobalt. Luster-decorated star-shaped tiles had tin-opacified glazes but most glazes were

translucent. Compositional groups were defined on the basis of decorative style, decorative technique, body recipe and elemental compositions of the clays. The authors conclude that the compositional groups represent individual commissions, as tiles were ordered for different rooms in the palaces, and were made by more than one group of tile-makers and most were fabricated in the area of Kubad-Âbâd area except for one group made from calcareous clays rather than kaolinitic clays. Star-crossed groups can also be differentiated from monochrome tiles. "The Study of Pyu Ceramics from Ancient Pyu Cities in Myanmar (Burma)" by Nyunt Han (pp. 9-23, 37 figures, 1 table, 8 references). Pyu culture flourished in Myanmar ca. 1st-10th century CE, and the author discusses the ceramics excavated at five ancient Pyu cities. Raw materials (clays and tempering materials) and the technology of production are documented and he presents the results of a systematic typological analysis of the ceramics and their decorations. Han details the five sites and the characteristics of Pyu culture and provides two C14 dates. He also provides a detailed comparison of ceramic typology, technology, and decorations (stamped, incised, and rouletted) among the five cities, and concludes with a study of the distribution and trade of Pyu ceramics to nearby countries in Southeast Asia. External cultural influences from India and China influenced the ceramics and cultural relations of Pyu cities. "Comparative Study of Cobalt Blue Pigment on Chinese Blue-and-White Porcelain and Islamic Glazed Pottery, Thirteenth-Seventeenth Centuries" by Rui Wen and A. M. Pollard (pp. 24-32, 3 figures, 5 tables, 25 references). Islamic glazed ceramics influenced the design, decoration, and size of Chinese Blue-and-White Porcelain including the use of Arabic calligraphy as a decorative motif. The authors report the results of an XRF analysis of 25 Islamic specimens (in the main, 14th-15th century CE) that shows that the blue pigments had a high iron:manganese ratio and is consistent with pigments used in China before the 1420s. Their data supports the hypothesis that this pigment was imported from the Middle East, however, most Islamic pigments have high levels of copper and zinc that differs from the Chinese wares. Using literary sources, they attribute the difference to the strict regulation of the quality of the ore for the Chinese official kilns and the higher firing temperatures employed in China. Lastly, they classify the pigments used on the Islamic specimens into three types based upon their chemical characteristics. "Analysis of Persian Painted *Minai* Ware" by Kerith Koss, Blythe McCarthy, Ellen Salzman Chase, and Dylan Smith (pp. 33-47, 10 figures, 4 tables, 28 references, 3 endnotes). Multicolored overglazes that depict figural and geometric designs on a variety of ceramics (ranging from bowls, jugs, ewers, and inkstands to tiles) characterize *minai* a finely painted ceramic believed to have originated in Seljuq Iran (late 12th-early 13th century CE). *Minai* is Persian for "enamel." Based on previous research, the authors and suggest that likely production sites include Sava, Rayyn, Natanz, and Kashan. They selected 24 *minai* sherds from the Freer Gallery collection to characterize and identify the colorants and compositions of as many different colors as possible and study the painting and firing of the glazes and their order of application. White and turquoise bases glaze specimens and eight different colors of paints were studied. SEM-EDS and XRF were used.

Stoneware and Porcelain (6): "Study of the Composition and Microstructure of Koryŏ Celadon and Whiteware from the Kiln Complex at Bangsan Village, Kyŏnggi Province, Korea" by Carolyn K. Koh Choo, Choo Woong Kil, Ahn Sang Doo, Lee Young Eun, and Kim Gyu Ho (pp. 51-68, 12 figures 6 tables, 20 references). The Bangsan kiln complex was unique in that it produced both celadon and whiteware during Koryŏ Dynasty (936-1391 CE). Based on data from excavations at the site (1997-1998), the authors reconsider theories regarding the origins of stoneware and porcelain technology in Korea. Table 1 provides information on 18 Korean porcelain kilns. Ceramics from the site of Sŏri, which also produced both ceramics, can be differentiated from the Bangsan materials based on the numbers of whiteware sherds, an unusual style of wide and low-cut foot rims, the use of Chinese-style brick kilns, and the use of a one-step firing method. The authors employed XRF for the fabric analysis and EDAX analysis for the glazes. The results of compositional and microstructural analyses on 18 celadon and 12 whiteware sherds from Bangsan are compared to results of similar previous studies at Sŏri. Although chemically distinct, the authors suggest that there was some degree of interaction between the potters at the two loci. "The Provenance of Ancient Chinese Proto-Celadon" by Wang Changsui and Zhu Jian (pp. 69-78, 8 figures, 6 tables, 9 references). The authors seek to shed light on the provenance of Chinese proto-celadon which some investigators contend that this ware was made only in southern China during the Shang-Zhou dynasties (ca. 1600-221 BCE) but other researchers believe that it was produced in both southern and northern China during this period. They used XRD, XRF, INAA, and ICP-AES to assess samples from northern and southern sites and the results of cluster analysis support the contention that the ceramics was made on both regions. They also propose a northern Chinese origin for Chinese proto-porcelain. "Microstructures of Chinese Green-Glazed Porcelains from Ru Guan Kiln and Laohudong Guan Kiln" by L. Weidong, Luo Hongjie, and Li Jiazhi (pp. 79-87, 7 figures, 4 tables, 4 references). The authors studied a ceramic characterized by a thin body, fine and smooth glaze, and elegant color. The Ru Guan kiln dates to the Northern Song Dynasty (960-1279 CE) but in the post-Song era, an imperial kiln was established at Laohudong and produced green-glaze porcelain characterized by an opaque, crackled, thick glaze in a variety of "jade-like" colors. Specimens from both kilns were examined physiochemically (XRD, EDS, and TEM) for crystallization and phase separation of the glazes, compositions, microstructure, and firing process. They found that both glazes were crystalline phase-separated glazes and they review microstructure and compositional data and relate these to colors. "Scientific Study of Porcelain from the Lingwu Kiln of Xixia Dynasty in Ningxia, China" by Song Yan and Ma Qinglin (pp. 88-95, 7 figures, 3 tables, 18 references). This kiln was operational during the Xixia Dynasty (1038-1227 CE) and excavated 1984-1986. The authors provide chemical and mineralogical analyses of 20 sherds representing five wares from the kiln site; PLM, EDXRF, XRD, EDS, and SEM were employed. Fine porcelains had compact microstructures while coarse porcelains had numerous quartz, cristobalite, mullite, and calcite grains. Firing temperatures ranged from 1100° to

1150° C. "Technological Innovation in the Manufacture of White Porcelain in North China" by Zhu Tiequan, Wang Changsui, Mao Zhenwei, Yao Zhengquan, Pan Weibin, and Xue Bin (pp. 96-103,17 figures, 5 tables, 9 references). White porcelains and celadon specimens from the Lingzhi and Anyang kilns of Henan Province and Xing kiln from Hebei Province dating to the Northern Dynasties period (386-581 CE) were studied using XRF, DIL (thermo-dilatometry), and petrographic microscopy (PLM). The authors confirmed that the ancient potters had attempted to improve the quality of the celadon by treating the ceramic by applying a thin slip between the body and glaze, and controlling the firing temperature. They contend that these innovations eventually led to the creation of white porcelains. "Research on the Question of Dating Chinese *Famille Noire* Porcelain" by Linda Rosenfeld Pomper, Jeffrey P. Stamen, and Norman R. Weiss (pp. 104-110, 5 figures, 1 table, 34 references). In 1974, John A. Pope cast doubt on the dating of this porcelain, suggesting that "several large pieces" in the Frick Collection were produced in the 19th century rather than the Kangxi period (1662-1722 CE). The authors examined 200+ auction catalogs from the 18th century but found no large pieces of *famille noire* for this period, but determined that there was a sudden appearance of the ceramics during the last half of the 19th century. They employed stylistic analysis to examine *famille verte* and other ware and present the results of parallel technical studies (emphasizing optical microscopy and mentioning XRF) in order to define physical characteristics and determine "obvious fakes."

Han, Tang, and Contemporaneous Ceramics (5): "*Mingqi* Pottery Buildings of Han Dynasty China: Production Methods and Techniques" by Guo Qinghua (pp. 113-122, 14 figures, 2 tables, 16 references; Appendix: "Data Sources for Tables" has 30 other references). *Mingqi* (funerary artifacts in the forms of miniature pottery buildings) placed in tombs of the Han Dynasty (206 BCE-220 CE) were studied by the author. The author focuses on the techniques of the complicated component-assembly production of these structures, transportation, assembly, and locations in the tombs, and tools (paddles, knives, and molds) used in their manufacture are documented. The modular fabrication is elaborated in Guo Qinghua recent book *The Pottery Buildings of Han Dynasty China, 206 BC-AD 220*, 2010 (reviewed in *SAS Bulletin* 33(3):15-20, 2010). "The Spread of Pottery Miniatures in Han Dynasty China" by Kawamura Yoshio (pp. 123-132, 10 figures, 2 tables, 14 references, 3 endnotes). In this related paper, a comparative study on *mingqi*, the author investigated the spread of the production processes among Xi'an, Luoyang, and Guangzhou during the Han period. The diffusion of the manufacturing process had three stages: 1) the styles and technology moved from Xi'an outward to as far away as Guangzhou; 2) the processes used in Guangzhou influenced production in Xi'an and Luoyang, and Xi'an influenced Guangzhou's production; and 3) there is a relationship between production in Xi'an and Luoyang but no relationship between Xi'an and Guangzhou, suggesting that the exchange of information became more limited in comparison to the prior two stages. "Characteristics of Tricolored Earthenware from the Huangye Kiln Site and the Heijo Capital Site Determined by Nondestructive Analysis" by Furihata Junko and Tatsumi Junitiro (pp. 133-140, 12 figures, 2 tables, 18 references). Twenty-six Japanese tricolored lead glaze earthenware specimens from excavated sites in Japan (Heijo, Nara, Japan) and materials from the Chinese Huangye kiln site which were exported to Japan were compared to ca. 100 sherds from China, Bohai, and Japan. Using binocular microscopy, XRD, and XRF, the authors were able to characterize the glazes from each era (7th-8th centuries and 9th-10th century) as well as firing technologies. Research was also conducted on the nature of the material constituting the "white motif" on the surfaces of the tricolored wares. "The Latest Archaeological Discoveries of Tang *Sancai* in China and the Study of Provenance" by Cheng Qian and Lei Yong (pp. 141-148, 15 figures, 1 table, 12 references). Tang *sancai*, a general term from multicolored glazed ceramics produced in China during the Tang Dynasty (618-907 CE), from three Chinese kilns and six tombs were studied by the authors using INAA with factor analysis. The specimens assessed included five vessels and four ceramic figures. The archaeological evidence from these kilns and tombs are related to four chronological sub-periods within the Dynasty. They concluded that the majority of red-bodied tomb *sancai* were likely produced at the Xi'an, while white-bodied *sancai* dating prior to 705 were probably fabricated near Luoyang. "Mutual Influence and Imitation of Mesopotamian and Chinese Ceramics in the Ninth and Tenth Centuries" by Sasaki Tatsuo (pp. 149-162, 14 figures, 7 tables, 31 references). Tang Dynasty (618-907 CE) white porcelain was widely exported to East and West Asia and stimulated the production of Islamic wares during the same period (notably the Sasanian, 224-651; Umayyad, 661-750; and Abbasid, 750-1258 periods). Chinese white porcelain influenced Islamic opaque white-glazed wares, but an opaque white-glaze had been in use in West Asia prior to the arrival of Tang white porcelain. The glaze was derived from quartz until the 8th century but tin and lead began to be employed in the 9th century. The provenance of some Chinese white porcelain excavated in West Asia has not been clear but could include Xing and Ding kilns (Hebei Province) and Gongxian kiln (Henan Province). XRF, XRD, INAA, and ICP-AES were employed in the study. The author studied and reported on the influence of Chinese white-glazed ceramics using archaeological data from West Asian sites, notably Samarra, Sīrāf, A'Ali, and Hulayah.

Production and Distribution (3): "Defining a New Type of Japanese 'Folk' Ceramic: Nishi Sarayama Ware" by Andrew L. Maske (pp. 165-174, 21 figures, 20 references, 3 endnotes). The author reported that Japan's utilitarian stonewares produced during the past 50 years have become known as "folk ceramics" and that Nishi Sarayama ("White Plate Mountain") kilns were located in an urban environment rather that in a rural setting. Maske details the new ceramic type, a rough reddish-brown stoneware used in the production of soy sauce jars, sake flasks, and mortars. Documentary and archaeological excavation data from 2005 were combined with materials analysis for this paper. See also C. Doherty and A. L. Maske in *Archaeometry* 40(1):71-95 (1998). "The Impact of Imitation Ceramic Industries and Internal Political Restrictions on Chinese Commercial Ceramic Exports in the Indian Ocean Maritime Exchange, ca. 1200-1700" by Rahul Oka, Laure

Dussubieux, Chapurukha M. Kusimba, and Vishwas D. Gogte (pp. 175-185, 10 figures, 66 references). The authors report that during these five centuries trading ports in the Indian Ocean were characterized by transoceanic similarities in elite tastes and preferences for prestige ceramics. Chinese celadon and blue-and-white porcelains made from 10th-18th centuries were in great demand and led to major attempts at imitation by potters in Southeast and Southwest Asia. Some scholars have suggested that non-Chinese products successfully competed with Chinese exports and took advantage of frequent Chinese imperial embargoes between the 13th and 17th century. The authors employed LA-ICP-MS on glazed celadon and blue-and-white specimens excavated in two ports (Mtwapa, Kenya and Chaul, India), and determined that Chinese ceramics were actively traded in the western Indian Ocean and were the preferred prestige wares for the elites in these locales. Their data suggests that the overseas demand for Chinese porcelain drove the Chinese commercial export economy toward greater resilience to external competition and internal regulation. A minor typo (p.185: Pa = CA) does not detract from this important paper. "Characterizing Asian Stoneware Jar Production at the Transition to the Early Modern Period, 1550-1650" by Peter Grave and Michael Maccheroni (pp. 186-204, 10 figures, 3 tables, 62 references). The authors document their studies on the characterization of 864 stoneware jars and jar fragments from 27 Asian and European shipwreck assemblages recovered in the China Sea and terrestrial long-distance trade routes dated to the 14th-17th centuries. Museum specimens from the Philippines were also assessed. ICP-OES and SEM with EDAX were used. The compositional groups provide the basis for assigning provenance, and 17 production sources ranging from China to Burma were identified. Typological and chronological information and compositional data were combined and shed light on regional production strategies.

Khmer Ceramics (3): "New Data on the Distribution of Khmer Ceramic Kilns and the Study of Ceramics" by E. A. Darith (pp. 207-214, 16 figures, 24 references). Khmer stoneware pottery and kilns dated to the Angkor period have been identified in the capital of the empire, Angkor, and along the royal road that connected the capital to regional communities. Kilns along the road to the west produced brown-glazed ceramics while Angkor area kilns made only green-glazed and unglazed wares; roads to the east have not yet been studied. The results of kiln excavations are reported and differences in ceramic products and kiln structures characterized; some SEM-EDS studies were undertaken. "Preliminary Results of the Anlong Thom Kiln Excavation on Phnom Kulen in Angkor: A Case Study of ALK01" by Chhay Visoth, Chhay Rachna, San Kosal, Sok Hun Ly, and Tabata Yukitsugu (pp. 215-224, 11 figures, 9 references). Three kiln sites in the Angkor region of Cambodia have been excavated: Tani, 1996; Sar Sei, 2003; and Anlong Thom, 2007. Preliminary results of Cambodian archaeological excavations at Anlong Thom were reported. The site produced high-quality green-glazed wares (architectural elements and household pottery) and is "among the largest kiln industries in Southeast Asia." There is a detailed discussion of kiln construction and the results of radiocarbon analysis. "Rethinking Khmer Ceramics and Metal Vessels through Ancient Inscriptions and Bas-Reliefs: Khmer Ceramic Typology through Ancient Words" by Sok Keo (pp. 225-234, 17 figures, 32 references). Ancient Khmer inscriptions include words in both Khmer and Sanskrit that document the importance of ceramic and metal vessels in that society. The author presents the results of his analysis of Old Khmer and Sanskrit words, bas-reliefs, objects, and "modern" words in order to define types or shapes of ceramic or metal vessels. Thirty-seven words have been identified to date.

This volume focuses primarily on East Asian ceramics in their many forms and functions. Eleven papers focus on China, six on Southeast Asia (mainly Cambodia and Myanmar) and there are contributions on ceramic materials from Korea, Japan, Iran, and Turkey. While sophisticated scientific analyses are employed in compositional analysis, production technologies, and devising ceramic typologies, the results are, in the main, presented and explicated in historical, aesthetic, religious, and other social science and humanities contexts. This volume, fourth in the ongoing series of Forbes Symposia proceedings, is a landmark for studies on ceramics from China and Southeast Asia.

Reflections of Empire: Archaeological and Ethnographic Perspectives on the Pottery of the Ottoman Levant, Bethany J. Walker (ed.), Annual of the ASOR Vol. 64, Boston: American Schools of Oriental Research, 2009. xii + 163 pp., 59 figures, 79 endnotes; ISBN 978-0-89757-081-7, $89.95 (hardback). Walker is in the Department of History at Missouri State University, Springfield MO and the individual authors are ceramics specialists in their respective areas. The advertising blurb points out that: "Ottoman archaeology in the last decade has progressed from the study of a 'Dark Age' to the multi-faceted investigation of the history and societies of the longest-lived Muslim empire of the early modern era. Missing from this investigation, however, have been technical studies of Ottoman-period ceramics-studies that identify assemblages, define typologies, and posit chronologies for specific wares across entire regions. This volume assembles such technical studies for the region of the Ottoman Levant: Cyprus, Israel, Palestine, and Jordan. This geographical focus recognizes the cultural, historical, and economic interconnections that made the Levant a distinctive part of the Ottoman empire. These studies present previously unpublished corpora of Ottoman pottery from largely archaeological, and specifically stratified, contexts." Structurally, the volume has six chapters with all of the illustrations clustered at the end of the monograph, plus a single conflated bibliography and an index.

Chapter 1: "Defining the Levant" by Bethany J. Walker (pp. 1-6, 1 figure on p. 95, 12 endnotes). The author characterizes the "greater Levant" area, discusses historical and ethnographic information and "defines the Levant ceramically" (p. 3). She notes that there has been an archaeological focus on single-sites rather than regional assemblages and that little Ottoman pottery has been published. She also comments that post-Mamluk pottery is not easily identified and refers to J. W. Hayes's *Excavations at Sarachane in Istanbul, Vol. 2: The Pottery* (Princeton, NJ: Princeton University Press, 1992), as a critical resource. The two chronological periods are Early Ottoman, 15th -17th centuries; and Late Ottoman, 19th-20th centuries CE.

Chapter 2: "Ottoman Pottery assemblages from Excavations in Israel" by Miriam Avissar, Israeli Antiquities Authority, Jerusalem (pp. 7-14, 12 figures on pp. 97-106, 6 endnotes). Avissar provides a systematic examination of glazed and unglazed ceramics from four sites in Israel, discusses stratigraphic contexts, and differentiates local patterns of production and importation. She discusses the architecture at Tell Yoqne'am (excavated 1977-1986) and the ceramics recovered: glazed bowls which predominate in the assemblage, unglazed bowls, hole-mouth cooking vessel (micaceous clay suggests an import), Gaza Ware handled jugs and table and storage jars, spouted drinking jugs, and tobacco pipes. The site of Habonim-Kafr Lam (excavated 1999) has pre-19th century pottery: glazed and unglazed bowls and craters; cooking vessels, storage jugs, and Gaza Ware jars and plain bowls (reddish-brown fabrics); glazed bowls with outfolded rims; handmade cooking vessels, storage jars, and closed Gaza Ware containers (jugs). The sites of Qula and al Qubab date to the 18th-19th centuries and have Gaza Ware bowls and some cooking vessels; craters and cooking vessels are made with other fabrics, as are storage jars, and jugs. She concludes that the ceramics have a limited number of forms and that there were significant amounts of pottery imported from Turkey, Thrace, Italy, and Holland.

Chapter 3: "The Ottoman Pottery of Palestine" by Marwan Abu Khalaf , al-Quds University/ Institute of Islamic Archaeology, Jerusalem/Ramallah (pp. 15-22, 10 figures on pp 107-116, 1 endnote). Abu Khalif notes that very little historical-era Ottoman pottery from Palestine has been published and begins his essay with a survey of published data in order to develop a typology of Ottoman pottery forms and functions. Tell Yoqne'am has one of the best dated ceramic sequences. Gaza Ware (GGW) and Handmade Geometric Painted Ware (HMGP) bowls and jars are reviewed in terms of typical forms, and a typological classification based on techniques of production is delineated. Forms include: tobacco pipes (beginning in the 17th century), five jar forms, cooking vessels (pots, casseroles, and pans), jugs (several diagnostic forms), basins and craters, bowls, dishes, and trays. Techniques of manufacture and decoration are reviewed from selecting clays and temper to the use of coiling, cloth-sack-building (coiling clay snakes around a sand-filled sack used as a form), wheel-made pottery (a small number of forms), and decorations (molding, painting, glazing, and carving). He confirms that most ceramics are handmade and glazed pottery is rare. Chapter 4: "An Ethno-Archaeological approach to Ottoman Pottery: The Case of 'Gaza Gray Ware'" by Hamed Salem, Department of Archaeology, Birzeit University, Birzeit (pp. 23-36, 4 figures on pp. 117-123, 3 endnotes). This excellent evaluation of Gaza Gray Ware (GGW) considers historical, ethnographic, and technological data, and the author suggests ways in which fabric and stylistic traits help to identify patterns of ceramic parentage and development that provides evidence the GGW emerged during the Early Ottoman period. His study is hampered by a lack of published information on GGW, the fact that contemporary Palestinian settlements overlie the Ottoman occupation, and little textual information on the potters' craft. Although there were other loci of production (Fallujah and Khan Unis, for example), Gaza was the primary production center where wine and olive oil production required storage and transport containers. He discusses the archaeological contents, the possibility that GGW is an imitation of Neolithic-era basalt grinders, and precursors of GGW such as Early Bronze Age Gray Burnished Ware and Beisan Ware of the Byzantine-Umayyad period. Information on five stratified and nine undated GGW sites is summarized, ethnohistoric and ethnographic date reviewed and production sequences delineated (pp. 31-32) from clay preparation through forming techniques and firing in a "special reduction kiln" in a process called *tatwisa* (pp. 33-34). Lastly there is a typological analysis of forms: water jars, spouted jugs, jugs, bowls, craters, and two types of cooking pots.

Chapter 5: "Identifying the Late Islamic Period Ceramically: Preliminary Observations on Ottoman Wares from Central and Northern Jordan" by Bethany J. Walker (pp. 37-66, 21 figures pp. 125-149, 50 endnotes). Walker provides a comparative analysis of Ottoman pottery from excavations and surveys at three sites from northern and central Jordan. A historiographical review precedes a discussion of the wares. This is a continuation of local Mamluk wares but new Ottoman ceramics are introduced, and transitional forms are critical chrono-markers (Table 5.1 has a chrono-typological summary of Green Glazed Turkish Wares). There is a chronological emphasis on the Mamluk-Ottoman and Ottoman-British Mandate transitions. In addition, she provides a site catalog for northern and central Jordan (pp. 59-66); fabrics by wares are differentiated: Wheelmade (Fabrics A, B, and C); 20th-century Painted; Fabric D); Stonepaste and Soft Paste Porcelain (Fabrics E and N); Slip Painted (Fabrics H and I); Monochrome Glazed (Fabrics J and K); Gaza Ware (Fabrics L1, L2, and M); Pipes (Fabrics O, P, and Q); and Handmade (Fabrics F and G). Tempers, mineral inclusions, Munsell colors, decorations, and some likely sources of manufacture are listed for each of the fabrics. Chapter 6: "Stability and Change in Ottoman Coarse Wares in Cyprus" Ruth Samadar Gabrieli, Hebrew University, Jerusalem (pp. 67-79, 11 figures pp, 151-161, 7 endnotes). This "socio-archaeological study" of Ottoman pottery traces the development of forms, decoration, and manufacture of the assemblage of coarse ware ceramics from Paphos, Cyprus in order to create a chronology for table and kitchen ceramics. The site was a port for commerce from the Medieval to Ottoman periods, 13th-19th centuries. Shapes and fabrics of cooking vessels, bowls, jugs, and jars are reviewed. Ottoman Coarse Ware was made on the fast wheel and there was an increase in quantities produced over time simultaneously with an increase of imports (mostly jugs). During the later phase of production (16th century ff.), trade with the Levant increased while more imports came from North Africa and, at the same time, there was increased diversity in coarse ware production on Cyprus. A socio-economic explanation is presented and the adoption of the fast wheel seen as a potential factor.

The "Bibliography" (pp. 79-92) has 240 entries while the "Index" (pp. 93-94) has two columns listing proper nouns, illustrations, and some topics. The location of the "Illustrations" (pp. 95-163), are grouped at the end of the volume necessitating that a reader to flip back and forth between the narratives and the appropriate illustrations. Alas,

34 illustrations have scales of measurement but 24 do not. There are 20 photographic images among the line drawings and a majority of the photos are not clear – indistinct or shaded (Illustrations 5.9, 5.10, 5.11, 5.12, 5.13, and 5.14).

Only Walker utilizes the Munsell Color Charts or system. Ottoman archaeology has recently emerged as a specialization in Near Eastern studies and this is a landmark volume in Ottoman-era ceramic studies. Although seemingly a collection of unrelated studies, this volume attempts to synthesize current knowledge of Ottoman ceramics in a way that is technically useful to both field archaeologists as well as scholars of Ottoman social history.

Shechem I: The Middle Bronze IIB Pottery, Tell Balâtah/Shechem, Dan P. Cole (James F. Ross and Edward F. Campbell, eds.), American Schools of Oriental Research Excavation Reports, Winona Lake, IN: Eisenbrauns, 1984. xiii + 203 pp., 24 figures, 49 plates, 5 tables, 5 plans, 3 sections; ISBN 0-89757, $50.00 (hardcover). David Brown Book Co. has it on sale for $9.98 (December 2010). Tell Balatah, otherwise known as Shechem, is an archaeological site situated in the Central Hill Country of the southern Levant, ca. 2 km east of present-day Nablus, Jordan. It is located in the saddle between the slopes of Mount Ebal and Mount Gerizim and controlled the strategic pass through the valley between the two mountains. The site was excavated by an Austro-German team in the period between 1913 and 1934, and by the Drew-McCormick Archaeological Expedition to Shechem, and served as a training ground for many American archaeology students. The more recent excavations were conducted from 1956 to 1971, with additional salvage operations in 1972 and 1973.

In this traditional descriptive volume and catalog, Cole reports on and provides a catalog of the pottery from the Middle Bronze IIB period (c.1750-1650 BCE) recovered from Field VI (excavated in 1960) for analysis because of good stratification. The publication of his research fulfilled in part his 1965 doctoral degree requirements at Drew University, Madison, NJ, and the current monograph is a revised and updated version of his dissertation. The volume has "Acknowledgments," a list of "Abbreviations," and a "Preface" (pp. xi-xiii). In the "Introduction" (pp. 1-10), Cole discusses the excavation and preservation of the sherds, the separation and interpretation of excavation loci, and the classification system. More than 7,000 sherds from Field VI were "registered and saved" and represent 2-5% of the pieces recovered from this location (p. 3). His analytical procedures (pp. 4-5) follows Anna Shepard (1942:233-235). Nowhere in the monograph does he state the actual number of sherds analyzed, but based on the catalog data (pp. 100-190), 1,372 sherds or whole vessels were studied. Later in the volume we learn that he employed the Munsell Color "Code," identified four "grits or temper" (calcite, lime, ceramic [grog], and crystal [sic.] quartz), and documents four temper sizes (p. 99). "Middle Bronze IIB at Shechem" (pp. 11-32, 4 tables, 4 plans) reports the Field VI strata and the rationale of the loci selected for analysis. "The Pottery: Typological and Comparative Analysis" (pp. 33-80, 23 figures, 1 table), with Table 5 (pp. 33-40) designated vessel types, forms, and subforms. There is a discussion of the classification of types and forms (pp. 33-41) followed by brief descriptions of 17 ceramic types: platter bowls, deep bowls, globular bowls, necked bowls, carinated bowls, miniature bowls, bowl bases, flat-bottom cook pots, hole-mouth cook pots, upright-rim cook pots, dipper juglets, piriform juglets, cylindrical juglets, jugs, large jars, small jars, and small jar and jug fragments. "General Comments on Wares, Pastes, and Surface Treatments" (pp. 78-80) provides cursory information on these topics.

In "Summary Conclusions" (pp. 81-97), the author reviews diagnostic ceramic types and forms, comparative sites, and geographical and historical considerations. Lastly, the "Catalogue of Shechem MB IIB Pottery" (pp. 98-197) provides notes on the drawings and descriptive conventions, pottery classifications by type and form (Plates 1-45), and Strata XX-XVIIs: Selected Pottery (Plates 46-49). A "Bibliography" of 163 entries (pp. 199-203) completes the volume. The narrative dates to 1997 but was not published until 1984, so that the comparative chronology was already dated even in the mid-1980's let alone 2011. There are a few errors in the plans: in Plan 3, Stratum XVII should be Stratum XVII; in Plan 4, Stratum XVI should be XVII. Joe D. Seger's *The Pottery of Middle Bronze IIC at Shechem* (unpublished Ph.D. dissertation, Cambridge, MA: Harvard University, 1965) documents the subsequent period.

Shechem IV: The Persian-Hellenistic Pottery of Shechem/Tell Balâtah, Nancy L. Lapp (Edward F. Campbell, ed.), American Schools of Oriental Research Archaeological Reports 11. Boston: American Schools of Oriental Research, 2009. xiv + 337 pp., 55 figures, 58 plates, 1 table, 100 endnotes, 3 appendices; ISBN 978-0-89757-079-4, $74.95 (hardcover). David Brown Book Co. has it on sale for $14.98 in December 2010. This volume, the last in the Shechem series of four publications and completes the series, documenting the Persian and Hellenistic pottery from the American expedition to Shechem. The Persian and Hellenistic ceramics are from the last periods of occupation of the site, and most of the ceramics that are reported came from the early seasons, especially 1956, 1957, 1960, and 1962. The later strata were defined by these excavations as Early Persian (Stratum V) and Early Hellenistic to Late Hellenistic (Strata IV-I). The study of the ceramics was begun by Nancy Lapp and her husband, Paul, who died in 1970, and she has intermittently carried on the analysis. He was the author of ceramic studies that appeared in more than a dozen articles or sections of monographs on Near Eastern sites, and may be best-known for: Paul W. Lapp (1961), *Palestinian Ceramic Chronology, 200 B.C.-A.D. 70*, New Haven, CT: American Schools of Oriental Research.

The Shechem monograph begins with an "Introduction" (pp. 1-17, 13 figures, 1 table, 38 endnotes) providing the usual background information on each Stratum (V, VI, II, II, and I), the fields and loci, and general information on Stratum V, the Early Persian occupation, and the Hellenistic occupation, including the fortifications and domestic areas. Lapp also discusses the decision to publish the pottery by types and variants rather than by locus and writes that pottery studies 40 years ago when his pottery was excavated "were almost wholly considered for chronological purposes" (p. 1). Hence, the goal

of the present volume is to present ceramic typologies based upon stratigraphy. The chapter on "The Early Persian Period – Stratum V" (pp. 19-39, 13 figures, 15 plates, 32 endnotes) begins by defining the difficulties in distinguishing Stratum V (dated 525-475 BCE) since the ceramics from Stratum VI (the last Iron II stratum) have not been fully studied nor were available for comparative analyses. In this chapter, the author documents eight major pottery types based primarily on vessel form and function. She first describes jar forms, handles, stamped handles from the site, and other types stamped handles; jugs and juglets (wide-mouthed, narrow-necked, and bottle forms); small, medium and large bowl subtypes (not easily classified), and their rim forms. Four types of kraters are defined: high-necked, sloping shoulder, ledged and lug handled, and vessels with wedged and/or circular impressed designs. The description of Persian mortaria and comparisons with the literature are enlightening and refer to a study on manufacturing methods and fabric types by W. Glanzman (1993, an unpublished manuscript archived at Simon Frasier University in British Columbia, Canada). Cooking pots are typically globular with two handles and some were lidded. The Persian period lamp fragments are from fills and there is a useful comparison with the published literature. Lastly, Attic/Imported Ware (published more fully by N. Lapp in 1985) included Black- and Red-Figured kraters, an assortment of cups, lekythoi, and fragments of various other forms.

In the chapter titled "The Hellenistic Pottery – Stratum IV-I" (pp. 33-71, 22 figures, 43 plates, 29 endnotes), spanning the period 325-110 BCE, the author documents ten major pottery types and notes that the Hellenistic occupation was much longer and more widespread at the site that the Persian period. Jars at Balâtah were cylindrical or 'bag-shaped," while conical jars were missing from the assemblage. Four jar shapes and variants are discussed and jar handles and bases described, and there is a lengthy discussion of comparative specimens. Two Rhodian jar fragments with inscribed handles were also recovered. No complete jugs were recovered from the excavations but seven types are discerned and base types (concave and ring) identified as are several unique jug types and flasks. Globular and bottle-form juglets were described and some miscellaneous fragments of juglets ascribed to this type. Fusiform unguentaria are described but, notably, there are no fragments of piriform unguentaria at Shechem. Small bowls with incurved rims are typical in the assemblage and reference is made to Berlin's (1997) typology of imitation fine ware bowls at Tel Anafa II. Lapp discusses these in some detail (including a mention of Munsell Color data) and also suggests mass production, noting a cache of these vessels in the Stratum I Hellenistic house in Field II. Shallow bowls or plates were also discussed as are imported bowls (Attic, Eastern Terra sigillata and Megarian Ware) and medium and medium to large bowls are also characterized. High-necked kraters were common and had grooved, flat rims but other types are noted. Clay mortaria were likely used for rubbing and grinding but the use isn't substantiated, although Lapp does refer to comparative materials from other sites. Cooking ware pots sherds were fragmentary but rim and neck distinctions could be delineated from the assemblage. One interesting form was a casserole with a probable lid device (p. 65) and separate lids were also defined at the site. Lastly, Attic, plain delphiniform, and molded-relief lamp types and unique White Ware form were described. The "Summary of Pottery Types" (pp. 73-80, 7 figures, and 1 endnote) with sections on the Early Persian types and the Hellenistic types is valuable and well-illustrated.

The volume also has "Appendix I: Locus Lists" (pp. 81-138), "Appendix II: Locus Indices" (pp. 139-149), and "Appendix III: Coins" (pp. 150-157), plus a "Bibliography" (pp. 158-166) with 164 entries, and a cursory "Index" (pp. 167-168). "Appendix I: Locus Lists" includes seven categories of information: Locus, locus description, locus publication references, area and basket, pottery registry number, vessel type, and plate numbers of the illustrations. "Pottery Plates and Descriptions" (pp. 169-337) take up the bulk of this volume with a catalog of 26 types and 42 variants. The plates consist of black-and-white drawings with no shadings but with appropriate metric scales. Each plate description (there are multiple pages for each of the vessel types and variants noted above in Chapter 2 and 3) includes basic information: Plate number, stratum, field information, specimen number, locus description, and ware description. The specimen locations are well-documented. Ware descriptions begin with a designation of using the Munsell Color Charts; a typical entry reads: 2.5 YR 4/0 dark gray. The entries include additional general descriptions such as "many small inclusions," "reddish yellow exterior surfaces, small inclusions," "few small inclusions," or "few inclusions." However, the reader will also find more descriptive information such as "limestone and a few ceramic inclusions," "small organic inclusions," and "few sand & organic inclusions." No thin-section petrography is reported.

These two volumes, *Shechem I: The Middle Bronze IIB Pottery, Tell Balâtah/Shechem* by Dan P. Cole (1984) and *Shechem IV: The Persian-Hellenistic Pottery of Shechem/Tell Balâtah* by Nancy L. Lapp (2009) illustrate how excavators were thinking a half century ago when the focus of archaeological excavations in the Near East was to develop ceramic typologies and relative chronologies. Pottery catalogs and illustrations of vessel forms and decoration dominate the volumes from this era. There was apparently little thought to topics of provenience of manufacture, let alone more recent archaeological concerns with the archaeometric studies beyond thin-section petrography such as use-wear patterns, residue analysis, chaîne opératoire, technological choices and abilities, learning the potters' craft, and sociocultural variables to the manufacture, the life history of the artifact beyond fabrication and firing – consumption, distribution, and final disposition of vessels and sherds. The past few decades have seen the expansion of the analysts' toolkit which might draw upon Instrumental Neutron Activation Analysis (INAA) and ICP Spectrometry, Inductively Coupled Plasma Spectrometry either as ICP-OES or Mass Spectrometry (ICP-MS), Proton-Induced X-Ray Emission Analysis (PIXE), X-Ray (XRF), X-Ray Milliprobe, X-Ray Microprobe, X-Ray Florescence Spectroscopy (XRF), X-Ray Photoelectron Spectroscopy (XPS, ECSA), X-Ray Spectroscopy, and the use of Electron Microscopy (TEM, SEM, and AEM). X-ray Fluorescence (XRF) has also gained a major following. More typical of current ceramic studies is The Athenian Agora Vol. XXXIII: Hellenistic Pottery: The Plain

Wares by Susan Rotroff (Princeton, NJ: American School of Classical Studies in Athens, ASCSA Publications, 2006) reviewed in *SAS Bulletin* 30(4):19-21 (Winter).

Ceramics in America 2010, edited by Robert Hunter and Luke Beckerdite, photography by Gavin Ashworth, Milwaukee, WI: Published by the Chipstone Foundation, distributed by the University Press of New England, Hanover and London, 2010. xv + 259 pp., 497 illustrations (478 in color), ISBN-10 0-9767344-6-8, ISBN-13 9780976734468, ISSN 1533-7154, $65.00 (cloth). Now in its tenth year of publication, *Ceramics in America* has become the journal of record for historical ceramic scholarship in the American context. The 2010 volume of *Ceramics in America*, like the 2009 volume before it, is entirely on North Carolina earthenware pottery. *Ceramics in America 2010* concentrates on the non-Moravian potters working in North Carolina between 1755 and 1850. This is a time period in North Carolina's pottery history that has before only been very sketchily covered in the literature. Knowledge about pottery making during the period from 1755 to 1850 has increased dramatically in the last 30 years, and the articles in this year's volume reflect this increased knowledge. The 2009 volume took a thematic focus by reporting new research related to the rich and varied earthenware production in the 18th- and 19th-century Moravian settlements of Bethabara and Salem, North Carolina. The editor, Robert Hunter, is a Fellow of the Society of Antiquaries of London, and an archaeologist and ceramic historian, while co-editor Luke Beckerdite, is the editor of *American Furniture* and a decorative arts scholar; both live in Williamsburg, Virginia.

The 2010 volume contains an "Editorial Statement" by Robert Hunter (p. vii), a "Preface" by Jonathan Prown, Lee L. French, and Martha Parker (pp. ix), an "Introduction" (p. x-xi) by Hunter, "Acknowledgments" by the editors (p. xv), and an "Introduction" by Robert Hunter (pp. xi-xiv). There are eight major contributions and three short ones. "Collectors and Scholars of North Carolina Earthenware" by Luke Beckerdite and Robert Hunter (pp. 2-13, 19 figures [9 in color], 13 endnotes) begins with the note that the 2009 and 2010 volumes of *Ceramics in America* were designed to serve as catalogs for the "Art in Clay: Masterworks of North Carolina Earthenware," a traveling exhibition sponsored by Old Salem Museums and Gardens, the Chipstone Foundation, and Caxambas Foundation. This chapter focuses on the contributions of persons and institutions that formed the first private and public collections of North Carolina earthenwares and the scholars who recognized the significance of that subject in the history of American ceramics. The authors discuss important publications by Edwin Atlee Barber (1893) and John Spargo (1926) and collections formed by the Young Men's Missionary Society of the Mormon Church, the contribution of Joe Kindig, Jr. (an antique dealer from York, Pennsylvania), Old Salem Museums and Gardens, archaeologist Stanley South, the Waynick Collection, the North Carolina Pottery Center, and author Charles Zugg III who wrote *Turners and Burners* (Chapel Hill: University of North Carolina Press, 1986).

"Slipware from the St. Asaph's Tradition" by Luke Beckerdite, Johanna Brown, and Linda F. Carnes-McNaughton (pp. 14-65, 83 figures [all in color], 73 endnotes) emphasizes the non-Moravian contributions seen in Orange County (now Alamance County), North Carolina from 1727. The chapter also considers "bloodlines and claylines," the development of the St. Astaph's tradition (notably the potters Henry and Solomon Loy and Jacob Albright, Jr.), and techniques of fabrication and decoration of dishes, bowls, and pitchers. Variants such as reddish-orange-, black-, and white-ground ceramics are reviewed as is lead glazing. The authors note that there was a continuity of decoration over time and space, challenging ideas held by folklorist and ceramic scholar Henry Glassie. "The Quaker Ceramic Tradition in Piedmont North Carolina" by Hal E. Pugh and Eleanor Minnock-Pugh (pp. 66-105, 55 figures [46 in color], 152 endnotes). There is a brief background on the Religious Society of Friends (Quakers) begun in 1644 and migration to the colonies in North America by 1698. Community-based potting traditions were organized along family lines and the authors also provide important genealogical charts for the Dennis and Webb families; the former came from West Meath, Ireland to Philadelphia and then New Salem, North Carolina. Thomas and William Dennis founded major potting traditions, and the latter also had apprentices, including George Newby. In addition, Henry Watkins, the Dick Family (1654-1920, and makers of jugs, jars, skillets, and some clay smoking pipes) and the Beeson Family are documented. The Hoggatt/Hockett Family produced bottles, colanders, drain times, and ceramic chests. The excavated David Franklin Hockett kiln in Randolph County is also discussed. There are also genealogies of the Mendenhall and Beard families.

"Solomon Loy: Master Potter of the Carolina Piedmont" by Linda F. Carnes-McNaughton (pp. 106-139, 56 figures [all in color], 50 endnotes). The genealogy of the Loy family, who were of Huguenot ancestry, is traced from 1747 to 1955. Solomon (1806-before 1865) is associated with two early kiln sites in Alamance County (31 Am 191 and 31 AM 192). Excavations at Am 191 are detailed with plans and images that document one updraft and one downdraft kiln. Excavations yielded 1,168 identifiable vessels (jars, bowls, dishes, pitchers, and jugs) from a collection of 16,731 artifacts. Information is also presented about related potters and their workshops (a brother, Joseph Loy (1812-1861) at 31 PR 59; and their father, Henry Loy (1777-18--?) and Jacob Albright, Jr. at 31 AM 278. "The Dennis Family Potters of New Salem, North Carolina" by Hal E. Pugh and Eleanor Minnock-Pugh (pp. 140-167, 46 figures [all in color], 36 endnotes). The Dennis family was Quaker farmer-potters from Chester County, PA and came to Randolph County, NC in 1766. Quakers characteristically built square kilns rather than beehive or bottle-shaped kilns. Excavations at the William Dennis site in New Salem, NC produced slip decorated ceramic dishes and mugs, while Thomas Dennis, a son, made dishes. Distinctive techniques and materials, including clay selections and slips are detailed. "Mineralogical and Geochemical Characterization of Eighteenth-Century Moravian Pottery from North Carolina" by J. Victor Owen and John D. Greenough (pp. 168-187, 12 figures [all in color], 3 tables, 1 appendix, 15 endnotes). The article begins with a brief history of Moravian potters in North Carolina beginning in 1753. Ceramics and clays (n = 37) from

six sites were selected for physicochemical analysis: (numbers of specimens in parentheses): Mount Shepard (7), Solomon and Joseph Loy (4), Bethabara (3), Salem (8), Dennis (8), and Heinrich Schaffner (6). Electron microprobe was employed and XRF used for samples >5 g powder and ICP-OES for samples </=5 g powder. Mineralogical characteristics for ceramic specimens (n = 21) and glazes (n = 8) are documented and illustrated on an MDS plot. Comparisons are made to ceramic samples (n = 12) from Moravian pottery workshops in Bethlehem, PA. These Pennsylvania materials differ significantly from the North Carolina specimens, and the authors suggest that differences in the proportions (relative to clay) and the compositions of tempers are significant factors. An appendix details the samples from both states that were selected for analysis.

"Making North Carolina Earthenware" by Mary Farrell (pp. 188-215, 47 figures [all in color], 6 endnotes). Farrell, a professional potter (Westmoore Pottery) replicates early North Carolina earthenware, primarily the wheelmade forms; there are superb step-by-step color illustrations. She compares these to the Moravian wares, discusses the application of handles, the creation of a distinctive rolled rim, and slip trail decoration. Some comparisons are made to archaeological specimens. "Making a Marbled Slipware Bowl" by Michelle Ericson and Robert Hunter (pp. 216-223, 13 figures [all in color], 5 endnotes). These potters replicate the slipware products of William Rogers at Mount Shepard, 1793-1800, notably in deep-sided bowls and compared to archaeological examples. The kiln site in Yorktown, VA is also mentioned. "A Recently Discovered Moravian Turtle Bottle" by Johanna Brown (pp. 224-228, 2 figures [in color], 2 endnotes). This "iconic" earthenware press molded form was made in Salem, NC, 1806-1820, and had a lead glaze. "A Unique Slipware Barrel and Related Dish: A Recent Find from the St. Asaph's Tradition" by Luke Beckerdite (pp. 227-228, 2 figures [in color], 2 endnotes). The author reports the only known example of a barrel form with slip trail decoration found in North Carolina. It was made by Moravian potters ca. 1790-1820 and was lead glazed. "The 'Hannah' Dish" by Hal G. Pugh and Eleanor Minnock-Pugh (pp. 229-230, 2 figures [in color], 3 endnotes). This is a Dennis product dating 1790—1832 and is a lead glazed earthenware. Lastly, there is a section entitled "Visual Index to *Art in Clay: Masterworks of North Carolina Earthenware*" (pp. 231-244, 160 color illustrations) and "Selected References" (pp. 245-249) that includes 106 entries and seven "Primary Archival Sources." An "Index" (pp. 250-259) is triple-columned and incorporates proper nouns and citations to the figures.

This is another superbly illustrated and informative volume on historical archaeology, ethnohistory, replication studies, and a detailed discussion of the mineralogical and geochemical characterization of 18th century Moravian ceramics from six sites in North Carolina that provides a foundation for future studies, especially with hand-held XRF. Congratulations to the individual authors and editors who have again provided a feast for the eyes and compelling essays.

Ancient Mexican Art at Dumbarton Oaks: Central Highlands, Southwestern Highlands, Gulf Lowlands, Susan Toby Evans (ed.), Pre-Columbian Art at Dumbarton Oaks, Number 3, Washington, DC: Dumbarton Oaks Research Library and Collection, 2010. xxi + 337 pp., 89 color plates, 92 figures, 147 endnotes, references cited; ISBN-10: 0884023451, ISBN-13: 978-0884023456, $70.00, £51.95, €63.00 (hardcover). Susan Toby Evans is Professor of Anthropology at the Pennsylvania State University and with David L. Webster edited *Archaeology of Ancient Mexico and Central America: An Encyclopedia*. (New York: Garland Publishing, 2001). Among her other publications are *Ancient Mexico and Central America: Archaeology and Culture History*, 2nd ed. (London and New York: Thames and Hudson, 2008), *Palaces of the Ancient New World*, edited by Susan Toby Evans and Joanne Pillsbury (Washington, DC: Dumbarton Oaks, 2004); and with David L. Webster and William T. Sanders, *Out of the Past: An Introduction to Archaeology* (Mountain View, CA: Mayfield Publishing Co., 1993).

In 1912 Robert Bliss, a U.S. diplomat living in Paris, began to collect Pre-Columbian pieces a portion of which comprise the collection reported in this handsomely illustrated volume which contains comprehensive discussions about the objects, their provenance, descriptions, and measurements. This volume, the third in a series of catalogues of Pre-Columbian art at Dumbarton Oaks, documents the collection of Aztec, Mixtec, Zapotec, Teotihuacan, and Classic Veracruz sculpture, jewelry, and painting. Four leading scholars present essays on the ancient art and archaeology of Mexico's Central Highlands, Southwestern Highlands, and Gulf Lowlands as well as extensive catalogue entries of over objects of jade, shell, fine ceramics, wood, and other materials. The color plates are distributed as follows: Preclassic (Plates 1-3), Teotihuacan (Plates 4-16), Aztecs (Plates 17-26), Aztec and Mixtec Jewelry (Plates 27-44), Possessions (Plates 45-71), and Gulf Lowlands (Plates 72-89). Comparative illustrations and diagrams are presented as black-and-white figures. There is a list of "Abbreviations" (p. 279) and the "References Cited" includes 623 entries, while the 15-page double column "Index" incorporated topics, proper nouns, and citations to the plates. Evans authored the first four chapters in this volume: "Ancient Mexican Art at Dumbarton Oaks" (pp. 1-2); "Preclassic Period Central Highlands of Mexico" (pp. 3-10, 3 plates, 2 figures); "Teotihuacan: Art from the City Where Time Began" (pp. 11-56, 12 plates, 8 figures); "Aztecs: Art from the Great Empire" (pp. 57-86, 10 plates, 3 figures). "Aztec and Mixtec Jewelry and Ornaments" is authored by Jeffrey Quilter (Peabody Museum, Harvard University) and Susan Toby Evans (pp. 87-126, 18 plates, 2 figures); "Valued Possessions: Materiality and Aesthetics in Western and Southern Mesoamerica" by Javier Urcid (Brandeis University) (pp. 127-220, 23 plates, 59 figures); and "Art of the Gulf Lowlands: The Classic Veracruz Florescence and Postclassic Huastec Apogee" by S. Jeffrey Wilkerson (Institute for Cultural Ecology in the Tropics, Veracruz, Mexico) (pp. 221-278, 18 plates, 14 figures).

Thirteen of the 89 objects are ceramic and I shall only review these pieces; the ceramics objects date to the Preclassic (Plates 1-3) all figurines; Teotihuacan vessels (Plates 6-11);

Possessions (Plates 46, 48); and Gulf Lowlands (Plates 73, 74). Two Tlatilco figurines, Middle Preclassic period, 1500-500 BC (pp. 6-8, Plates 1-2, Fig. 2) depict an entire solid figurine of a nude young woman and a two-faced head from a solid figurine; both are Type D with traces of paint and were gifts of Samuel Lothrop in 1953. A plan of Burial 27 from the Tlatilco site is included. There is also a Chupícuaro figurine, Late Preclassic period, 500 BC-AD 200 (p. 9, Plate 3), the red, black, and yellow polychrome nude female figurine in a West Mexican style, likely a grave good; a gift of Alan Sawyer in 1961.

The six subsequent vessels are clustered on the basis of decoration and periodization. Jar with Lid, Classic Teotihuacan period, AD 200-750 (pp. 27-29, Plate 6a-b, Fig. 6): a brown ware fresco-painted (red, white, green, and black) cylindrical vase with hollow openwork rectilinear tripod supports and a corresponding lid with flared knob handle, heavily restored; purchased from Earl Stendahl in 1954. The designs are similar to those found on Teotihuacan wall murals. Bowl, Classic Teotihuacan period, AD 200-750 (pp. 30-33, Plate 7a-g): an orange ware fresco- painted (red, green, yellow, and black) flat-bottomed bowl with a decoration that depicts a Teotihuacan Goddess, reptilian eyes, and geometric decorations. All surfaces except the exterior bottom are decorated but the fresco has faded and the artifact has been restored; obtained before 1957. Jar, Classic Teotihuacan period AD 200-750 (pp. 34-36, Plate 8a-b, Fig. 7): a brown ware fresco-painted (white, green, red, yellow, and black) cylindrical vase with hollow rectilinear openwork tripod supports; purchased from Earl Stendahl. The designs include masked human figures, a mirror, and darts. Jar, Classic Teotihuacan period AD 200-750 (pp. 37-39, Plate 9a-b, Fig. 8): a brown ware ceramic fresco-painted (green, yellow, white, red, and black) cylindrical vase with solid tripod supports (replaced); purchased from Earl Stendahl. The designs include masked figures, scrolls, and wing-shaped banners. Jar, Classic Teotihuacan period AD 200-750 (pp. 40-42, Plate 10a-b, Fig. 9): an orange ware ceramic fresco-painted (green, yellow, white, red, and black) cylindrical vase with basal adornos (bas-relief human heads) and solid tripod supports; purchased from Earl Stendahl. The designs include a frontal animal face with claws. Jar, Classic Teotihuacan period AD 200-750 (pp. 43-44, Plate 11, Fig. 10): a brown ware with two distinct decorations -- diagonal friezes in plano relief curvilinear on a plain background and fresco-painted (green, white, and black) decoration on a cylindrical vase with hollow rectilinear openwork tripod support; purchased from Earl Stendahl. The designs include a probable animal snout. The narratives do not mention that the orange ware vessel depicted in Plate 10 is "Thin Orange" (specifically Alpha Thin Orange), a ceramic manufactured in the Rio Carnero area of Puebla, Mexico and imported into Teotihuacan. See Charles C. Kolb, "The Thin Orange Pottery of Central Mexico," *Miscellaneous Papers in Anthropology*, William T. Sanders (ed.), University Park: Pennsylvania State University, Occasional Papers in Anthropology 8:309-377 (1974); "Commercial Aspects of Classic Teotihuacan Period 'Thin Orange' Wares," *Research in Economic Anthropology, Supplement 2: Economic Aspects of Prehistoric Highland Mexico,* Barry L. Isaac (ed.). Greenwich, CT: JAI Press, 155-205 (1986); and "Analyses of Archaeological Ceramics from Classic Period Teotihuacan, Mexico, AD 150-750," *Materials Research in Art and Archaeology, V*, Pamela B. Vandiver, James Druzik, et al. (eds.), Pittsburgh, PA: Materials Research Society, Symposium Proceedings Vol. 462:247-262. In addition, the important work of Cynthia Conides on fresco painted ceramics from Teotihuacan is not cited, but her detailed analysis covers the six vessels discussed (Plates 7-11), viz. Cynthia A. Conides, *The Stuccoed and Painted Ceramics from Teotihuacan, Mexico: A Study of Authorship and Function of Works of Art from an Ancient Mesoamerican City*, unpublished Ph.D. dissertation, New York: Columbia University, 2001, 658 pp. Also of relevance is an article published by one of Conides's students: Jessica M. Fletcher, "Stuccoed Tripod Vessels from Teotihuacán: An Examination of Materials and Manufacture," *Journal of the American Institute for Conservation* 41:139-154 (2001).

The next two artifacts are described in detail by Javier Urcid. Ceramic Effigy Vessel with Man and Deer, possibly Late to Terminal Preclassic period, 200 BC-AD 350 (pp. 134-139, Plate 46, Figs. 18-22): a polished and burnished brown ceramic depicting a semi-kneeling male "hunter" lifting a deer on his back; the head of the deer and the head and legs of the human are hollow and connected to the vessel interior; purchased from Earl Stendahl in 1944. Urcid infers that the deer is live rather than dead and that the container was likely used to store some solid material rather than a liquid; purchased from John Stokes in 1960. Other illustrations show the importance of deer in Mesoamerican culture (seen in a Yucatecan Maya plate and vase, and in the Codex Madrid). Ceramic Effigy Vessel of a Face with Open Mouth, Late to Terminal Preclassic period, 200 BC-AD 200 (pp. 144-146, Plate 48, Figs. 27-28): a two-chambered polished, burnished, and incised brown tripod supported vessel with an open mouth and a second opening in the forehead. The openings are separated by a slab partition and the face suggests the depiction of a Xipe Totec figure and likely connections to the Totonac culture of Veracruz.

The final two ceramic pieces are described by Jeff Wilkerson. Ceramic Head, Late Classic period, AD 600-900 (pp. 230-232, Plate 73): a fragment from a large, probably monumental fired clay figure depicting a deceased human head in a zoomorphic helmet; purchased from Helmut de Terra in 1952 (formerly in the collection of William Spratling). Wilkerson attributes the piece "probably" to the Late Classic of the Gulf Coast while other scholars have suggested origins in the Gulf Coast Remojadas culture of Terminal Preclassic to Early Classic. The artifact is fully-fired and has a sand temper paste. Fragment of an Incense Burner, Early Classic period, AD 300-600 (pp. 233-235, Plate 74): attributed to the Liros site near Tres Zapotes in the south-central Gulf Lowlands, the artifact was acquired ca. 1963. A human face and headdress (with earspools, beaded necklace, and feathered panache), and hands and arms are depicted and likely represent the Old God or Old Fire God (Huehueteotl to the later Aztecs) and there are traces of white slip.

This catalogue of the Dumbarton Oaks Pre-Columbian Collection is a significant reference for scholars and students, as well as an attractive volume for admirers of Pre-Columbian art. There are important contributions by Javier Urcid on the

fabrication of ear flares (pp. 147-149), mosaics (pp. 180-190), and the fabrication of stone vessels (pp. 191-209), as well as references to iconography throughout the volume. Scientific analyses are meager but noted above in this review.

Online Resources

Meaghan Peuramaki-Brown, ***The Chaîne Opératoire of Ceramic Manufacture and Production: Preliminary Analysis through Ceramic Petrography at Rancho del Rio, Valle de Cacaulapa, Santa Barbara District, Honduras***. MA thesis in Artefact Studies. University College London, London. (2004). http://www.wayeb.org/download/theses/peuramaki-brown_2004.pdf

Alexandre Livingstone Smith, ***Chaîne opératoire de la poterie: Références ethnographiques, analyses et reconstitions***. Thèse présentée à Université Libre de Bruxelles Faculté. Tervuren, Belgium. Musée Royal de l'Afrique centrale, Publications digitales. (2007). http://www.africamuseum.be/publications/publications/poterie.pdf

Hans Barnard, ***Eastern Desert Ware: Traces of the Inhabitants of the Eastern Deserts in Egypt and Sudan during the 4th-6th Centuries CE***. Unpublished Ph.D. dissertation. Faculty of Archaeology, Universiteit Leiden, Leiden. (2008). https://openaccess.leidenuniv.nl/handle/1887/12929 .

Sarah Ginn Peelo, ***Creating Community in Spanish California: An Investigation of California Plainwares.*** Unpublished Ph.D. dissertation. Department of Anthropology, University of California Santa Cruz, Santa Cruz, CA. (2009). http://academia.edu.documents.s3.amazonaws.com/782098/Ginn_Dissertation.pdf

Mary F. Owenby***, Canaanite Jars from Memphis as Evidence for Trade and Political Relationships in the Middle Bronze Age***. Unpublished Ph.D. dissertation. Department of Archaeology, University of Cambridge, Cambridge, UK. (2010). http://www.dspace.cam.ac.uk/handle/1810/226319?mode=full&submit_simple=Show+full+item+record URI http://www.dspace.cam.ac.uk/handle/1810/226319

Online ***Conservación y Restauración del Material Arqueológico Subacuático***. Carmelo Fernández Ibáñez (Museum of Palencia, Spain) reported in December 2010 that the Ministry of Culture has published a PDF of the monograph *Conservación y Restauración del Material Arqueológico Subacuático* [*Conservation and Restoration of Underwater Archaeological Material*] (2003). It can be downloaded from the website of the National Museum of Underwater Archaeology: http://museoarqua.mcu.es/servicios/publicaciones/publicaciones_museo/index Carmelo also reminded readers that "this is the only handbook on the topic in our country and has been out of print for several years." I have provided complete citations below to the actual monograph; among the 22 chapters in this 460 page volume are separate chapters on ceramics and glass. The entire volume is in Spanish but I found that it is more readily accessed at the following URL: http://museoarqua.mcu.es/web/uploads/ficheros/monte_buciero.pdfnot (accessed December 2010). Citation: *Conservación y Restauración del Material Arqueológico Subacuático*: *Montte Buciierro 9: La conservación del material arqueológico subacuático*, Excmo. Ayuntamiento de Santoña, Comisión de Cultura, Casa de Cultura de Santoña, 2003. ISSN 1138-9680. "Las sales y su incidencia en la conservación de la cerámica arqueológica" (pp. 303-325) by Carmelo Fernández Ibáñez (Museo de Palencia. Plaza del Cordón s/n, 34001 Palencia), email correspondencia: carmelofdez@delfin.retecal.es "Deterioro de vidrios en medio submarino" (pp. 327-350) by Noemí Carmona Tejero (Fundación Centro Nacional del Vidrio. Real Fábrica de Cristales, Pº Pocillo 1, 40100 La Granja de San Ildefonso (Segovia); Manuel García Heras (CENIM, Consejo Superior de Investigaciones Científicas, Avda. Gregorio del Amo 8, 28040 Madrid); Cristina Gil Puente (Fundación Centro Nacional del Vidrio. Real Fábrica de Cristales, Pº Pocillo 1, 40100 La Granja de San Ildefonso (Segovia); and Mª Ángeles Villegas Broncano (CENIM, Consejo Superior de Investigaciones Científicas Avda. Gregorio del Amo 8, 28040 Madrid). Autor responsable de la correspondencia: mavillegas@cenim.csic.es

Pamplin Clay Tobacco Pipes Online Type Collection. Clay tobacco pipes are a common artifact type found in historic Euro-American archaeological sites. These inexpensive and disposable items were generally manufactured, used, and discarded within a very short span of time, and individual styles can often be traced to specific manufacturer and period of production. Therefore, clay pipes can serve as a valuable tool in helping to date a historic archaeological site. A common type produced in the eastern United States in the 18th and 19th centuries has a comparatively large bowl with a short stem into which a longer stem (usually of reed) was inserted. The area of Pamplin, Virginia, is one the localities where this type is known to have been produced in large quantities. Thirty-two pipe types are defined and illustrated on the University of Missouri Anthropology Museum Web site: http://anthromuseum.missouri.edu/minigalleries/pamplinpipes/pamplinpipes.shtml

Previous Meetings

A ***Conference on SEM-EDX*** was held 9-10 September 2010 at the British Museum, London, hosted by the Department of Conservation and Scientific Research at the British Museum in association with Hitachi High Technologies Europe. The conference focused on the application of scanning electron microscopy and microanalysis (SEM-EDX) to the study of materials, manufacturing methods, and deterioration processes of objects from ancient to contemporary cultures. The conference was attended by more than 150 delegates representing 22 countries (including North, Central and South America, China, Japan, Iran and most European countries). There were 28 oral presentations and 56 posters divided into two sessions over the two day meeting. The presentations focused on several areas of study, from broader applications of SEM and microanalysis techniques, to specific case studies,

technological advances and limitations. The conference began with a presentation from Alexander Ball (Natural History Museum, UK) entitled "How 'non-destructive' is Variable Pressure SEM?" in which he introduced basic concepts of variable pressure SEM focusing on the alterations caused by the technique due to the effects of rapid decompression, beam interactions between the samples and imaging gas and the contamination from the vacuum system. These effects can result in cracking, contaminations, dehydration, radiation damages, etc. This was an alert call, particularly directed to the recent possibilities of analyzing entire objects, since modern equipment have larger vacuum chambers. The first session ended with two presentations on the study of parchment biodegradation and on the study of glass beads from urns found in 1970 in excavations in Carthage, followed by the first poster session. The second session began with a practical approach on the use of SEM in the study of surface materials at high magnification. Ineke Joosten and Luc Megens (Netherlands Institute for Cultural Heritage, Holland) focused on the parameters that could influence the image such as scan rotation, magnification, beam voltage, type of detector and pressure in the vacuum chamber. "The Iron Age Snettisham torc hoard: technological insights revealed by SEM" by Jody Joy, Caroline Cartwright, Nigel Meeks, Duncan Hook, and Aude Mongiatti (British Museum) considered the application of SEM to the study of the organic cores from the Iron Age Snettisham (Norfolk) torc hoard, from ca. 70 BCE. The study added important new information regarding the manufacture of these objects. Another session was on the study of the Bedford Lemere Collection, particularly the deterioration of glass plate negatives from mid to late 19th century.

Contributions to ceramics included a paper titled "The investigation into the raw materials used in the production of Chinese porcelain and stoneware bodies" by Michael Tite (Research Laboratory for Archaeology and the History of Art, UK), Ian Freestone (Cardiff University, UK), and Nigel Wood (University of Westminster, UK), and six posters: "Iron Age painted pottery from Eastern Central Italy, the Marches region, Italy: Chemical and mineralogical characterisation by X-ray absorption spectroscopy and by SEM/EDX" by Giovanna Bergonzi (Dipartimento di Scienze Archeologiche e Storiche, Università degli Studi di Macerata, Italy) and Eleonora Paris (Dipartimento di Scienze della Terra, Italy); "Keeping your temperature under control: an SEM study of the anatomical changes to Fabaceae wood from traditional kilns in Pernambuco, north-east Brazil" by Caroline Cartwright (British Museum), Peter Gasson and Claudia Luizon Dias Leme, (Kew Gardens, UK), and Chris Jones (Hitachi, UK); "Characterisation and attribution of 18th-century Meissen porcelain using handheld X-ray fluorescence (XRF) supported by variable-pressure scanning electron microscopy (VPSEM-EDX) and conventional XRF" by Kelly Domoney and Andrew Shortland (Cranfield University, UK); "Characterization of the cracking system in 17-18th century Portuguese Azulejos by SEM" by João Manuel Mimoso and António Mimoso Santos Silva (Laboratório Nacional de Engenharia Civil, Portugal) and Susana Coentro (Universidade Nova de Lisboa, Portugal); "SEM and optical microscopic study of gilded tiles from Darb-e-Imam Tomb in Isfahan (Iran)" by Moslem Mish Mastnehi and Hamid Reza Chaman (Zabol University, Iran) and Muhamad Mortazavi (Art University of Isfahan, Iran); "Scanning Electron Microscopy and ceramic technology: the study of metalworking ceramics from late prehistoric Scotland" by Daniel Sahlén (University of Glasgow and National Museums Scotland, UK); and "Scanning electron microscope investigation of the Nuzi 'frits'" by Andrew Shortland (Cranfield University, UK), Katherine Eremin (Harvard Art Museum, USA), Susanna Kirk (National Museums Scotland, UK), Marc Walton (Getty Conservation Institute, USA), and Patrick Degryse (Katholieke Universiteit Leuven, Belgium). The conference proceedings are to be published by Archetype Publications in association with the British Museum.

International Workshop: Hellenistic Ceramics in Anatolia (4th to 1st Cent. B.C.) was held 12-14 October 2010 in Izmir Turkey under the auspices of The French Institute of Izmir/Institut Française d'Izmir/ Izmir Fransiz Kultur Merkezi, email: hellenistic2010@gmail.com. Following introductory talks in Session 1, there was a visit of the Department of Archaeology and The Museum of History and Art of Izmir/Musée d'Histoire et d Art d Izmir. Session 2: Ionia/Ionie. Aygun Ekin Meric (Deu.) "Metropolis Ana Tanrýca Kult Magarasi'nda Ele Gecen Hellenistik Donem Seramikleri ve Kultsel Islevleri"; Mustafa Bilgin (Pamukkale University, Denizli, Turkey); Nif (Olympos) "Dagý Hellenistik Donem Seramikleriyle Ilgili Ilk Dusunceler"; and Aynur Civelek (Adnan Menderes University, Aydin, Turkey); "Beginning and Development of ESB Tradition: New Observations." Session 3: Aiolis-Mysia/Aiolie-Mysie. Massimo Frasca, Marco Camera, Mario Cottonaro, Valentina Giuffrida, Alessandra Granata, and Ambra Pace (Università di Catania, Italy) (read by Cenker Atila) "Kyme in Aeolis: Hellenistic Ceramics from a Cistern on the South Hill: and Cenker Atila, Aslý Cumalioglu, Ergun LaflI (Deu) "Hellenistic Finds from Myrina in the Museums of Bergama and Izmir." Session 4: Caria-Lycia/Carie-Lycie. Ahmet Kaan Senol (Ege University, Izmir) "Erken Hellenistik Donemde Rhodos Peraiasi and Amphora Uretimi: Yeni Kanýtlar"; Ali Akýn Akyol, Yusuf Kagan Kadioglu (University of Ankara, Turkey) and Ahmet Kaan Senol (Ege University, Izmir) "Preliminary Archaeometrical Studies on the Hellenistic Transport Amphorae from Bybassos"; Cecile Rocheron (Universite Michel de Montaigne Bordeaux 3, France). "Hellenistic Ceramics from the Northern Stoa of Upper Agora in Xanthus"; and Gul Isin, Erkan Dundar, Gulnaz Acar, and Tijen Yucel (Akdeniz University, Antalya, Turkey) "Patara Tepecik Akropolisi Bey Evi Sarnic/Mahzen Buluntulari: 2003-2004 Yillari." Session 5: Pisidia-Cilicia/Pisidie-Cilicie. Ergun Lafli (Deu). "Hellenistic Unguentaria from Cilicia: Re-Considerations"; and Hatice Korsulu (University of Mersin, Turkey) "Nagidos Unguentariumlari." Session 6: Central and Northern Anatolia/Anatolie centrale et septentrionale. Ali Akin Akyol, Sahinde Demirci, Asuman Turkmenoglu, and Levent Vardar (Ankara, Turkey) "Archaeometrical Studies on the Surface Pottery from Galatian Hilltop Sites"; Gulseren Kan Sahin, and Ergun Lafli (Deu) "Hellenistic Ceramics from Southwestern Paphlagonia"; and Sevket Donmez (University of Istanbul, Turkey) "Kuzey-Orta Anadolu da Onemli Bir Merkez, Oluz Hoyük. I.O. 5.–1. Yuzyýllar Canak-Comlegi." Session 7:

Greece and Egypt/Grèce et Egypte. Despoina Kondopoulou, E. De Marco, I. Zananiri, Ch. Rathosi (Aristotle University, Thessaloniki, Greece) "Hellenistic Ceramic Workshops in Greece: An Archeomagnetic and Mineralogical Approach"; Sandrine Elaigne (Centre d Etudes Alexandrines, Maison de l'Orient, Lyon, France) "Hellenistic Imports from Asia Minor and Rhodes to Alexandria at the 2nd and 1st Centuries B.C."; Calliope Limneou-Papakosta (Hriac, Athens, Greece) "Stamped Handles from Alexandria, Egypt: Excavations 2007-2010"; Gonca Cankardes-Senol (Ege University, Izmir) "Proto-Cnidian Amphora Exportation to Alexandria/Egypt." Session 8: Closing Session/Cloture and Concluding Remarks and Announcement of a New Project: CVA Izmir.

The American Schools of Oriental Research Annual Meeting was held in Atlanta, Georgia, USA, 17-20 November 2010 and featured 60 sessions with 322 papers. Twenty papers focused on ceramics, particularly clay figurines: Katherine Burke (Cotsen Institute of Archaeology, UCLA) "New Research on Early Islamic and Crusader Ceramics from Jaffa"; Allan Todd (Duke University) "A Vessel's Import: Household Pottery, Ritual Purity Concerns, and Gentiles during the Time of the New Testament"; Oded Lipschits (Tel Aviv University) "Stamped Jar Handles as a Tool for Dating Babylonian and Achaemenid Archaeological Strata in Judah"; S. Thomas Parker (North Carolina State University) "Coarse Ware Pottery of the First through Third Centuries at Roman Aila (Aqaba, Jordan): A Preliminary Analysis"; Elena Zapassky (Tel Aviv University) and Itzhak Benenson (Tel Aviv University) "Ancient Mathematics of Trade: The Torpedo Store-Jars from the Ashkelon Shipwreck"; Schmitt Ruediger (University of Muenster) "Animal Figurines as Ritual Media in Ancient Israel"; Christopher A. Tuttle (American Center of Oriental Research, Jordan) "Nabataean Camels & Horses in Daily Life: The Coroplastic Evidence"; Erin Darby (Duke University) "Seeing Double: Viewing and Re-viewing Judean Pillar Figurines through Modern Eyes"; Adi Erlich (University of Haifa) "The Emergence of Enthroned Females in Hellenistic Terracottas from Israel: Cyprus, Asia Minor, and Canaanite Connections"; P. M. Michele Daviau (Wilfrid Laurier University) "The Coroplastic Traditions of Transjordan"; Rick Hauser (International Institute for Mesopotamian Area Studies) "Reading Figurines: Animal Representations in Terra Cotta from Urkesh, the First Hurrian Capital (2450 B.C.E.)"; Eric Meyers (Duke University) "Ceramics, Coins, and Chronology at Sepphoris"; Boaz Gross (Tel Aviv University) and Yuval Goren (Tel Aviv University) "The Provenience of the Judahite Lion Stamped Jar Handle"; Ezra Marcus (University of Haifa) "The Painted Pottery of the Early Middle Bronze Age from Tel Ifshar, Israel"; Ezra Marcus (University of Haifa) "The Painted Pottery of the Early Middle Bronze Age from Tel Ifshar, Israel"; Marie Hopwood (DePauw University) "The Burnt Pot: An Ethnoarchaeological Experiment"; Susan Ellis (Wayne State University) "Sisters Through Time: Iron Age and Roman Figurines from Abila in Jordan"; Aaron Brody (Pacific School of Religion) "Transjordanian Commerce with Northern Judah in the Iron IIC–Early Persian Period: Ceramic Indicators, Interregional Interaction, and Marketing at Tell en-Nasbeh"; Christopher J. Davey (La Trobe University) "Ancient Near Eastern Pot Bellows: Assessing New Evidence"; and Martha Risser (Trinity College) and Michael Zimmerman (Independent Scholar) "Eastern Terra Sigillata Wares at Caesarea Maritima."

The American Anthropological Association annual meeting held in New Orleans, LA, USA from 17-21 November 2010 included the Ceramic Ecology XXIV symposium detailed in the previous issue of the *SAS Bulletin* 33(4):5-19 (Winter, 2010). There were a few other presentations that focused on ceramics. These included the session entitled "Hot Trade: Frontiers and Friction in Past Economies," organized by Kathryn Franklin and chaired by Shannon Dawdy (both at the University of Chicago) included four papers that featured ceramic materials: "Political Economy at the Edge of Everywhere: Commerce and Conflict in the Late Medieval Armenian Highlands" by Franklin; "Conflictive Trade along the Margins: Value and Power Relations between Foragers, Tribal Swiddeners, and Lowland Polities in the Prehispanic and Recent Philippines" by Laura Junker and Larissa M. Smith (both at the University of Illinois at Chicago); "Predatory Commerce and Economic Disaster: A Cautionary Tale from 17th Century Indian Ocean Economy" by Chapurukha Kusimba (Field Museum of Natural History) and Rahul Oka (University of Notre Dame) – read by Oka; and "Trading Places: Economic Networks in a Caribbean Frontier" by Mark Hauser (Northwestern University). In addition ceramic materials were featured in a poster by Amy Hirshman (West Virginia University) "Volcanic Ash and Tarascan Ceramic Variability: Petrographic Observations" and in a paper by Michelle Rich and David Freidel (both at Southern Methodist University) and F. K. Reilly (Texas State University) "A Royal Burial in Clay: The Figurine Tableau from Burial #39, El Peru-Waka', Peten Guatemala."

The ***Materials Research Society Fall Meeting*** was held from 29 November through 2 December 2010 in Boston, MA, USA. Symposium WW: Materials Issues in Art and Archaeology IX was co-chaired by Pamela B. Vandiver (Department of Materials Science and Engineering, University of Arizona, Tucson, AZ, USA); Chandra L. Reedy (Laboratory for Analysis of Cultural Materials Center for Historic Architecture and Design, University of Delaware, Newark, DE, USA); Weidong Li (Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China); and Jose L. Sil (Instituto de Física, Universidad Nacional Autonoma de México, DF, México). It is anticipated that the *Proceedings* will be published in both print and electronic formats as Volume 1319 of the Materials Research Society. Nine of the 49 papers presented dealt with ceramics, including "Ceramic Thin Coatings: A Review of Current Archaeometric Studies in France and in Europe" by Philippe Sciau and Yoanna Leon, "An Evaluation of Decorative Techniques Used on a Red-Figure Greek Vase Based on Examinations with Reflectance Transformation Imaging (RTI) and Other Surface Analysis Methods" by Paula Artal-Isbrand, Philip Klausmeyer and Winifred Murray, "Linking Milk Processing to Pottery Function in Prehistoric Anatolia: Diachronic and Regional Perspectives" by Hadi Ozbal, Laurens Thissen, Ayla Turkekul-Biyik, Turhan Dogan, Fokke A. Gerritsen and Rana D. Ozbal-Gerritsen, "Non-destructive Raman Characterization of Song Dynasty Guan Celadon in the Palace Museum Collection" by Zhao Lan, "Origin and

Development of Chinese White Porcelain: Take the Gongyi-Baihe Kiln for Example" by Hongjie Luo, Weidong Li, Xiaoke Lu, Zhiwen Zhao and Xinmin Sun, "Microstructure and its Physicochemical Basis for the White Porcelain from Gongyi Kiln of Henan Province in China" by Weidong Li, Hongjie Luo, Xinmin Sun, Xiaoke Lu and Zhiwen Zhao, "Micro Structural and Chemical Study of Terra Sigillata Slips: A Way for Investigating the Diffusion in Gaul of a Roman Technique" by Philippe Sciau, Yoanna Leon and Robert Sablayrolles, "Methods of Faience Manufacture in Antiquity: Investigations of Technological Processes" by Lesley Frame, Donna Bright DeSorda, Yuan-Chi Chiang and Pamela B. Vandiver, and "Pottery Firing Practices at the Advent of the Early Bronze Age and the Social Integration of Crafts and Craftspeople at Kura-Araxes Sites in the Northeastern Caucasus" by Mary Fran Heinsch.

Smithsonian Institution Department of Anthropology Lecture. "Quartz, Carination, and Assyrian Occupation: The 'Palace Ware' from Tel Jemmeh" was the title of a presentation at the Smithsonian Institution Department of Anthropology Lecture Series on 9 December 2010 by Alice Hunt, a doctoral candidate in Archaeological Materials Analysis at the University College, London Institute of Archaeology. Her doctoral work is supervised by Thilo Rehren and Caroline Cartwright, and focuses on material from Iraq, Syria, and the southern Levant associated with the Neo-Assyrian Empire (8^{th}-7^{th} century BCE) and she was at the Smithsonian studying relevant collections. Her research combines archaeological and archaeometric evaluations of Neo-Assyrian "Palace ware" and the semiotic meaning of the ware for both the central polity and peripheral regions of the empire. In her dissertation she details her macroscopic and petrographic examination of the ware and the use of electron beam and radiation methods to establish a *chaîne opératoire*. X-ray radiography is used to evaluate vessel formation, firing and finishing techniques. Scanning electron microscopy with an energy dispersive detector (SEM-EDS) and electron microprobe (EPMA) analyses are employed to examine raw clay processing techniques and refine provenance assignments of these ceramics because Palace ware is extremely difficult to provenance due to the rarity of mineral inclusions (<0.5%).

Hunt's Smithsonian lecture concerned Palace ware from Tel Jemmeh, an archaeological site located in the northwest Negev, excavated by Petrie (1927) and van Beek (1970-1990). Tel Jemmeh has been described in the literature as a Neo-Assyrian military installation and administrative capital. Assyrian style Palace ware ceramics and architectural features are typically cited as evidence of the 7^{th} century BCE occupation. In her PowerPoint presentation she defined the period and the administrative capitals at Nimrud, Nineveh, Assur, and Tel Jemmeh and discussed the attributes of the ware: vessel forms (cups, carinated bowls, and jars), vessel capacities, wall thicknesses, colors (Munsell data), and fabric characteristics (fine-grained alluvial silt, and micro- and meso-size grains, with few mineral inclusions). She differentiated the Tel Jemmeh specimens as having greater amounts of coarser minerals but with a similar mineralogy, and she compared its production technology, social function, and semiotic value with corpora from Nimrud, Nineveh, and Assur. Cathodoluminescence of quartz inclusions in the ceramic raw material is developed as a method for determining geological groups for Palace ware which is not easily provenanced using more traditional methods such as ceramic petrography. She concluded that the Palace ware forms were similar but the fabrics differed from those in the Tigris-Euphrates river basin.

Society for Historical Archaeology: 2011 Conference on Historical and Underwater Archaeology was held in Austin, Texas, USA, 5-9 January 2011. There were two Roundtable Luncheon sessions that concerned ceramics: "Identifying Asian Ceramics' led by Linda Pomper. The roundtable focused on some of the problems in identifying and dating Asian ceramics from various sites as well as questions that concern scholars who study Chinese porcelain. "Please Touch: Pottery Show and Tell" led by Timothy Scarlett. This round table served as a venue to which people brought samples of locally manufactured ceramic material to pass around the table. The primary focus was "show and tell" so each participant was encouraged to bring sample fragments and served as a prelude to paper sessions dedicated to the analysis and interpretation of pottery and ceramic materials. An innovative Forum/Panel "Three-Minute Ceramic Forum: View from the West" was organized by Rebecca Allen, Julia Huddleson, and Kimberly Wooten, and chaired by Allen and held on 6 January. This forum was composed of three-minute papers addressing specific ceramic topics or artifacts. "Abstract: Ceramics are a major building block of archaeological inquiry, and one of the more abundant classes of material culture found in the archaeological record. Professionals and students alike find they have been drawn to the aesthetics, history, and at times the mystery of a particular ceramic artifact. For some it is an unusual or rare piece; for others it is the simplicity of the everyday that intrigues—a literal "wow" moment that drives one to learn more. This session addresses ceramics dating from the 18^{th}-20^{th} centuries that are found in the American West. In a fast-paced format of three sets of five speakers with three-minute papers, presenters will discuss a single ceramic artifact or artifact type, its background, and insights. Open-to-all discussions will follow each set of five papers. At the end, we invite audience members to bring their own ceramics, photos, digital images, or tales for a short show-and-tell." Panelists included Sarah M. Peelo, Richard Carrico, Glenn Farris, Linda J. Hylkema, Kimberly Wooten, Teresita Majewski, Erin Parsons, Stacey Lynn Camp, and Julia Huddleson. See http://www.sha.org/documents/SHA2011%20Preliminary%20Program.pdf for additional information.

The ***2011 Archaeological Institute of American and American Philological Association Joint Annual Meeting*** was held in San Antonio, Texas, 6-9 January 2011. This was the 112th meeting for the AIA and the 142nd meeting for the APA; the AIA Academic Program featured more than 300 speakers with 14 papers on ceramics: http://aia.archaeological.org/webinfo.php?page=10527 . There were three sessions concerning ceramics. Greek Pottery (5 papers): "The Eyes Have It: Targeted Marketing and Athenian Eye Vessels Abroad" by Sheramy D. Bundrick (University of South Florida, St. Petersburg); "The Role of Ruvo di Puglia in

the Trans-Apennine Shipment of Attic Pottery" by Jed M. Thorn (Franklin & Marshall College); "Isolated Heads on South Italian Vases: A New Iconographic Approach" by Keely E. Heuer, (New York University, Institute of Fine Arts); "Kraters and Drinking Practices in Hellenistic Corinth" by Sarah James (University of Texas at Austin); and "Urban Cooking at Azoria in Eastern Crete" by Margaret S. Mook (Iowa State University).

Bronze Age Aegean Ceramic Analysis (5 papers): "Ceramic Production in LBA Thebes: A Summative Assessment based on Recent Fieldwork" by Anastasia Dakouri-Hild (University of Virginia), Malia Johnston (University of Cape Town), and Maury Morgenstein (Geosciences Management International); "The Influence of Glyptic Art on Minoan Larnakes Painting" by Erica Morais Angliker (Zurich University); "Mycenaeanization and Local Traditions on Kos. A Typological and Functional Examination of the Locally-produced Anatolianizing Ceramics from the "Serraglio," Eleona, and Langada" by Arianna Trecarichi (University of Pisa) and Salvatore Vitale (University of Pisa); and "Sponge Spicule Ceramic Fabrics in Minoan and Post-Minoan Crete" by Jennifer Moody (University of Texas at Austin), Jane Francis (Concordia University), and Harriet Robinson (AIA Member at Large).

Colloquium Scientific Analyses of Obsidian and Ceramics (3 papers on ceramics): Papers in Honor of Michael D. Glascock, organized by Robert H. Tykot (University of South Florida) and Hector Neff (California State University Long Beach), with Michael D. Glascock (University of Missouri, Columbia) as discussant. "Obsidian Circulation in Bolivia, Chile, and Argentina" by Martin Giesso (Northeastern Illinois University); "Selective Use of Obsidian Subsources on Mediterranean Islands" by Robert H. Tykot (University of South Florida); "Inter-Regional Trade and the Late Uruk Expansion: Putting the Pieces Together" by Leah Minc (Oregon State University), Geoff Emberling (formerly Oriental Institute of the University of Chicago), and Henry Wright (University of Michigan); "A Comparative Study of Red Slip Pottery from Turkish Sites of Kanligeçit and Küllüoba" by Michael D. Glascock (University of Missouri, Columbia), Mehmet Özdoğan (Turkish Academy of Sciences, Istanbul Üniversitesi), and Namik Aras (Turkish Academy of Sciences, Bahçeşehir Üniversitesi); "Archaeological Science at the Athenian Agora" by Susan I. Rotroff (Washington University in St. Louis); "Archaeometric Research and Art-Historical Scholarship: The Limestone Sculpture Provenience Project" by Garman Harbottle (Stony Brook University), Charles T. Little (The Metropolitan Museum of Art), and Georgia S. Wright (-); and "Absolute Dating of Ceramics by Rehydroxylation" by Hector Neff (California State University Long Beach) and Carl P. Lipo (California State University Long Beach). In addition, there was a separate paper on ceramics: "Experiments with Ceramic Beehives: Varro and Columella were Wrong" by Jane E. Francis (Concordia University).

Pottery Summer School

Archer Martin, Director, Summer School in Roman Pottery, reports that the **American Academy's Howard Comfort FAAR '29 Summer School in Roman Pottery** is accepting applications for its sixth session, to be held from 13 June to 11 July 2011. The program's aim is to introduce the participants to the study of Roman pottery and then for them to apply their knowledge under the director's guidance to a context, which they may elaborate for publication. It is assumed that the participants will have a basic grounding in archaeology but not specifically in pottery studies. Typically the participants are graduate students who have realized the importance of pottery while working on an excavation or with a museum collection and wish to incorporate ceramological data into their research programs. Qualified undergraduates and practicing archaeologists will also be considered. The program is open to all nationalities. For further information see http://www.aarome.org?rt=program&rid=29 and for a 2010 participant's account of her experience of the program see http://www.aarome.org/#rt=blog&rid=258 .

A Good Read

A Passion for the Past: The Odyssey of a Transatlantic Archaeologist by Ivor Noël Hume, Charlottesville and London: University of Virginia Press, 2010. xvii +351 pp., 42 black-and-white illustrations; ISBN 978-0-8139-2977-4, $29.95 (cloth). If any reader teaches a course on the history of archaeology, or is looking for an insider's view on the founding of historical archaeology, or just wants a pleasant and informative read, this autobiographical volume will fit these descriptions. The author ranks along with Pinky, John, and Jim as a pillar in the creation of historical archaeology as a viable discipline. Ivor Noël Hume is the former Director of Colonial Williamsburg's archaeological research program and the author of 16 books, including *The Virginia Adventure* and *Here Lies Virginia* (both reissued by the University of Virginia Press). He also coauthored two volumes with his first wife, Audrey Noël Hume, wrote two volumes of fiction (one of which was *Martin's Hundred* – also reprinted) and he authored three works of fiction and one play. Born into the good life of pre-Depression England, Noël Hume was a child of the 1930s "who had his silver spoon abruptly snatched away" when World War Two began. He recounts a story that begins amid the bombed-out rubble of post-war London and ends on North Carolina's Roanoke Island, where the history of British America began. In this narrative, he weaves personal with the professional; this is the chronicle of a truly extraordinary life steered by coincidence. He endured a period of Dickensian poverty and had aspirations of becoming a playwright but began his archaeological career by collecting antiquities from the shore of the river Thames and, stumbling upon this new passion, becoming an "accidental" archaeologist and meeting his first wife, Audrey. From those beginnings emerged a career that led Noël Hume literally and figuratively into the depths of Roman London and, later, to Virginia's Colonial Williamsburg, where for thirty-five years he directed its department of archaeology. His discovery of nearby Martin's Hundred and its massacred inhabitants is among his best-known achievements but, as the

narrative documents, it was hardly his last, his pursuit of the past taking him to Egypt, Jamaica, Haiti, and to shipwrecks in Bermuda. And he does not hide his disappointment at the loss of the Carter's Grove site and the Rockefeller Archaeology Museum.

ARCHAEOMETALLURGY

Thomas R. Fenn, Associate Editor

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

New Books

Ancient Metals: Microstructure and Metallurgy, Volume 1, by David A. Scott, CSP: Conservation Science Press, Ware, England, and Los Angeles, CA, 2010, 351 p., full color throughout, ISBN: 9780982933800; 0982933800, $58.00 US (cloth). Metallography is the scientific examination of metals using the optical microscope to study grains, phases, the distribution of different components and how they affect casting and working properties of the metals themselves. The principal focus of this book is on the alloys of copper with the elements silver, tin, zinc, nickel, antimony and arsenic. Drawing on a number of detailed case studies, the author places some of this metallurgical knowledge on a cultural basis from societies in both the Old World and the New. This is the first volume in a multi-volume series on metallographic studies which will include in later volumes, investigation of corrosion and authenticity, iron, steels and cast iron, gold and gilding and metallurgical studies from ancient Ecuador and Colombia. The second volume in this series is scheduled to be printed in 2012. To order a copy, please contact Dr. David A. Scott <dascott@ucla.edu>. Payments can be sent to the author: Dr. David A. Scott, 2054 Walgrove Avenue, Los Angeles, California, 90066, USA.

***Mining and Metallurgy in Ancient Perú, GSA Special Paper* 467**, by Georg Petersen G., translated by William E. Brooks, Geological Society of America, Boulder, Colo., 2010, xxi+90 p., illus. (some color), ISBN: 9780813724676 (paper); 0813724678, $28.00 (GSA Member)/$40.00 (Non-GSA Member) in US, €30.50 in Europe, ~£26 in UK. This book represents a recent translation of *Minería y Metalurgia en el Antigua Perú*, Arqueológicas 12, published in 1970 by the Institute of Anthropological Investigations, Pueblo Libre, Lima, Perú. In 2009, Perú was the world's leading producer of silver, the world's second leading producer of copper, and the leading producer of gold in Latin America. However, Perú's role as a producer of metals extends for centuries into the past. Mining and Metallurgy in Ancient Perú documents the use of minerals, metals, and mineral resources in ancient Perú for pigments, industrial stone, and the aesthetic and artistic use of gold, silver, copper, and platinum. The tools and methods used for mining, as well as ancient mining sites in the extensive Andean region, are described here, as are metallurgical techniques and fabrication procedures. The volume also provides forward-thinking analytical data on metals, artifacts, and alloys. A detailed pyrite mirror, featured on the cover of the book, symbolizes the spectacular workmanship and blending of utilitarian craft and mineral resources in ancient Perú. Following several introductory sections, the contents consist of: Minerals, Gems, and Pigments; Ornamental and Industrial Stone; Metals; Mining; The Chuquicamata Mummy, an Ancient Mining Accident; Inca Mining in the Altiplano; Metallurgy; Alloys; Metalworking and Fabrication; and, Mirrors. The book concludes with a selected bibliography organized by various categories. More information on this publication can be found at: http://specialpapers.gsapubs.org/content/467.

Iron Ancestors: Kris Sajen, Kris Majapahit and Related Objects, by Theo Alkema, Ben Grishaaver, Karel Sirag, C. Zwartenkot Art Books, Leiden, the Netherlands, 2010, 222 p., 288 col. phot., 27 b/w drawings, ISBN: 9789054500117; 9054500115, €60 (cloth). This important monograph focuses on the all-iron kris with an ancestor as its hilt, amulets rather than weapons. This first ever publication on the subject entirely devoted to these time-honoured heirlooms is based on the collection of the National Museum of Ethnology (Leiden, the Netherlands) and on a private collection of great quality and quantity. Theo Alkema's 'Iron Ancestors' is enhanced with 288 illustrations by top photographer Ben Grishaaver and with 27 exquisite drawings by the artist Karel Sirag. Information on this book can be found at: http://www.ethnographicartbooks.com/Html_web_store/html_web_store_vvolken.cgi?page=./catalogs/c00446.htm&cart_id=6239945.56708.

Mining in European History and its Impact on Environment and Human Societies: Proceedings for the 1st Mining in European History-Conference of the SFB-HiMAT, 12.-15. November 2009, Innsbruck, edited by Peter Anreiter, *et al.*, Innsbruck University Press, Innsbruck, 2010, 467 p., many illustrations and maps, ISBN: 3902719699; 9783902719690, €29.95 (paper). The "Mining in European History-Conference", held in November 2009 and hosted by the SFB HiMAT of the University of Innsbruck, brought together scientists from various disciplines involved with prehistoric and historic mining on an European scale for the first time. More than 150 scientists from 15 countries discussed in an integrative way the archaeological, paleoecological, geological, geographical, historical, ethnological, linguistic and technical aspects of ancient mining activities. This conference transcript provides an overview of the recent state of the art in mining research all over Europe by uniting new findings from interdisciplinary research within one volume. The conference transcript consists of 60 articles (471 pages) on mining activities and traces of ancient mining, including aspects of societies, landscapes, settlements, palaeoecology, trade, subsistence, promary production, environment, lenguage and culture. Furthermore, one session deals with documentation of mining-related excavations and data management.

After a short "Preface", the book is divided into nine sections based on the original conference sessions: Session I, Society and Landscape in Prehistory; Session II, Mining and Settlement

in Pre-Modern Times; Session III, The Palaeo-Ecology of Prehistoric Ore Mining; Session IV, From Ore to Trade; Session V, Subsistence and Nutrition in Mining Areas; Session VI, Prehistoric Mining – Primary Production and Reflection in Landscape; Session VII, Mining and Archaeology: The Early History to Early Modern Mining; Session VIII, Language and Culture. Conference proceedings information can be found at: http://www.uibk.ac.at/himat/publications/publications-2010/meh-proceedings/meh-proceedings.html.en.

Dawn of the Metal Age: Technology and Society during the Levantine Chalcolithic, by Jonathan M. Golden, Equinox, London, 2010, 256 p., 47 b&w figs., ISBN: 1904768997; 9781904768999, £70.00 (cloth), $100.00. By midway through the fifth millennium BCE rapid social change was underway in the southern Levant. One critical dimension of this cultural revolution was a series of profound technological breakthroughs, bringing the dawn of the age of metals. Archaeologists working in the region have discovered a host of sites dating to the Chalcolithic Period (4700-3500 BCE) with material culture reflecting the production and use of copper. This survey will take the reader from the copper mines of the Aravah in Jordan and Israel where the ore was acquired, to the villages of the northern Negev such as Shiqmim, where copper was produced in household workshops, and the Beer Sheva sites, where several large workshops sprung up, and where a variety of finished copper goods saw limited circulation. We will also explore a series of cave burials, such as the hidden tomb at Nahal Qanah, where a range of sumptuous luxury goods and exotic "imports" including copper scepters and the earliest gold in the region were buried with the elite members of Chalcolithic society. Thus, in addition to reconstructing ancient technology, the archaeological evidence also affords us the opportunity to study the changing economic, social and political environment of the time. For example, there is early evidence for specialized craftsmanship, the exchange of luxury goods, and far-flung trade relations. The evidence also indicates that some members of society had greater access to certain goods than others, and that some individuals may have harnessed the symbolic power of the new-founded metals industry in order to promote their own political power. Following the Acknowledgments and Preface, chapters consisted of: The Dawn of the Metal Age; Leaving the Neolithic; The Northern Negev Copper Boom; Elite Tombs of the Chalcolithic; Cornets and Copper--A Metallurgical Perspective on Chalcolithic Chronology; A Model for Specialized Craft Production; Copper Production at Abu Matar; The Seduction of the Industry; Technology and Society; Production and Social Organization during the Chalcolithic; and, Conclusion. General and purchasing information about this publication can be found at the following link: http://www.equinoxpub.com/equinox/books/showbook.asp?bkid=73&keyword=Dawn%20of%20the%20metal%20age.

Die Geschichte des Bergbaus in Tirol und seinen angrenzenden Gebieten : Proceedings zum 3. Milestone-Meeting des SFB-HiMAT vom 23.-26.10.2008 in Silbertal, edited by Klaus Oeggl and Mario Prast, Innsbruck University Press, Innsbruck, 2009, 359 p., b&w/color illus., ISBN: 3902719281; 9783902719287 (paper). This publication presents proceedings of the 3rd Milestone Meeting "The History of Mining Activities in the Tyrol and Adjacent Areas", held October 23-26, 2008, in Silberthal, and hosted by the of the Special Research Area (SFB) HiMAT of the University of Innsbruck, Austria. While the overwhelming majority of papers published from this meeting were focused on mining in the Tyrol region and environs, papers covered similar topics in other parts of Europe and the world. Most papers included some relevance to archaeometallurgy. Following a brief Foreword by one of the editors, papers were organized by presentations sessions from the meetings. Chapters are divided into the following groups: Session 1, Impulsreferate; Session 2, Bergbau in der Key-Area Schwaz I; Session 3, Archäometallurgie, Mineralogie & Geochemie; Session 4, Bergbau in den Key-Areas Montafon und Mitterberg; Session 5, Subsistence and Nutrition in Mining Areas; and Session 6, Bergbau in der Key-Area Schwaz 2. A PDF of the table of contents can be found at the following link: http://www.uibk.ac.at/himat/events/meh/tagungsfuehrer-meh.pdf.

New Book Chapters/Articles

From the *7th International Conference of the Balkan Physical Union: Organized by the Hellenic Physical Society with the Cooperation of the Physics Departments of Greek Universities, Alexandroupolis, Greece, 9-13 September 2009*, edited by Angelos Angelopoulos and Takis Fildisis, American Institute of Physics, Melville, NY, 2010, comes "**Archaeometallurgical Characterization of Some Ancient Copper and Bronze Artifacts from Albania**" (T. Dilo, N. Civici, F. Stamati, O. Cakaj ; pp. 985-990), while from *Von Maikop bis Trialeti. Gewinnung und Verbreitung von Metallen und Obsidian in Kaukasien im 4.-2. Jt. v. Chr. Beiträge des Internationalen Symposiums in Berlin vom 1.-3. Juni 2006*, edited by S. Hansen, A. Hauptmann, I. Motzenbäcker, and E. Pernicka, Habelt Verlag, Bonn, 2010, comes "**Geochemical characterisation of Armenian Early Bronze Age metal artefacts and their relation to copper ores**" (K. Meliksetian, E. Pernicka; pp. 41-58), and from *The Lost World of Old Europe: The Danube Valley, 5000-3500 BC*, edited by David W. Anthony and Jennifer Chi, The Institute for the Study of the Ancient World at New York University and Princeton University Press, Princeton, N.J. and Oxford, 2010, comes "**The Invention of Copper Metallurgy and the Copper Age of Old Europe**" (E. Pernicka, D. W. Anthony; pp. 162-177).

From *A Timeless Vale: Archaeology and Related Studies of the Jordan Valley, in Honour of Gerrit van der Kooij on the Occasion of His Sixty-Fifth Birthday*, by E. Kaptijn and L. P. Petit, Leiden University Press, 2009, comes a chapter entitled "**Of Slag and Scales, Micro-Stratigraphy and Micro-Magnetic Material at Metallurgical Excavations**" (Harald A. Veldhuijzen ; pp. 163-174), while from *Montafon 2. Besiedlung - Bergbau - Relikte: von der Steinzeit bis zum Ende des Mittelalters*, edited by Robert Rollinger, Schruns Stand Montafon, 2009, comes "**Der prähistorische Bergbau in Europa und archäometallurgische Untersuchungen im Montafon**" (E. Pernicka; pp. 9-22)., and from *Modesty and Patience: Archaeological Studies and Memories in Honour of*

Nabil Qadi 'Abu Salim', edited by Hans-Georg K. Gebel, Zeidan Kafafi, and Omar Al-Ghul, Ex Oriente e.V., Berlin, and Yarmouk University, Irbid, Jordan, 2009, comes a chapter entitled "**Hip to be Square: How *tuyères* Shaped the Hammeh Iron Production**" (Harald A. Veldhuijzen ; pp. 114-125).

From *New Technologies for Archaeology: Multidisciplinary Investigations in Palpa and Nasca, Peru*, edited by Markus Reindel and Günther A. Wagner, Springer, Berlin, 2009, come two chapters entitled "**Gold in Southern Peru? Perspectives of Research into Mining Archaeology**" (Thomas Stöllner; pp. 393-407), and "**Fingerprints in Gold**" (Sandra Schlosser, Robert Kovacs, Ernst Pernicka, Detlef Günther, Michael Tellenbach; pp. 409-436), while from *Tsodilo Hills: Copper Bracelet of the Kalahari*, edited by Alec Campbell, Larry Robbins, and Michael Taylor, Michigan State University Press, East Lansing, MI, 2010, come two chapters pertaining to Iron Age metallurgy in Botswana, southern Africa. These are "**Chapter 5, Early Villages at Tsodilo: The Introduction of Livestock, Crops, and Metalworking**" (Edwin N. Wilmsen, James R. Dendow; pp. 72-81), and "**Chapter 6, The Prehistoric Mining of Specularite**" (Mike Murphy, Larry Robbins, Alec Campbell; pp. 82-93).

From *Archaeometry* (2011, Vol. 53, No. 1) comes "**Southeast Asia's First Isotopically Defined Prehistoric Copper Production System: When Did Extractive Metallurgy Begin in the Khao Wong Prachan Valley of Central Thailand?**" (T. O. Pryce, A. M. Pollard, M. Martinón-Torres, V. C. Pigott, E. Pernicka ; pp. 146-163), while from *Economic History Society* (2011, Vol. 64, No. 1) comes "**The choice of fuel in the eighteenth-century iron industry: the Coalbrookdale accounts reconsidered**" (Peter King; pp. 132-156). From *Earth and Planetary Science Letters* (2011, Vol. 301, Nos. 1-2) comes "**Geomagnetic field intensity: How high can it get? How fast can it change? Constraints from Iron Age copper slag**" (Ron Shaar, Erez Ben-Yosef, Hagai Ron, Lisa Tauxe, Amotz Agnon, Ronit Kessel ; pp. 297-306). Also from *Earth and Planetary Science Letters* (2010, Vol. 290, Nos. 1-2) comes "**Testing the accuracy of absolute intensity estimates of the ancient geomagentic field using copper slag material**" (Ron Shaar, Hagai Ron, Lisa Tauxe, Ronit Kessel, Amotz Agnon, Erez Ben-Yosef, Joshua M. Feinberg ; pp. 201-213).

From *Historical Metallurgy* (2010, Vol. 44, No. 1), come several archaeometallurgical papers. These consist of "**The Oedt sword: a note on brass and fire-gilding in the European Bronze Age**" (Roland Schwab, Frank Willer, Dietmar Meinel, Michael Schmauder, Ernst Pernicka ; pp. 1-9), "**Metallographic investigation and experimental replication of an Etruscan bronze mirror**" (Paolo Piccardo, Roberta Amendola, Alessandro Ervas ; pp. 10-14), "**The possible water-powered bloomery at Goscote (Rushall), Walsall, West Midlands**" (David Dungworth ; pp. 15-20), "**Iron in the building of gothic churches: its role, origins and production using evidence from Rouen and Troyes**" (Maxime L'Héritier, Philippe Dillmann, Paul Benoit ; pp. 21-35), "**Identification of a slag-draining bloomery furnace in the Mandara Mountains (Cameroon)**" (Nicholas David ; pp. 36-47), and "**Metal to mould: alloy identification in experimental casting moulds**" (Thérèse Kearns, Marcos Martinón-Torres, Thilo Rehren ; pp. 48-58), while in 2010, from *Der Anschnitt* (Vol. 62, No. 3), comes "**Bergmannsgräber im bronzezeitlichen Zinnrevier von Askaraly, Ostkasachstan?**" (Thomas Stöllner, Zeinolla Samaschev, Sergej Berdenov, Jan Cierny, Jennifer Garner, Alexander Gorelik, Galina A. Kusch; pp. 86-98), and also (from Vol. 62, Nos. 1-2) "**Das Bergbau- und Verhüttungszentrum der Bronzezeit in Michailo-Ovsânka an der mittleren Wolga. Die ersten Forschungsergebnisse und Problemstellungen**" (Juri I. Kolev, Jennifer Garner; pp. 2-19). Also from *Der Anschnitt* (2009, Vol. 61, No. 3) comes "**Holznutzung und Bergbau im Schwarzwald während des Mittelalters und der Neuzeit**" (Martin Straßburger, Willy Tegel; pp. 182-192).

From the *Journal of Anthropological Archaeology* (2010, Vol. 29, No. 3) comes "**Explaining the evolution of ironmaking recipes – An example from northwest Wales**" (Michael F. Charlton, Peter Crew, Thilo Rehren, Stephen J. Shennan ; pp. 352-367), while from *Archaeological and Anthropological Sciences* (2010, Vol. 2, No. 4) comes "**Prehistoric copper production and technological reproduction in the Khao Wong Prachan Valley of Central Thailand**" (Thomas Oliver Pryce, Vincent C. Pigott, Marcos Martinón-Torres, Thilo Rehren ; pp. 237-264). In 2010 from *Trabajos de Prehistoria* (2010, Vol. 67, No. 2) comes "**Vingt ans de recherches à Saint-Véran, Hautes Alpes: état des connaissances de l'activité de production de cuivre à l'âge du Bronze ancien**" (David Bourgarit, Pierre Rostan, Laurent Carozza, Benoît Mille, Gilberto Artioli; pp. 265-281), and also (from Vol. 67, No. 1) "**The Copper Age Settlement of Valencina de la Concepción (Seville, Spain): Demography, Metallurgy and Spatial Organization**" (Manuel Eleazar Costa Caramé, Marta Díaz-Zorita Bonilla, Leonardo García Sanjuán, David W. Wheatley; pp. 85-117), and "**Las Lunas, Yuncler (Toledo): Un depósito de materiales metálicos del Bronce Final en la Submeseta Sur de la Península Ibérica**" (Dionisio Urbina Martínez, Óscar García Vuelta; pp. 175-196).

From the *Bulletin de la Société préhistorique française* (2010, Vol. 107, No. 4) comes "**Analyses de cuivres et de bronzes protohistoriques du sud-ouest de la France. Résultats de la comparaison de méthodes analytiques**" (C. Blanc, J. Lutz, J.-C. Merlet, E. Pernicka; pp. 767-774), while from *Antiquity* (2010, Vol. 84, No. 325) comes "**The beginning of Iron Age copper production in the southern Levant: new evidence from Khirbat al-Jariya, Faynan, Jordan**" (Erez Ben-Yosef, Thomas E.Levy, Thomas Higham, Mohammad Najjar, Lisa Tauxe ; pp. 724-746). In the *Journal of Maritime Archaeology* (2010, Vol. 5, No. 1) is "**Maritime Archaeology and Trans-Oceanic Trade: A Case Study of the Oranjemund Shipwreck Cargo, Namibia**" (Shadreck Chirikure, Ashton Sinamai, Esther Goagoses, Marina Mubusisi, W. Ndoro ; pp. 37-55), and from *Arabian Archaeology and Epigraphy* (2010, Vol. 21, No. 2) comes "**Lead isotope and chemical signature of copper from Oman and its occurrence in Mesopotamia and sites on the Arabian Gulf coast**" (F. Begemann, A. Hauptmann, S. Schmitt-Strecker, G. Weisgerber ; pp. 135-169).

From *Post-Medieval Archaeology* (2010, Vol. 44, No. 1), comes "**Five centuries of iron working: excavations at Wednesbury Forge**" (Paul Belford ; pp. 1-53), while from *The Journal of the Arms & Armour Society* (2010, Vol. 20, No. 1) comes "**A note on the metallurgy of two Migration period helmets**" (A. Williams ; pp. 27-35), and from *Accounting, Business & Financial History* (2010, Vol. 20, No. 2) comes "**Management, finance and cost control in the Midlands charcoal iron industry**" (P. W. King; pp. 385-412).

From the *European Journal of Mineralogy* (2010, Vol. 22, No. 5) comes "**Mineralogical study of precolonial (1650–1850 CE) tin smelting slags from Rooiberg, Limpopo Province, South Africa**" (Robert B. Heimann, Shadreck Chirikure, David Killick; pp. 751-761), while from the *Journal of Alpine Geology* (2010, Vol. 52) comes "**Geochemische Untersuchungen an ostalpinen Kupfervorkommen und ihre Nutzung in prähistorischer Ze**it" (J. Lutz, R. Pils, E. Pernicka, F. Vavtar; pp. 172-173). In *Earth-Science Reviews* (2010, Vol. 100, Nos. 1-4) is "**The "chessboard" classification scheme of mineral deposits: Mineralogy and geology from aluminum to zirconium**" (Harald G. Dill ; pp. 1-420), while from *Journal of Microscopy* (2010, Vol. 237, No. 3) comes "**An investigation of nitride precipitates in archaeological iron artefacts from Poland**" (Z. Kędzierski, J. Stępiński, A. Zielińska-Lipiec ; pp. 271-274). In *Analytical and Bioanalytical Chemistry* (2010, Vol. 397, No. 6) is "**Characterization of copper alloys of archaeometallurgical interest using neutron diffraction: a systematic calibration study**" (F. Grazzi, L. Bartoli, S. Siano, M. Zoppi; pp. 2501-2511), while from *Accounts of Chemical Research* (2010, Vol. 43, No. 6) comes "**The Coordinated Use of Synchrotron Spectroelectrochemistry for Corrosion Studies on Heritage Metals**" (Annemie Adriaens, Mark Dowsett ; pp. 927-935).

A special issue of *Applied Physics A: Materials Science & Processing* (2010, Vol. 100, No. 3), "**Precise Processing, Diagnostics, Characterization and Identification of Materials for Restoration of Art**", included several papers on metals and archaeometallurgical subjects, including "Non-invasive characterization of manufacturing techniques and corrosion of ancient Chinese bronzes and a later replica using synchrotron X-ray diffraction" (M. L. Young, F. Casadio, S. Schnepp, E. Pearlstein, J. D. Almer, D. R. Haeffner; pp. 635-646), "The reconstruction of the first copper-smelting processes in Europe during the 4th and the 3rd millennium BC: where does the oxygen come from?" (E. Burger, D. Bourgarit, A. Wattiaux and M. Fialin; pp. 713-724), "The bronze shields found at the Ayanis fortress (Van region, Turkey): manufacturing techniques and corrosion phenomena" (G. M. Ingo, A. Çilingiroğlu, F. Faraldi, C. Riccucci; M. P. Casaletto, A. Erdem, A. Batmaz; pp. 793-800), "An integrated analytical characterization of corrosion products on ornamental objects from the necropolis of Colle Badetta-Tortoreto (Teramo, Italy)" (M. P. Casaletto, G. M. Ingo, M. Albini, A. Lapenna, I. Pierigè, C. Riccucci, F. Faraldi; pp. 801-808), and "Production of reference alloys for the conservation of archaeological silver-based artifacts" (M. P. Casaletto, G. M. Ingo, C. Riccucci, F. Faraldi; pp. 937-944).

From *Materials Characterization* (2010, Vol. 61, No. 1) comes "**PIXE analysis of medieval silver coins**" (H. Ben Abdelouahed, F. Gharbi, M.Roumié, S. Baccouche, K. Ben Romdhane, B. Nsouli, A. Trabelsi ; pp. 59-64). Also from *Materials Characterization* (2009, Vol. 60, No. 4) comes "**Metallography, history and the fine arts III**" (George F. Vander Voort, Chris Bagnall ; pp. 251), "**Electron backscattering diffraction analysis of an ancient wootz steel blade from central India**" (M. R. Barnett, A. Sullivan, R. Balasubramaniam ; pp. 252-260), "**Roman mystery iron blades from Serbia**" (Sebastian Balos, Arlan Benscoter, Alan Pense ; pp. 271-276), and "**On the Kautilya's characterization tests for the purity of silver and its experimental replication**" (R. K. Dube ; pp. 277-281). In the *Journal of Thermal Analysis and Calorimetry* (Published online: 24 June 2010; DOI 10.1007/s10973-010-0926-2), is "**Kinetics of iron-copper sulphides oxidation in relation to protohistoric copper smelting**" (Emilien Burger, David Bourgarit, Vincent Frotté, Fabien Pilon; 8 p.), while from *JOM* (2010, Vol. 62, No. 3) comes "**The Ancient Brass Cementation Processes Revisited by Extensive Experimental Simulation**" (David Bourgarit, Fanny Bauchau; pp. 51-57).

In 2009 a special issue of the ***Journal of Mining and Metallurgy, Section B: Metallurgy*** (Vol. 45 B, No. 2, pp. 141-220) was dedicated to archaeometallurgical studies. The Preface (Dragana Živković) and eight research contributions were included in the issue. Contributed papers comprised "Beginning of the metal age in the central Balkans according to the results of the archaeometallurgy" (B. Jovanović), "Ancient metallurgical traditions and connections around the Caput Adriae" (A. Giumlia-Mair), "Prehistoric copper tools from the territory of Serbia" (D. Antonović), "A multi-disciplinary approach to the study of an assemblage of copper-based finds assigned to the prehistory and proto-history of Fucino, Abruzzo, Italy" (M.L. Mascelloni, G. Cerichelli, S. Ridolfi) "The traces of Roman metallurgy in Eastern Serbia" (S. Petković), "Early Byzantine metallurgical object at the site Gamzigrad – Romuliana in Eastern Serbia" (M. Živić), "Investigation of archaeometallurgical findings from Felix Romuliana locality"(D. Živković, N. Štrbac, J. Lamut, B. Andjelić, M. Cocić, M. Šteharnik, A. Mitovski), and "Copper production in Majdanpek in sixties and seventies of the 16th century" (S. Katić, I. Ilić and D. Živković). Abstracts and PDF files of the preface and articles can be downloaded from the journal website:
http://www.jmmab.com/index.php?option=com_content&task=blogcategory&id=44&Itemid=79.

From *Restaurierung und Archäologie* (2009) comes "**Archäometallurgische Untersuchungen zur Metalleinlegetechnik einiger Auvernierschwerter**" (Daniel Berger, Ernst Pernicka; pp. 1-18), "**Granuliertes Gold aus Troia in Berlin: Erste technologische Untersuchungen eines anatolischen oder mesopotamischen Handwerks**" (Hermann Born, Sandra Schlosser, Roland Schwab, Boaz Paz, Ernst Pernicka; pp. 19-30), "**Zu Entwicklungen in der Vergoldungstechnik im germanischen Raum während des 1. Jahrhunderts nach Christus**" (Iris Aufderhaar; pp. 31-46),

"**Kantharos, Klapptisch und kannelierte Schüssel: Zu Neurestaurierung und Herstellungstechnik dreier großformatiger Objekte aus dem Hildesheimer Silberfund**" (Barbara Niemeyer; pp. 47-66), and "**The Metal Threads from the Silk Garments of the Famen Temple**" (Anna Karatzani, Thilo Rehren, Lu Zhiyong; pp. 99-110). In *AMBIX: The Journal of the Society for the Study of Alchemy and Early Chemistry* (2009, Vol. 56, No. 1) comes "**A Note on Liquid Iron in Medieval Europe**" (A. Williams ; pp. 68-75). Also from *AMBIX* (2009, Vol. 55, No. 3) comes "**Alchemy and Mining: Metallogenesis and Prospecting in Early Mining Books**" (Warren Alexander Dym ; pp. 232-254), while from *Near Eastern Archaeology* (2009, Vol. 72, No. 3) comes "**Red Hot: The Smithy at Tel Beth-Shemesh**" (Harald A. Veldhuijzen ; pp. 129-131).

Forthcoming Meetings and Conferences

The ***Iron & Steel Preservation Conference (ISPC***) will be held March 7-9, 2011, at Lansing Community College, Michigan. It is a unique combination of formal papers and hands on work. "Historic wrought iron and steel truss bridges that were fabricated between 1850 and 1950 are rapidly being replaced today with new concrete or steel bridges, primarily because of the lack of knowledge in the restoration of historic metals," explains Vern Mesler, Technical Careers Adjunct Faculty in welding. "We need to develop expertise in preserving the original materials by combining modern technology such as electric arc welding with historic methods like hot riveting." This conference will provide hands-on experience in those technologies. For more information contact Vernon Mesler (phone: 517-337-6533; e-mail: meslerv@email.lcc.edu), or to register, call: 517-483-9853. More information also can be found at the conference website link: http://www.lcc.edu/tet/welding/ISPCConference/.

The ***Third International Conference on Experimental Archeology "Metallurgies Compared: Archaeology and Experimentation"***, will be held from April 8-10, 2011 at the Antiquitates Center for Experimental Archaeology, at Civitella Cesi (Viterbo), Italy, and will focus on metallurgy and experimentation. The conference, organized in three sessions of presentations alternating with experimental activities, will be attended by many Italian and European scholars. Participants may present works in the form of posters, according to the rules to be announced by the organizing committee. The deadline for communication is by February, 8, 2011. The registration fee is €100 and includes the opportunity to participate in the poster session. The conference will be open to a maximum of 70 attendees. Participants will be selected based on the CVs submitted with their admission application, which should specify all relevant information (activities conducted, course of study, scientific qualifications, publications, etc.). Admission applications should be submitted by March 20, 2011, at the conference website: www.antichemetallurgie.com. The conference proceedings will be made available to the scientific community in Italian and English on a website that will include experiment results and videos.

The three main sessions, spread across the three days of the conference, are: Experimentation and Scientific Popularization-Comparing experiences in disseminating knowledge of archaeological research through experimental activities, Experimentation and Archaeological Science--In search of an archaeometallurgical protocol, and Experimentation, education and scientific tourism: Potential and limitations of the experimental approach. Speaker presentations also will be given and include, among others, "The decades-long experience of the Antiquitates Center" (A. Bartoli), "Research on the Iberian Peninsula" (S. Rovira), "The role of experimental archaeology in understanding Iron Age archaeology" (P. Halkon), "Between experimental archaeology and ethnoarchaeology: Research on Ethiopian furnaces (T. Burka), "Experiments in gold refining" (D. Leopp), "Archaeometallurgical research in the Portuguese area" (C. Bottini, R. Villaça), "Shagudo and other ancient Japanese techniques" (Nagai Yutaka), "The experience of the Lombardy museum network" (R. Poggiani Keller, M. Baioni, C. Mangani), and "The experience of the Archéosite d'Aubechies (Belgium)" (C. Demarez). Additionally, visits will be made several times each day to the experimental smelting furnaces which will include opportunities for discussion and comment. Experimental smelting will focus on iron smelting but discussions and comments will include furnaces used to smelt metals and craft objects of copper, copper alloys, iron, and gold.

The ***Historical Metallurgy Society*** will hold its Spring and Annual General Meeting, ***Royalty, Religion and Rust!***, on June 4th-5th, 2011, at Helmsley, North Yorkshire, England. Presentations at the meeting will focus on Royalty, High Status and Ecclesiastical or Religious sites and artifacts. More information, including the call for papers, can be found at the following website: http://hist-met.org/agm2011.html.

The ***3rd International Conference "Archaeometallurgy in Europe" 2011***, will be held from June 29-July 1, 2011 at the Deutsches Bergbau-Museum, Bochum, Germany. The previous two International Conferences, Archaeometallurgy in Europe I + II, were organized by the Associazione Italiana di Metallurgia in Milan (2003) and Grado/Aquileia (2007), Italy, respectively. In the mean time research in our Scientific Community has produced significant results on early metal working and processing. The aim of this conference is to provide an overview of new insights and new approaches to the history of metallurgy in this part of the world. New regional studies, new instruments, and a changing pattern of research have clearly led to innovative scientific approaches to archaeometallurgy. This has long been a well established and most interesting field of research, and Europe has always been at the cutting edge. The Conference will cover topics relevant to the investigation of the technology and diffusion of different metals and alloys used in ancient times, and of related (pre-) historic finds such as slag, furnaces, remains of production, etc. It will present interdisciplinary scientific and archaeological investigations. The Conference "Archaeometallurgy in Europe" reflects the evolution of metallurgy in an area which due to its geographic and geological characteristics is exceptionally rich in ore deposits and looks back on an

extraordinary development in metallurgy. Besides regional studies it will focus on new insights into the eastern part of Europe.

Papers accepted for oral and poster presentations will be organized by seven thematic groups: 1. Metallurgical Innovation Stages in Early Metallurgy in Europe; From the Neolithic to the Medieval Period; 2. Regional Studies; 3. Early Mining in Europe and the Distribution of Raw Sources; 4. Experimental Archaeometallurgy; 5. Reconstructing Ancient Technologies; 6. New Horizons: Archaeometallurgy in Eastern Europe and Beyond; and 7. New Approaches, New Technologies in Archaeometallurgy. For each topic, a key note lecture providing the state of the art will be held. Papers on archaeometallurgy of Non-European countries will be grouped in a special session. Additional activities also have been scheduled for Tuesday, June 28th (Meet-and-greet in the "Restaurant Tauffenbach", Bochum), and Wednesday, June 29th (Dinner party in the "Restaurant Förderturm" of the Deutsches Bergbau-Museum Bochum). The costs for the dinner party are included in the conference fee.

Participants are invited to submit abstracts for oral or poster presentation. Abstracts of no more than 2 pages (DIN A4; TNR 12; black & white pictures [submitted separately!] 300 dpi with 12 cm width) have to be submitted electronically. The abstracts will be published in a special volume of the journal "Metalla". Oral presentations are limited to 15 + 5 minutes including questions and discussion. Poster may not exceed the size limit of DIN A0. Deadline for submission of abstracts: January 30th, 2011. Authors will be informed of the acceptance of their contribution and the type of presentation (oral or poster) by February 28th. Participants are requested to register electronically via E-Mail or Fax or by post using the registration form. The registration will become valid only after receipt of the payment. Registration fees and costs for excursions are listed in the registration form which can be found at: http://aie3.bergbaumuseum.de/tiki-index.php?page=Registration. The third announcement with further information concerning the conference program, as well as localities, poster presentations, papers and conference publication will be issued in March 2011. Further information about the conference can be found at: http://aie3.bergbaumuseum.de/tiki-index.php.

Previous Meetings and Conferences

The ***Archaeological Iron Conservation Colloquium*** was held June 24–26, 2010, at the State Academy of Art and Design, Stuttgart, Germany. The aim of the conference was on the conservation and preservation of iron from archaeological and historical contexts. Preservation of the masses of iron finds is still a problem. Although somewhat neglected in the last decades, now there are many current research projects going on in Germany and worldwide. The colloquium reviewed the state of the art of archaeological iron conservation and related research; speakers from all parts of the world presented their work. Main topics were the corrosion and the stabilization of iron finds from the soil and the sea. Presentations were made on the 24th and 25th of June, with fieldtrips and facility visitations on the 26th. Oral presentations were divided amongst four main sessions, and a fifth session was dedicated to poster presentations.

On June 24th, papers from Session I, Iron Conservation Science, consisted of "Plasma-reduction, its potential and limits in the conservation of metals" (Katharina Schmidt-Ott), "The chloride left behind: (dis)solving an analytical problem" (Britta Schmutzler), "The formation and transformation of akaganeite" (David Thickett), "Unusual corrosion products of iron" (Quanyu Wang), and "Metastable iron sulphides as corrosion products of iron archaeological objects" (Celine Remazeilles). Session II, Iron Conservation Projects Around the World, contained the following papers: "Corrosion and conservation problems of iron artefacts from Oradea Fortress" (Olimpia Muresan), "The Cucagna Conservation Project - Conservation of archaeological finds and conservation research in Friaul" (Tobias Friedrich), "Iron from London waterlogged sites: Assessing the outcomes of treatment and passive storage" (Rose Johnson), "The KUR-project - Large quantity finds in archaeological collections" (Cristina Mazzola), and "Metallurgical properties of steel used in a Japanese matchlock gun" (Manako Tanaka), followed by the Keynote lecture, "Iron and the microscope" (David A. Scott).

On June 25th, papers from Session III, Alkaline Chloride Extraction, included "Efficiency of chloride extraction with organic ammonium bases: The KUR-Project - Conservation and professional storage of iron artefacts" (Heinrich Wunderlich), "The use of subcritical alakaline solutions for the stabilization of archaeological iron artefacts" (Paul Mardikian), "Some new advances in alkaline sulphite treatment of archaeological iron" (Svetlana Burshneva), "The effectiveness of chloride removal from archaeological iron using alkaline deoxygenated desalination treatments" (Melanie Rimmer), and "Simplifying sodium sulfite solutions - the DBU project" (Britta Schmutzler). Papers from Session IV, Marine Finds, comprised "Effect of dechlorination in NaOH of iron archaeological artefacts immersed in sea water" (Florian Kergourlay), "Evolution of pH in the solutions of dechlorination" (Stephane Lemoine), "Conservation of iron artefacts from the USS Monitor (1862)" (Eric Nordgren), and "Retreatment of archaeological irons temporarily submerged in brackish floodwaters" (Kenya Brown Fusciello). Poster presentations included "Identification of organic remains on iron finds using variable pressure Scanning Electron Microscopy (SEM)" (Andrea Fischer), "The laboratory processing of block-lifted finds from graves" (Andrea Fischer), "The iron collection of ancient messene: a methodological conservation approach" (Maria Giannoulaki), "Freezing corrosion - a viable storage option?" (Charlotte Kuhn), "Metal 2010: ICOM-CC WG "Metals" interim meeting in Charleston, South Carolina from Oct. 11-15, 2010" (Paul Mardikian), "Archaeological Iron After Excavation (AIAE) - working group within the ICOM-CC Metals Working Group" (Eric Nordgren), and "Corrosion protection without red lead: A contradiction in terms?" (Martina Raedel). Extended abstracts and additional information on the colloquium can be found at: http://www.iron-colloquium.abk-stuttgart.de/iron-colloquium-information.html.

A handful of papers and posters relating to ancient metals and archaeometallurgy were presented at the ***16th Annual Meeting of the European Association of Archaeologists*** held in The Hague, Netherlands, from September 1–5, 2010. Contributions included a session on gold threads in textiles with the following papers: "Gold thread from Near Eastern rulers to Roman Emperors: evidence and problems" (Margarita Gleba), "The Investigation of Merovingian Gold Textiles of the Early Medieval Period" (Ina Meißner), "Merovingian gold textiles in South and West Germany" (Carina Stie), "Golden glittering garments of Late Roman and Vandal time from North Africa" (Christoph Eger), "Nasij" (Zvezdana Dode), "Gold Threads from Cloak and Vitta in the Alamannia: Examples from Dürbheim "Häuslesrain" (Kreis Tuttlingen) and Lahr-Burgheim, St. Peter (Ortenaukreis)" (Niklot Krohn), "Tutankhamun`s golden garments" (Gillian Vogelsang-Eastwood), "Gold textile or yellow colour? Some images of Ancient and Early Medieval Art" (Sergey Yatsenko), and "Opportunities and Limits in the Technological Examination of Gold Threads from the Early Medieval period" (Britt Nowak-Böck). Other relevant papers included "Metalwork exchange networks in Chalcolithic Italy: facts or fictions?" (Andrea Dolfini), "Aardenburg, Roman town or castellum? Metal finds as indicators" (Guus Besuijen), "The significance of the metallurgy at the beginning of the 3rd millennium in the Carpathian basin" (János Dani), "Metallurgy and society in the Carpathian Basin at the transition from the fourth to the third millennium BC: new identities and consumption patterns" (Vajk Szeverényi), "Embodied mercantilism: The production and use of silver in a 17th century colonial context. The Scandinavian example" (Jonas Nordin), "Copper artefacts and stone axes: means of social transitions in Neolithic societies" (Johannes Müller), "The role of spondylus and copper ornaments in social change from the middle Neolithic to the early copper age" (Zsuzsanna Siklósi, Eötvös Loránd), "Iron production in Uganda: memories of a near-forgotten industry" (Louise Iles), "A mine of information: presenting the social histories of heritage mining sites" (Peter Oakley), and "Benders, Benches and Bunkers: Recent Contestation and Commemoration at an Industrial (Heritage) Landscape" (Hilary Orange). Poster presentations of relevance include "Investigation of metal threads archaeological textiles using scanning electron microscopy and X-ray microanalysis" (Tetyana Mykolayivna Krupa), "Archaeometallurgical study of the chalcolithic materials of Camino del Molino (Caravaca de la Cruz, Murcia, Spain)" (Gutiérrez Sáez Carmen, Montero Ignacio, Chamon Jorge, Catalán Elena, Pardo Ana, Cabrera Ana, Martin Ignacio, Lomba Maurandi Joaquín), and "Gold strips from Late Roman sarcophagi burials in Trier" (Nicole Reifath, Britt Nowak-Böck). Access to PDF files of the program and paper abstracts can be found at the following link: http://www.eaa2010.nl/.

A recent conference focusing on an increasingly important area of environmental research, ***Polluting the Environment in Antiquity: an Inter-Disciplinary Meeting***, was held September 7-8, 2010, at the Boyd-Orr Building, University of Glasgow. Papers at the two-day conference covered a range of topics with a few on mining and metallurgical studies. These included "Chronology of atmospheric deposition into ombrotrophic bogs resolves debate of when British tin was exploited" (Andy Meharg, E. Schofield, A. Raab, K. Edwards), and "'Pollution' or social landscape? Copper slag and ploughsoil in central Cyprus" (Michael Given).

Another metal conservation conference was the ***International Conference on Metal Conservation, METAL 2010, Interim Meeting of the International Council of Museums Committee for Conservation (ICOM-CC) Metal Working Group***, held October 11–15, 2010, at Clemson Conservation Center, Charleston, South Carolina. The conference presented an opportunity for professionals from across the world to convene and discuss current issues in metal conservation. These included an outstanding program that of both conservation practice and conservation science, with speakers from more than 20 different countries. Participants in this year's conference represented universities, national research laboratories, conservators in private practice and many renowned cultural institutions.

Presentations from October 11th included papers in Session 1, Treatment of Archaeological Iron, such as "Residues from Alkaline Sulphite Treatment and Their Potential Effect on the Corrosion of Archaeological Iron" (M. Rimmer, D. Watkinson), "Chloride Calamities: Assessment of Residual Chloride Analysis to Compare Iron Desalination Methods" (B. Schmutzler, G. Eggert), "Keep Cool? Deep-Freeze Storage of Archaeological Iron" (C. Kuhn, G. Eggert), and "The Use of Subcritical Fluids for the Stabilization of Concreted Iron Artifacts" (N. Gonzalez-Pereyra, T. Brocard, S. Cretté, P. De Viviés, M. Drews, P. Mardikian), while papers in Session 2, Conservation of Marine Archaeological Objects, included "Corrosion and Conservation Management of the HMAS *AE2* (1915) Submarine in the Sea of Marmara, Turkey" (I.D. Macleod), "Approaches to the Preservation of Sunken Historic Aircraft" (G. Schwarz, P. Fix), "Disassembly of USS *Monitor*'s Complex Mechanical Components" (D. Krop, E. Nordgren), and "A Case Study of *In Situ* Monitoring on an 18th Century Anchor from the *Queen Anne's Revenge* (1718)" (W. Welsh).

Presentations from October 12th included papers in Session 1, Materials Characterization and Identification, such as "Hot-Tinning of Low Tin Bronzes" (P. Manti, D. Watkinson), and "Technical Analysis of Muntz Metal Sheathing from the American Clipper Ship *Snow Squall* (1851-1864)" (M. Carlson, N.R. Lipfert, E. Ronnberg, D.A. Scott), while papers in Session 2, Case Studies, included "The Examination and Conservation of a 17th Century Indian Horse Armour" (E. Schmuecker, R. Lees, T. Richardson), and "Dry-Ice Blasting for the Conservation Cleaning of Metals" (R. Van Der Molen, I. Joosten, T.C.P. Beentjes, L. Megens), while on the same day, papers in Session 3, Coatings and Corrosion Inhibition, included "Development of New Environmentally Safe Protection Systems for the Conservation of Iron Artefacts" (S. Hollner, F. Mirambet, E. Rocca, S. Reguer), "Better Than Paraloid? Testing Poligen® Waxes as Coatings for Metal Objects" (J. Wolfram, S. Brüggerhoff, G. Eggert), "The Corrosive Influence of Acetic Acid Emissions on Bronze and the Efficacy of Two Protective Coatings" (A. Paterakis, D.

Lafuente, E. Cano), "The Application of Non-Toxic Corrosion Inhibitors for the Temporary Protection of Iron and Copper Alloy in Uncontrolled Environments" (G. Rapp, C. Degrigny, F. Mirambet, S. Ramseyer, A. Tarchini), and "On the Use of Alcoholic Carboxylic Acid Solutions for the Deposition of Protective Coatings on Copper" (A. Elia, M.G. Dowsett, A. Adriaens).

Presentations from October 13th included papers in Session 1, Corrosion and Deterioration Studies, such as "Predicting the Corrosion Behaviour of Outdoor Bronzes: Assessment of Artificially Exposed and Real Outdoor Samples" (C. Chiavari, E. Bernardi, C. Martini, L. Morselli, F. Ospitali, L.Robbiola, A. Texier), "The Delhi Iron Pillar: A Study of the Corrosion Formed in Areas of Surface Deformation" (A. Pandya, D.D.N. Singh), and "The Effects of Fingerprints on Silver" (V. Cheel, P. Northover, C. Salter, D. Stevens, G. Grime, B. Jones), while Session 2, X-Ray Fluorescence Analysis, included "An Evaluation of Inter-Laboratory Reproducibility for Quantitative XRF of Historic Copper Alloys" (A. Heginbotham, A. Bezur, M. Bouchard, J.M. Davis, K. Eremin, J.H. Frantz, L. Glinsman, L. Hayek, D. Hook, V. Kantarelou, A. Karydas, L. Lee, J. Mass, B. Mccarthy, M. Mcgath, A. Shugar, J. Sirois, D. Smith, R.J. Speakman), "The Application of Alloy Analysis to Questions of Attribution: Giovanni Francesco Susini and the Workshop of Giambologna" (D. Smith), "Bringing Context to the Smithsonian Collections of Pre-Columbian Gold from Panama Through Technical Examination and Analysis" (A. Harrison, H.F. Beaubien), and "The Effect of Surface Changes in Heat Treated Bronze Samples Analyzed By X-Ray Fluorescence Spectrometry" (R. Van Langh, A. Pappot, S. Creange, L. Megens, I. Joosten), while on the same day, papers in Session 3, Technical Studies, comprised "Blisters in Fire Gildings on Silver: an Investigation into Blister Formation and the Effect of Conservation Treatments" (E. Van Bork, S. Creange, I. Joosten), "Organic Coatings Found on Tibetan Buddhist Gilt Copper Alloy Statuary At the American Museum of Natural History" (K.U. Knauer, E. Nunan, J. Levinson, A. Rizzo, W.C. Petersen, J. Mass, K.A. Paul), and "Imitation-Bronze Paints on American Zinc Sculpture" (C.A. Grissom, A. Mack, M. Wachowiak, G. Bieniosek).

Presentations from October 14th included papers in Session 1, Caring for Outdoor Cultural Heritage, such as "Regilding the Golden Goddess: the Challenge of Conserving a Monumental Bronze Statue 20 Stories off the Ground in Madison, Wisconsin" (A. Rajer), "Surface Preparation and Coating Application Practices for the Conservation of Large-Scale Metal Artifacts" (J. Posluszny Bello, P. Miller, M. Rabinowitz, J. Sembrat), "Traditional Architectural Ironwork: Scientific Approaches to Determining Best Conservation Practice and the *Bute Canopy* Case Study" (L. Wilson, A. Davey, D.S. Mitchell, A. Davidson), "A Study of Coating Materials for Outdoor Iron Objects" (D. Shen, L. Ma, B. He, Q. Ma, L. Pan), and "Saving Your Spangles: the Conservation and Care of Galvanised Steel Sculptures" (E. Fryer, D. Pullen, D. Greenfield), while papers in Session 2, Engineering and 3D Technology in Conservation, included "Treatment of the Damaged Bronze of Rodin's *the Thinker* from the Singer Museum in Laren, the Netherlands: an Innovative Approach" (T.P.C. Beentjes, T. Davidowitz, R. Van Der Molen), "Digital Documentation of Historic Ferrous Metal Structures: 3D Laser Scanning as a Conservation Tool" (L. Wilson, D.S Mitchell, A. Davey, D. Prichard), "An Integrated Structural Health Monitoring System for the Preservation of the Historic Fireboat *Alexander Grantham*" (J.C.Y. Tse, S.W.S. Liu, E.S. Yeung, S. Chan), "Finite Element Analysis of the *H.L. Hunley* Submarine: A Turning Point in the Project's History" (V.Y. Blouin, P. Mardikian, C. Watters), and "Finite Element Analysis of Corrosion-Induced Progressive Collapse of the Wreck of the USS *Arizona*" (T. Foecke, L. Ma, M.A. Russell, D.L. Conlin, L.E. Murphy).

Presentations from October 15th included papers in Session 2, Innovative Techniques, included "Qualitative Analysis of Historic Copper Alloy Objects by Measuring Corrosion Potential versus Time" (C. Degrigny, G. Guibert, S. Ramseyer, G. Rapp, A. Tarchini), "Computed Tomography: A Powerful Tool for Non-Destructive Mass-Documentation of Archaeological Metals" (N. Ebinger-Rist, C. Peek, J. Stelzner, F. Gauß), and "A Scientific Study and Preliminary Experiments for Electrolytic Reduction of Corroded Lead Inlays on Japanese Lacquer Objects" (M. Van Bellegem, Q. Wang, P. Fletcher).

Papers from the poster session comprised "Non-Toxic Corrosion Inhibitors for the Conservation of Bronzes and Gilded Bronzes Exposed to the Atmosphere" (A. Balbo, S. Goidanich, C. Chiavari, C. Martini, L. Toniolo, D. Matera, C. Monticelli), "Non-Invasive Investigation of Poligen® ES91009, A Water-Dispersible Organic Coating on Metals with Reflectance-Absorption Infra Red Spectrometry" (S.C. Boyatzis, A.M. Douvas, A. Siatou, V. Argyropoulos), "Dry Ice Dusting Cleaning Trials of Muntz Metal Sheathing from the Clipper Ship *Snow Squall*" (M. Carlson, R.B. Heath), "Colorando Auro: Experiments and Analytical Investigation of a Medieval Colouring Recipe on Gilded Plates" (A.C. Crabbé, H.J.M. Wouters, G. Dewanckel, I. Vandendael), "The Treatment and Display of A 16th – 17th Century Wrought Iron Swivel Gun Recovered from A Marine Environment" (J.B. Crawford, C. Degrigny, J. Licari, E. Magro-Conti), "Iron from London's Waterlogged Sites – Thirty Years On" (H. Ganiaris, R. Johnson, E. Barham, E. Goodman), "New Materials for Treating Ferrous Metal Objects: A Case Study of a 19th Century Painted, Tinned-Iron Spice Box from the Winterthur Museum" (L.B. Gordon, R. Wolbers, B. Pouliot), "Conservation and Restoration of a WWII CB-20 Submarine" (Z. Kirchhoffer), "Conservation of Lt. Dixon's Pocket Watch Recovered from the *H.L. Hunley* Submarine (1864)" (J. Rivera, P. Mardikian, D. Nied), "Evaluation of Sodium Nitrite as a Corrosion Inhibitor for USS *Monitor* Artifacts" (E. Sangouard, E. Nordgren, R. Spohn), "Historic Iron Stabilisation Treatments: A Public Survey" (E. Schmuecker, R. Payton), and "Testing for Localized Electrochemical Cleaning of Two 17th Century Gilt Silver Decorative Artifacts" (J. Wolfe, M. Bouchard, C. Degrigny).

Courses

Ancient and Historic Metals: Technology, Microstructure, and Corrosion. The course will be held at University of California, Los Angeles (UCLA), from Monday, July 4th to

Friday July 8th, 2011. It acts as an introduction and a focus of more intensive study dealing with the examination, analysis, metallographic examination and deterioration of ancient and historic metals. The course is designed to benefit conservators, scientists and archaeologists who wish to learn how to prepare metallic samples for metallographic study, learn something of the technological aspects of the working and structure of metals, and how corrosion and patination can be discussed and examined.

Artifacts for examination: Over the past 27 years an unrivalled collection of mounted metallographic samples has been assembled, which are studied as part of the course practical work, involving both polarized light microscopy and metallographic microscopy of both freshly polished and etched samples. These samples range from Chinese cast iron from to Indian wootz steel, bronze coinage alloys from the Roman Empire to high-tin bronze from ancient Thailand, silver alloys from the Parthian period to ancient Ecuador, gilded copper and *tumbaga* from Peru and Colombia, to mention only a few of the geographical areas and materials covered by available samples. Course participants will be instructed in the use of polishing and etching in the examination of samples and are encouraged to keep digital images of the samples they have prepared during the week. Students may also bring their own samples for examination if mounted and ground, or if not mounted, then one or two samples may be brought which can be mounted and prepared during the course.

Course Schedule: The course will be held over the five days from Monday July 4th to Friday July 8th 2011. The course will be held at UCLA in the basement of the Fowler Museum Building, Room A312, on the UCLA campus. Many nearby hotels and parking available and details will be sent on request. The course will run from 9:15am-5pm each day. The course is open to a maximum of 10 participants only. Course Costs: The cost of the instruction for the five days will be $850.00 or sterling equivalent of this amount [530 Pounds Sterling]. For details of payment and to register for this course, please contact the course organizer and director: Professor David A. Scott <dascott@ucla.edu>, Room A410, The Cotsen Institute of Archaeology, UCLA, 405 Hilgard Avenue, Los Angeles CA 90095-1510, USA.

Web Resources

SMELT 2010 took place in the National Heritage Park, Ferrycarrig, Co. Wexford. It was an attempt, for the first time since the 1950s, to smelt Irish bog ore in a furnace based on Irish archaeological evidence. The project focused on the smelt itself (detailed in the documentary above) but the project also included the experimental production of oak and peat charcoal in conjunction with Niall Kenny (see http://charcoal.seandalaiocht.com/) as well as prospection for bog ore and some flint knapping by Emmett O'Keeffe. A twenty-two minute high-definition video of the SMELT 2010 documentary can be viewed at: http://smelt.seandalaiocht.com/.

BOOK REVIEWS

David Hill, Associate Editor

There is considerable variability in this issue in the volumes presented for review. The issues reviews include a collection of papers regarding voice and position in the presentation of archaeological knowledge, an analysis of stone-tool manufacture and use by the Maya, and a volume that presents the archaeology of the Fremont archaeological culture of Utah. For readers unfamiliar with the Fremont and their expressive rock-art should look at the following link: http://www.jqjacobs.net/rock_art/fremont.html

Two of the volumes were identified by independent reviews as inadequately referenced. Archaeology is a comparative science. Authors should remember this fact when preparing manuscripts for publication wheatear they are presenting the theoretical underpinnings of their research or in citing studies from adjacent areas. Limited citation diminishes the value of the research. Four further discussion of the role of citation in archaeological research I highly recommend the articles (and references) contained in *Archaeologies: Journal of the World Archaeological Congress*. August 2010 Volume 6, Number 2.

Cosmopolitan Archaeologies. Lynn Meskell (editor). Duke University Press, Durham: 2009. 304 pp, index. Price: US$23.95 (paper), ISBN: 0822344440.

Reviewed by Deni J. Seymour, Research Associate, The Southwest Center, University of Arizona, Tucson, AZ, USA.

Cosmopolitanism, a current theme in many allied fields, has special ethical and investigatory significance for archaeologists who study cultural and behavioral diversity. The 10 authors in this volume present a range of views; many rely on the theoretical paradigm of Anthony Appiah and focus on a "rooted cosmopolitanism." In attempting to outline the boundaries of this topic for what they view as a morally based archaeology in contemporary society, they encompass a range of topics, geographic areas, and perspectives. Papers are composed by scholars prominent in the field as well as younger contributors.

Aggravated by archaeology's peripheral role and influence in the world, these authors advocate direct researcher involvement to change power relations. They attempt to define a new theoretical sector, although they neglect to consider or cite the relevant advocacy, empowerment, action, and conflict theory current in a number of modern fields motivated by similar concerns, such as sociology, healthcare, and other fields. Of relevance is that politics said to promote equality and social justice may ultimately lead to a homogenization of the world's populations, suppression of cultural difference, and unforeseen deleterious consequences. Without a sophisticated understanding of political and culture change theory, indigenous groups—who are often at the mercy of their anthropological advisors—may not be adequately informed, just as ravaged Colonial-period populations were not given clear and disinterested advice on the most beneficial courses of action. No doubt, archaeologists should be part of this emerging

debate…but "the right to cultural heritage needs to be ordered intellectually, ethically and legally" (p 203), and grounded in the profession's unique approach to such understandings.

While cosmopolitanism is an important theme to be combined with related theory, the editor and this clade of authors weave together often contradictory concepts, dismissing while not addressing many of the chief difficulties of their approach. The rambling nature of many of these narratives allows the authors to effectively sidestep a logical flow, which contributes to the apparent imperviousness of their chameleon-like arguments.

Examining the processes by which globalization occurs and the potential consequences of alternative action within the cosmopolitan framework would have been more useful for archaeology. The implications of insertion of Western liberalism into world politics certainly deserves more thorough consideration, as does a critical examination of the logical consequences and historical precedents of an agenda that minimizes state and international regulation and intervention and encourages transnationalism (p 29, 201). Bypassing the current power structure to embrace another was a common Colonial-period process and was visible recently in Iraq as locals wished to unseat the current power structure to strengthen their own position (and manipulated the US in the process). This type of power play by or on behalf of the disadvantaged and the processes involved in the amplification and decline of diversity have important social consequences that have precedents, have been discussed in other disciplines, and whose outcomes are not always as predicted or desirable.

Another ethical issue is whether archaeologists are qualified to conduct ethnographic archaeology (p 89) or archaeology of the present (p 138). For many, this venture is a tenure-seeking and prestige-related game, and attempts at creative new theory fail to recognize previous endeavors, for example those related to the archaeology of the present (e.g., Reid, Rathje, and Schiffer's 1974 article in *American Antiquity*). Evangelical archaeologists who experiment (p 66) while attempting to assist may inadvertently do irreversible damage—a circumstance that is reminiscent of the colonial missionary who brought disease and culture change, believing he was achieving a higher good. Ethical ramifications inadequately considered violate the "do no harm" commitment (p 48), just as acting on shortsighted perceptions of "good" can be harmful. It seems that advocating "human rights" and "democracy' as part of a politically correct and unexamined dogma fills the same structural role as did colonialism with its religious and progress doctrines. Given their ethics-centered focus, the authors would do well to consider the Western and elitist basis of their commitment to the assumption of the "universal" character of human rights (29) and the democratic process (p 185). As justification for attempting to direct culture change they adopt the validation stratagem used by Bush for the Iraq war. Whether researchers should interfere or observe is a long-standing question in our discipline, with an associated literature.

Seemingly beneficial concepts can be damaging when used as unexamined forces for directed culture change. The authors mention their need to act because of the "repugnance" of certain cultural practices (p 201), how we "ought" to do this or that (p 165), of the difficulty of standing by and watching injustice (p 201), and our responsibility to one another (p 201)—all with a puritanical, un-self-critical, and ambitious tone. My key concern is who occupies this privileged status of deciding what this responsibility is and the nature of this higher moral order.

This volume is primarily a treatise on ethical action without demonstration of appropriate grounding in the tenets of our profession, examples from the past, and the hard-won lessons of our intellectual predecessors. The dearth of citation of archaeology's deep literature that addresses many of these topics (including the seminal debates that attended the emergence of the New Archaeology, as well as the post-colonial and ethnoarchaeological literature), allows the volume to maintain a fresh appearance despite the fundamentally superficial nature of its content. Many of the same practices discussed have historic, even prehistoric parallels and precedents, from the belief-based defacing of another group's murals (ancient Egypt) to the travel industry's literature of the effect of heritage tourism on local communities. On the face, many of the arguments sound appealing but the logical outcome is the dissolution of the archaeological profession for its lack of methodological, theoretical, and interpretive rigor and value. Moreover, when two communities disagree archaeology will no longer be effective in serving as an arbiter. In the same way, changed political reality will nullify the small residual value of many of the treatises in this work. In relinquishing "power" (p 49) and promoting local politics the public will find it increasingly preferable to choose narratives conveyed by journalists, novelists, or cowboy raconteurs over those of archaeologists.

Elite Craft Producers, Artists, and Warriors at Aguateca: Lithic Analysis. Kazuo Aoyama. University of Utah Press, Salt Lake City: 2009. viii + 312 pp. Price: US$60.00 (cloth), ISBN: 0874809592.

Reviewed by Harry J. Shafer, Professor Emeritus, Texas A&M University, College Station, TX, USA.

Aguateca was rapidly abandoned Maya city in the Petén district of Guatemala. It has been the subject of a long-term Aguateca Archaeological Project at the University of Arizona. The monumental center at the site was burned and apparently rapidly abandoned, providing archaeologists with a "Pompeii-like" situation with sealed deposits and in situ material. The excellent contexts certainly present an excellent opportunity for spatial and functional analyses. Aoyama examined the lithics from eight structures in an elite residential area and from two long vaulted buildings in the Palace Group. A total of 10,845 lithic artifacts were recovered from the excavations, of the lithic artifacts, 8, 322 were chipped stone and 2,523 were ground stone. About 65% of the chipped stone were of chert and the remainder was of obsidian.

Aoyama provides a description of the chipped stone obsidian and chert artifacts and of the ground stone artifacts from each structure, and compares these assemblages from each to argue

for differential craft production and tool use among the structures. He devotes entire chapters to the description and discussion of obsidian and chert tools. Functional interpretations are based mostly on use-wear and overall assemblage content. He conducted high-power micro wear analysis to study stone tool use on a randomly selected sample from each structure. His use-wear study was supported by experimental use-wear on obsidian and chert artifacts in Honduras and established his own classification of polish types, and his functional interpretations were based on his experimental results. Aoyama relies heavily on the use-wear results to interpret tool use and activities.

He conducted spatial analysis of the lithic artifacts and use-wear data comparing different households which yielded some interesting distributions among the structures that undoubtedly relate to the differential task roles carried out by the occupants. Some interesting conclusions are presented with regards to spatial activities and craft production among the structures based on his use-wear conclusions. For example, he states that because polished greenstone celts were clustered in Structure M8-8, this was the residence of a scribe who carved stelae for the ruler. Greenstone is hard material and suitable for carving limestone and he interprets the use-wear on all of the celts to stone carving. Chert eccentrics were restricted to the royal palace and temples suggesting they were regarded as royal ritual objects. The distribution of obsidian among the structures was not uniform and that not all households produced blades. Lastly, the author makes an argument that both men and women were engaged in craft production, but that no craft specialists resided among the structures investigated. Rather, low-level craft production occurred as shown my manufacturing debris present in the lithics.

This reviewer has many issues with statements and subjective interpretations presented in this book, and space does not permit an itemized listing. Some of the concerns are highlighted here. The burning of the excavated structures was attributed to attacking enemy who also burned the palace building (M7-22) as part of a termination ritual. Alternately, the inhabitants of Aquateca could have burned the buildings and ritual contents of M7-22 as a termination event themselves. I question the author's statement that the site was necessarily burned by attackers although destruction of monumental centers by attacker did occur in the Maya Lowlands, and Colha is an example. He asserts that the projectile points were the result of the battle that took place, and notes that many were broken and some could be refitted. The projectile points could have been merely discarded weaponry from hunting and the presence of broken points could be the result of tool maintenance.

This reviewer also finds Aoyama's functional interpretations problematic. For example, his use-wear of artifacts from M7-22 suggest to him that over 40% of the material worked consisted of meat or hide, and that meat and hide working tools were represented in all of the structures. High-powered use-wear studies conducted at Texas A&M University in conjunction with the Gault Clovis project agree with Ayoama's experiments in that they could not distinguish between meat and hide working as both resulted in abrasive wear that became more pronounced through duration of use. The same problem occurs between hide and wood. However, I found no mention of faunal remains that would independently support his claims for meat and hide working. If the use-wear interpretations are reliable then hunting was an important activity carried out by the occupants of these structures. In other words, alternative explanations for the burning and abandonment were not rigorously pursued.

Petexbatun kingdoms were not the only Maya settlements subjected to destruction by attackers. While evidence of warfare is often difficult to demonstrate archaeologically no better example is known from the Maya Lowlands than Colha. Two separate deposits of human remains associated with the destruction of the monumental center were recovered. One consisted of 30 heads buried in a pit in the rubble of a destroyed palace building, and the other a deposit of human remains a base of a staircase of a small pyramid; crania in both deposits exhibited cut marks from flaying.

Aoyama also makes an argument that the bow and arrow was used by the alleged attackers based on use-wear of the points. I question how such use-wear can determine if a projectile was used on an arrow or atlatl-thrown spear. Either way it is a projectile point. Furthermore, maximum width cannot be used as a criterion for distinguishing dart points from arrow points. I also question the evidence presented that bows and arrows were used by the attackers, as I know of not a single example of the bow and arrow being depicted in Classic Maya art. Chronological studies in northern Belize place the introduction of the bow and arrow there clearly in the Middle Postclassic. Perhaps the small points were miniature spear points used by children.

The artifact illustrations are poor and useless in detail. Artifacts were illustrated "in the Japanese technical style," which is unfortunate for such a purportedly important study. Digital images would have been much more informative for comparative studies in this digital age.

Aoyama does not put the Aguateca lithics in the broader context of Maya lithic technology. It is difficult to judge whether or not the bifaces were made locally. It is also hard to judge from the poor illustrations whether broken preforms or aborted failures in the manufacturing process are present in the assemblage although he does mention that a few were recognized. The obsidian sources were identified as coming from the three major sources of El Chayal, San Martin Jilotepeque, and Ixtepeque with most coming from El Chayal. And what is the geological source of the chert; I assume it was local but where are the workshops? These are issues that would help to understand the production-consumption patterns for the region, and to place the Aguateca lithics in a broader context.

Curiously, there are no references to the decades-long studies of Maya lithic craft specialization in northern Belize, especially at Colha. Papers reporting on various aspects of this landmark study of Maya lithic craft specialization were published in such journals as *American Antiquity*, *Latin American Antiquity*,

Mesoamerican Archaeology, World *Archaeology*, plus book chapters, monographs, to say nothing of graduate theses and dissertations (over 250 published results to date). The Colha and related publications address community-wide lithic craft specialization and regional consumption patterns to a degree not yet demonstrated at any other Maya site. For example; the site has yielded empirical evidence for lithic craft specialization, regional production-consumption models, extraordinary evidence of Maya warfare, unequivocal response to social threat in the types of artifacts mass produced, elite participation in bloodletting rituals associated with lithic activities, regional consumption patterns for stone tools produced at Colha, among other relevant issues that would apply to Aguateca. This omission is unfortunate and telling, and takes away from an otherwise decent contribution. It takes nothing more than to *Google*® Maya lithic craft specialization to turn up dozens of references to the northern Belize chert industries. Was this exclusion deliberate to promote archaeological revisionism, or just poor scholarship?

Traces of Fremont: Society and Rock Art in Ancient Utah. Steve R. Simms (author) and Froncois Gohier (photographer). University of Utah Press, Salt Lake City: 2010. 144 pp. Price: US$24.95 (paper): ISBN: 1607810115.

Reviewed by Tim Church, Lone Mountain Archaeological Services, Inc. El Paso, TX, USA.

This is a deceptive book. At first glance I assumed it would be a nice book filled with numerous pretty pictures of rock art set in the context of a brief standard cultural history. You know, we've all seen similar publications, and probably have several laying around for visiting family and friends to page through. But I was surprised and pleased. Not only is it a set of very excellent rock art photos but Steve Simms dares to introduce the reader to advanced topics such as polities, landscapes, kinship, etc., concepts that scare some professional archaeologists. He acknowledges this, "Admittedly, archaeologists shy away from topics of society and ideology because these require speculation, even for the restrained goal of tilting our inquiry in a different direction."

With this Simms touches upon a sore point for many archaeologists. Those that believe that all speculation is bad and those who view speculation as a conceptual tool to frame big picture topics. Some of the former may criticize this book for the mere presence of the speculative narratives in parts of the book. I think it says something that archaeologists feel uncomfortable introducing and discussing big picture ideas (e.g. the dreaded 'speculation' to some), such as this volume does, only in a more general audience oriented formats.

This is not a book about rock art, rather the author uses rock art as a vehicle to introduce broader concepts. Simms states, "The goal, however, is not a general treatise on all things Fremont. That is available elsewhere. Our focus here is on realms of the Fremont examined by archaeologists only fleetingly and sporadically. I refer to the society and ideology of Fremont people as they developed before the sixth century A.D. and continued to evolve into at least the fourteenth century".

The book is organized into some 21 short chapters, most of these focusing on what the author term 'tasks'. These 'tasks', or conceptual excursions, range from a farming hamlet, to a field, a place for food storage, etc., each presenting a story of the 'task'. The first of these chapters, Life at a Fremont Hamlet, is a narrative told from the perspective of a visitor to such a hamlet. Simms chooses to leave out people in most his narratives, instead describing the organization and activities of the 'task'. Simms builds the picture of the Fremont from these relatively simple components to pictures of the larger societal structure, introducing corporate groups, power, and leadership. The text for most of these chapters is relatively brief, seldom over a couple of pages in length.

The following chapters cover the Fremont landscape, Fremont origins, and the Fremont Frontier. It is after this point that Simms returns to rock art, describing Fremont rock art styles and distribution. He brings the two subjects, Fremont Society and Fremont Rock Art, together in the second to last chapter.

The numerous photographs in the book, taken by photographer Francois Gohier, include many beautiful rock art panels, as well as photographs of Fremont artifacts. The photographs will intrigue professionals and non-professionals alike.

This is something beyond the typical pretty picture book. In doing so he has produced an excellent introduction to these advanced topics. Plainly spoken without the technical gibberish that we're all too prone to lapse into Simms effectively weaves an understandable picture of the complexities of the Fremont society. This book should be on the shelf of every professional archaeologist if for nothing else as an excellent example of communicating complex topics in an elegant fashion to a wide-range of readers.

UPCOMING CONFERENCES

Rachel S. Popelka-Filcoff, Associate Editor

2011

2-5 March. 3D-ARCH International Conference on "3D Virtual Reconstruction and Visualization of Complex Architectures" Trento, Italy. Gen. info.: http://www.3d-arch.org/

20-25 March. Twelfth International Conference on Accelerator Mass Spectrometry, Wellington, New Zealand at the Museum of New Zealand, Te Papa Tongarewa. Gen. info.: http://www.gns.cri.nz/ams12/.

27-31 March. 241st ACS National Meeting and Exposition, Anaheim, California, U.S.A. Gen. info.: http://acs.org

13-18 March. Modern Trends in Activation Analysis, College Station, TX, U.S.A. Special session on Archaeometry. Gen. info.: http://tti.tamu.edu/conferences/mtaa13/

13-18 March. Pittcon Conference and Expo, Atlanta, GA, USA. Gen. info.: http://www.pittcon.org/

30 March- 3 April. Society for American Archaeology 76th Annual Meeting. Sacramento, CA USA. Gen. info.: http://www.saa.org/meetings/index.html, Contact: meetings@saa.org

3-6 April. Qin Period Metallurgy and its Social and Archaeological Context. Xian, China. Gen. info.: http://www.ucl.ac.uk/silva/archaeology/events/conference/qinmetallurgy2010

3-8 April. European Geosciences Union General Assembly 2011, Vienna, Austria. Gen. info.: http://www.egu.eu/ Special session: Sediments and soils as indicators of natural and anthropogenic environmental change in the Caucasus Region and neighbouring areas? from the Early Pleistocene to the Present" Special session contact: hans.von.suchodoletz@uni-leipzig.de

11-15 April. Archéométrie 2011, Liege, Belgium. Gen. info.: http://www.archeometrie2011.ulg.ac.be/Welcome.html

12-16 April. American Association of Physical Anthropologists Annual Meeting. Minneapolis, MN, USA. Gen. info.: http://physanth.org/annual-meeting

12-16 April. Paleoanthropology Society Meetings, held in conjunction with the American Association of Physical Anthropologists. Minneapolis. MN, USA. Gen. info.: http://www.paleoanthro.org/meeting.htm

12-17 April. 39th Annual Conference of Computer Applications and Quantitative Methods in Archaeology, "Revive the Past". Beijing, China. Gen. info.: http://www.caa2011.org/#home|default

14-16 April. On the Surface: The Heritage of Mines and Mining. Innsbruck, Austria. Gen. info.: http://tourism-culture.com/conferences_and_events.html

16-21 April. Association of American Geographers (AAG) Annual Meeting, Seattle, Washington, USA. Gen. info.: Special Session: Special session contact: Christopher Gentry: gentryc@apsu.edu

26-29 April. 11th Nordic Theoretical Archaeology Group (TAG): Multidisciplinary Archaeology, Kalmar, Sweden. Gen. info.: http://lnu.se/about-lnu/conferences/11th-nordic-tag-multidisciplinary-archaeology?l=en

4-7 May. 34th Annual Conference of the Society for Ethnobiology. Columbus, OH, USA. Gen. info.: http://ethnobiology.org/conference/upcoming

4-7 May. Why Does the Past Matter? Changing Visions, Media and Rationales in the 221st Century. Amherst, MA, USA. Gen. info.: http://www.umass.edu/chs/news/conference2011.html

10-12 May. GLASSAC 11-Conference (Glass Science in Art and Conservation) in the Bronnbach Monastery near Wuerzburg, Germany. "Innovative technologies in glass art, design and conservation from the 19th to the 21st century – the role of the sciences" Gen. info.: http://www.glassac.eu/

18-22 May. Canadian Archaeological Association Meeting, Halifax, Nova Scotia Alberta, Canada. Gen. info.: http://novascotiaheritage.ca/caa2011/index.html. Special session: "Integrating Quarry Data from Outcrop and Extraction to Workshop and Habitation" Session contact: Elizabeth Robertson: liz.robertson@usask.ca

23 - 25 May. The Third International Congress of Eurasian Archaeology. Demirci Belediyesi Kültür Merkezi, Demirci, Manisa, Türkiye. Application deadline: 4 March 2011. Gen. info.: http://web.deu.edu.tr/kam/index.php/congress/icea-2011-demirci

23-26 May. 4th Symposium on Preserving Archaeological Remains in situ (PARIS4). Copenhagen, Denmark. Gen. info.: http://www.natmus.dk/sw74169.asp

29 June- 1 July. Archaeometallurgy in Europe III. Bergbau-Museum, Bochum, Germany. Gen. info.: http://www.bergbaumuseum.de/ Contact: aie3@bergbaumuseum.de

21-27 July. INQUA 2011: Quaternary Sciences-the view from the mountains, Bern, Switzerland. Gen. info.: http://www.inqua.tcd.ie/congress.html

1-5 August. 60th Annual Denver X-Ray Conference. Colorado Springs, CO, USA. Gen. info.: http://www.dxcicdd.com/

14-19 August. Goldschmidt 2011. Prague, Czech Republic. Gen. info.: http://www.goldschmidt2011.org/

22-26 August. 238th National Meeting and Exposition, American Chemical Society. Boston, MA, USA. Gen. info.: http://www.acs.org.

28-31 August. CANQUA/Canadian Chapter of the International Association of Hydrologists. Quebec City, Canada. Gen. info.: http://www.mun.ca/canqua/index.html

28-31 August. Geohydro 2011: Water and EARTH: The junction of Quaternary Geoscience and Hydrogeology, Quebec City, Canada. Gen. info.: http://geohydro2011.ca/?q=home. Special session: "Exploring Climate Change Impacts on Landscape and Hydrologic Processes at a Range of Spatial and Temporal Scales".

5-8 September. 6th International Congress on the Application of Raman Spectroscopy in Art and Archaeology (RAA 2011). Parma, Italy. Gen. info.: http://www.fis.unipr.it/raa2011/

19-23 September. ICOM-CC Triennal Conference. Lisbon, Portugal. Gen. info.: http://www.icom-cc.org/244/triennial-conferences/16th-triennial-conference,-lisbon,-portugal/

25-30 September. The Clay Minerals Society Annual Meeting. Lake Tahoe, NV, USA. Gen. info.: http://www.clays.org/annual%20meeting/announcement.html

29 September - 1 October. European Meeting on Ancient Ceramics. Vienna, Austria. Gen. info.: http://emac2011.univie.ac.at .

2-6 October. 38th Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) Meeting. Reno, NV, USA. Gen. info.: http://facss.org/facss/index.php.

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