



SAS Bulletin

Society for Archaeological Sciences

Volume 26 number 2

Summer 2003



The Society for Archaeological Sciences: The First 25 Years (More or Less)

Rob Sternberg, General Secretary

The Society for Archaeological Sciences is somewhere in the vicinity of the 25th anniversary of its founding. During the International Symposium on Archaeometry and Archaeological Prospection in 1977 at the University of Pennsylvania in Philadelphia, five members of the acting executive board met to lay the groundwork for the formal organization and development of the SAS. The first issue of the *Newsletter* of the Society for Archaeological Sciences was issued in the summer of 1977. The Articles of Incorporation for the Society for Archaeological Sciences were filed with the Secretary of State of the State of California on 29 March 1979. The initial goal was to develop a consensus as to the issues confronting those actively involved in the pursuit of archaeometric research in the 1970s and beyond.

"The original idea for the SAS came about as the result of a consideration of the contrast between the support for archaeological science/archaeometry in England and Europe as opposed to the United States... The actual idea was developed in conversations between Rainer Berger and myself and we coined the name Society for Archaeological Sciences (plural, "sciences"). I then contacted various individuals around the country to sound them out. There was support by a number and they became the first Acting Executive Board" (R.E. Taylor, personal communication).

"Both SAS and the Geological Society of America Division were founded as part of a broad effort to get archaeological science and archaeological geology able to function better – you need professional societies, university grad programs to train the next generation, journals, newsletters, meetings, etc. Both have been successful in 'leading the way' and both fields are doing well" (Rip Rapp, personal communication).

SAS had 100 charter members. Membership cost \$5 per year. The first meeting was held on April 25, 1979, at the Society for American Archaeology (SAA) meeting in

Vancouver. A questionnaire in Fall, 1979, showed SAA to be the most popular venue for SAS meetings. This has continued, with the exception that SAS business meetings have been held at the International Archaeometry Symposium when that meeting is in North America. The SAS has sponsored archaeological science sessions at the SAA meeting since 1982 (*SAS Newsletter* 5:2). Membership for the past decade has hovered between 300 and 400. SAS currently has 294 members (2003 renewals are still dribbling in), of which 214 are in the United States, 16 in the United Kingdom, 14 in Canada, and 50 from other countries. By membership category, there are 181 regular members, 72 lifetime members, 20 student/retired members, and 21 institutional members. There are 145 members taking advantage of special SAS subscription rates to the *Journal of Archaeological Science*, and 55 subscribing to *Archaeometry*.

The founding SAS Acting Executive Board in 1977 consisted of Rainer Berger, Karl Butzer, James B. Griffin, P. Edgar Hare, Richard L. Hay, Vance Haynes, Robert Maddin, George Rapp, Jr., Max Saltzman, and R.E. Taylor. R.E. Taylor served as both the *Newsletter* editor and the Acting Secretary. Subsequent elections brought those listed below into the offices of President and Secretary-Treasurer. The Editor of the *Newsletter/Bulletin* has been selected by the Board. Elections switched from annual to biannual in 1991.

(continued on page 4)

In This Issue

Jobs and Fellowships	2
Report of SAS Elections	4
AIA, SAA & Fryxell Awards	4
Chronometric Dating (J. Rink)	5
Geoarchaeology (F. Pearl)	6
UK Archaeological Science 2003 (K. Brown)	8
Archaeological Science News	9
Archaeological Ceramics (C.C. Kolb)	10
Book Reviews (M. Hall)	
<i>32nd Archaeometry Symposium</i> (I.E. Schrüfer-Kolb)	26
<i>Beyond Foraging and Collecting</i> (W.C. Prentiss)	28
<i>Arch. Theory and Scientific Practice</i> (Y. Nishida)	29
<i>The Body</i> (J. Carman)	30
Meetings Calendar (C. Stapleton)	31

Research Awards for Graduate Students

The Laboratory for Archaeological Chemistry at the University of Wisconsin-Madison has an annual program of research award grants to graduate students in archaeology programs around the world. The lab staff strongly believes that major discoveries in archaeology in future years will come from laboratory investigations. In that light, the training of graduate students in analytical methods and their application is essential. This award is intended to further those goals. The awards are offered to support and encourage the application of chemical analyses in solving archaeological problems.

The Laboratory for Archaeological Chemistry has been involved in the study of questions of archaeological interest for many years. The primary focus of research in the laboratory is on the characterization of prehistoric bone, soils, and pottery. A variety of other materials including stone, dyes, organic residues, metals and glass are also investigated in the laboratory. Instrumentation in the lab includes a (1) Inductively Coupled Plasma Atomic Emission Spectrometer for the rapid elemental characterization of a variety of materials with a resolution in parts per million, and (2) Finnigan Element Inductively Coupled Plasma High-Resolution Mass Spectrometer for isotopic and elemental characterization of many materials. This instrument incorporates laser ablation as a sample introduction technique appropriate for solids and for small or fragile samples. In addition the lab has access to a variety of other instrumentation and equipment on campus that is often used in our research.

Application: Applications for the award should contain (1) a three-page letter from the applicant containing the specifics of the research and the analyses involved, (2) a curriculum vitae of the applicant, (3) a tentative table of contents for the dissertation, and (4) a letter of recommendation from the major advisor. The letter of application should contain detailed information on the research project, the kinds of analyses involved, the number of samples and analyses required, availability of samples with letter(s) of permission if appropriate, and a discussion of the importance of the analysis to the proposed research. This letter should also provide a timetable for research and completion of project. Discussions with the lab staff are recommended prior to application to ensure that the project meets award criteria and employs services available in the Laboratory for Archaeological Chemistry. There is no form for applications.

Criteria for Award: The award will be made by the staff of the Laboratory for Archaeological Chemistry; major criteria for selection will be the significance of the research question, project feasibility, and impact on the student and the field.

Deadline: 1 January for awards beginning 1 September.

Award: One award will be made each year consisting of analytical services involving elemental or isotopic measurements available with Laboratory for Archaeological Chemistry instrumentation. The lab strongly encourages students to participate directly in the analysis in order to learn and understand the methods employed.

Announcement: The award will be announced on 15 March each year. Awards should be appropriately acknowledged in any dissemination of results of the analyses and copies of resulting publications should be provided to the Laboratory for our files

Contact: Questions and Applications should be addressed to T. Douglas Price or James H. Burton, Laboratory for Archaeological Chemistry, University of Wisconsin-Madison, 1180 Observatory Drive, Madison WI 53706 USA. Phone: 608-262-2575 (tdp), 608-262-0367 (jhb), 608-265-4216 (fax). Email: tdprice@facstaff.wisc.edu or jhburton@facstaff.wisc.edu. For further information on the Laboratory for Archaeological Chemistry, please see our web site at www.wisc.edu/larch/aclab/larch.htm.

Junior Researcher in Luminescence Dating

Max Planck Institute, Leipzig, Germany

The Max Planck Institute for Evolutionary Anthropology, Leipzig (Germany) invites applications for a junior research position in luminescence dating (OSL and TL) to establish a luminescence dating laboratory at the new department of Human Evolution. We are seeking a researcher who undertakes fundamental research into luminescence and who is therefore contributing to the continued development of the field. We also would expect the successful candidate to undertake routine dating of sites of interest to the Human Evolution group. Over the next few years the Human Evolution department will also create a U-series dating lab, and will have a strong interest in radiocarbon dating, creating a strong geochronology sub-group. We are therefore particularly interested in a researcher who will interact with other geochronologists, palaeoanthropologists and archaeologists within the Department of Human Evolution. The successful candidate will have a Ph.D. in a related field, and a strong track record of research in the area of luminescence dating (optical and/or thermal) including the application of the methods to dating archaeological and/or palaeontological sites. The position is for three years in the first instance, with the possibility of renewal.

For further information please contact the Director of the Human Evolution department, Professor Jean-Jacques Hublin (hublin@eva.mpg.de), or Dr. Mike Richards (richards@eva.mpg.de). Applications, including cover letter (with an electronic copy to hublin@eva.mpg.de and richards@eva.mpg.de), curriculum vitae, list of publications, reprints of two key publications, short statement of research interests, and the names of three referees should be sent to Prof. J.J. Hublin, Max-Planck-Institut for Evolutionary Anthropology, Department of Human Evolution, Deutscher Platz 6, D-04103 Leipzig (Germany). Candidates should ask references to send supporting letters to the same address. Screening of applications will begin December 1, 2003, and continue until a suitable candidate is found.

Advertise your job, post-doc, and student opportunities here. Contact the Editor for further information.

New position in Archaeological Science

University of Queensland, Australia

The School of Social Science, University of Queensland, Brisbane, Australia has just posted an advertisement on its website for a Lecturer/ Senior Lecturer in the Archaeology program. In addition to archaeology, the position includes experience in archaeological science. Details can be found at the University website: <http://www.uq.edu.au/staff/vacancies/index.html> and navigate through 3 or 4 pages or go directly to <http://www.seek.com.au/users/viewdetails.asp?Action=jobsearch&JobListAction=ViewOneAd&JobSearch=true&AdID=2957634>

MIT's Summer Institute in the Materials Science of Material Culture

With support from the National Science Foundation, MIT will convene the third annual Summer Institute in the Materials Science of Material Culture [SIMSMC] during the two week period, 7-18 June 2004. The job of the Summer Institute is to encourage and assist faculty at liberal arts colleges in introducing materials science and engineering to their undergraduate curricula in imaginative and intellectually stimulating ways that are congruent with and relevant to the pursuits of the wide spectrum of disciplines common to liberal arts institutions. Archaeological science is the vehicle through which the SIMSMC instructors accomplish this educational goal.

Summer Institute participants are a group of fifteen faculty members drawn primarily from undergraduate liberal arts institutions that do not offer engineering. They are chosen each year to represent a broad range of fields, including: anthropology, archaeology, art history, biology, chemistry, classics, earth sciences, environmental science, geography, history, physics. A few engineering faculty members may round out the group. The SIMSMC is a liberal arts guide to planning effective integration of these areas with materials engineering.

Working together with these colleagues, the four MIT faculty members who designed the SIMSMC - two materials archaeologists and two materials scientists - present teaching modules that explore materials engineering in the context of material culture.

The modules concentrate on the materials processing technologies that transform natural and synthetic materials into cultural objects. Because the research of the MIT instructors has focused heavily on the manufactures of ancient and pre-industrial societies, the discipline of archaeology has become a vehicle and context for integrating materials science and engineering fully into our study of the material world of the past. The SIs also consider the production of material culture by contemporary societies, including that category of objects we denote as "art".

No more than two modules are considered during the course of any SI, organized as morning lectures and afternoon laboratory sessions. Participants gain intense exposure to the

materials science, social science/humanities, materials processing, and laboratory analytical components of the subject matter.

The two modules offered during the June 2003 SIMSMC were: (1) Glass in Human Experience (Prof. Linn Hobbs and Prof. David Grose), and (2) The Power of Metal in the Ancient Andean World (Prof. Heather Lechtman and Prof. Samuel Allen). Other modules that may be offered in June 2004 include: Acoustics and Culture in Mesoamerica: Metal and Sound (Prof. Dorothy Hosler and Prof. Samuel Allen) and Andean Cloth and Other Fiber Technologies (Mary Frame and Prof. Linn Hobbs).

The broad aim of the Summer Institutes in the Materials Science of Material Culture is to promote infrastructure at liberal arts institutions that will affect dramatically the educational experience of undergraduate students by stimulating teaching that links science, engineering, social science, and humanities. We aim to accomplish this broad objective by providing a template for such experience.

Our template joins the fields of archaeology and materials science and engineering to provide an integrated educational experience for students as they explore the relations between people and their material world. Art history, classics, environmental science, geography, history and other fields are all excellent vehicles for achieving this goal.

Participant expenses are fully paid by SIMSMC: round-trip travel to MIT, housing on campus, and meals.

Visit the SIMSMC web site [<http://web.mit.edu/materialculture/www>] for an on-line application form and detailed information on Requirements for Applicants, the 2003 Modules, the Instructors, Travel & Housing, and how to contact us with inquiries about the program.

The MIT Summer Institute in the Materials Science of Material Culture is supported by an educational grant from the Division of Materials Research of the National Science Foundation.

Director of SCMRE Retires

David L. Evans, Under Secretary for Science

It is with deep appreciation for his work that I announce the retirement of the longtime director of the Smithsonian Center for Materials Research and Education (SCMRE), Dr. Lambertus van Zelst. Bert retired effective July 31, 2003 and plans to spend some time sailing the Caribbean before returning to his research interests.

Bert came to the Smithsonian Institution on August 5, 1984, to direct SCMRE under its previous name the - Conservation Analytical Laboratory - and just after its move to the newly constructed Museum Support Center. Over the subsequent nineteen years, he was responsible for reshaping this service unit into an internationally renowned research laboratory, which dealt with complex issues of preservation of collection materials and the use of physical science techniques to answer question in art history and archaeology. Under his guidance, and in

response to a congressional mandate, the laboratory developed a strong educational program to address the needs for advanced training of conservators. Particularly noteworthy was his commitment to communicating information derived from the scientific study of cultural material to the public, targeting especially Native American and Latino populations who created the objects of study.

Bert has served in leadership roles for many national and international organizations that are concerned with the preservation of the cultural heritage. He held prior research positions at the Metropolitan Museum of Art and was Director of the Research Laboratory at the Museum of Fine Arts in Boston.

Secretary Small and I understand Bert's decision to retire at this time and we hope all of you will join us in wishing him well fair winds and following seas.

For further information on this message contact Theresa L. Mellendick, Office of Under Secretary for Science, 202-786-2323 or email mellendickt@si.edu.

SAS Elections Committee Report 2002/2003

Greg Hodgins, VP/President Elect

Arleyn Simon, President

Christian Wells, VP for Membership Development

The Elections Committee was struck in January and initiated a search for candidates for the Executive Board Positions of Vice-President/President Elect and Secretary-Treasurer. A Call for Nominations was e-mailed to the membership on February 26, 2003 with nominations closing on March 7, 2003. A slate of candidates was assembled in early March and both e-mail and paper ballots sent by the General Secretary to the membership on March 18th, 2003. Balloting closed April 2nd.

The Elections Committee is pleased to announce the election of Dr. Aaron Shugar and Ms. Colleen Stapleton to the Positions of Vice-President/President Elect, and Secretary-Treasurer respectively.

Vice President/President Elect

Dr. Aaron Shugar, Archaeometallurgy Laboratory, Materials Science and Engineering, Lehigh University, Bethlehem PA a.shugar@lehigh.edu

Dr. Shugar is a Research Scientist in the Archaeometallurgy Laboratory at Lehigh University. His main area of interest is early pyrotechnology. Aaron has a doctorate from University College London, and also completed a post-doctoral position at UCL's The Institute of Archaeology. He is co-founder and director of the Near Eastern Archaeometallurgy Research Group (NEAR), and co-organizer of the Early Materials' Forum. For the last 3 years he has managed both the EMF's web pages and organizing meetings. He is a Research Associate at the Department of Near and Middle Eastern Civilizations, University of Toronto, and serves on the Scientific Committee of the Institute of Archaeometallurgical Studies (IAMS). A member of the SAS, Aaron organized the discussion

session on Experimental Archaeometallurgy for the 2002 Society for American Archaeology meeting. Aaron is a member the Society for Historical Metallurgy, the American Institute of Archaeology, and the American Society for Oriental Research (ASOR).

Secretary-Treasurer Elect

Colleen P. Stapleton: University of Georgia, Geology Department, Athens, GA, USA; cstaple@uga.edu

Colleen Stapleton recently completed her dissertation at the University of Georgia. Her primary interest is the archaeometry of glass. She has previously held positions in the Department of Scientific Research, Corning Museum of Glass, NY, and the Department of Scientific Research, British Museum, London. She is Past President of Sigma Gamma Epsilon, Student Association for Archaeological Sciences (University of Georgia), and she has served on International Commission on Glass Technical Committee 17: The Archaeometry of Glass. She is a member of the Society for Archaeological Sciences, the Materials Research Society, the International Association for the History of Glass, American Schools of Oriental Research, Geological Society of America, Mineralogical Society of America. She is also Meetings Calendar Editor for the SAS Bulletin.

Kuniholm Receives AIA Pomerance Award

Peter Ian Kuniholm received the Archaeological Institute of America Pomerance Award for Scientific Contributions to Archaeology at its 104th Annual Meeting, in New Orleans in January 2003. The text of the award follows.

The AIA is pleased to present the Pomerance Award for Scientific Contributions to Archaeology to Professor Peter Ian



Kuniholm, director of the Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology at Cornell University. The focus of the laboratory, organized and led by Kuniholm for 30 years, has been the building of long tree-ring chronologies for the eastern half of the Mediterranean from the

Neolithic to the present. Over 10 million tree-ring measurements have led to the successful compilation of chronologies spanning, but not wholly covering, 9,000 years. At first studies concentrated on the Iron Age period of Turkey using conifers; now partial chronologies have been constructed using samples from seven species of trees spread over the eastern Mediterranean from Georgia near the Caucasus to Italy and from Cyprus and Lebanon to the former Yugoslavia and parts of Bulgaria.

Kuniholm has pioneered the cross-dating of wood over considerable distances, not only establishing dates for microclimatic zones, but also leading to evidence for macroclimatic patterns. He also uses instrumental neutron activation analysis (INAA) of trace elements to more accurately date volcanic eruptions based on sampling of a single tree ring and correlating an increase in gold concentration caused by the eruption. To accomplish this, he focused on careful collection of wood samples, full documentation of archaeological context, and the preparation and measurement of samples using standardized protocols. Many Cornell University undergraduates and graduate students have been trained in his laboratory in the scientific measurements necessary for reliable dendrochronology. He and his students have dated tomb and building timbers, shipwrecked hulls, Ottoman monuments, panel paintings, charcoal, and icons. The results have been communicated faithfully and promptly in yearly reports and in an active user-friendly web site. His web site has 145,000 hits annually, this year from 72 countries. Kuniholm has produced many review articles, special topical articles, and appendices in archaeological reports, totaling almost 100 peer-reviewed papers. In addition, Kuniholm has contributed major chapters and encyclopedia entries on dendrochronology and other applications of tree-ring studies in archaeology.

Recently, Kuniholm investigated dendrochronological evidence for climate change and found remarkably stable conditions over millennia, with the extremes of previous warm periods matching those of our present time. He has addressed questions of forestation, volcanic activity, statistical analysis, the sharing of data among laboratories, and the cross-comparison of tree-ring dates with radiocarbon dates. The laboratory's activities are now broadening to include projects centered in Europe and North America.

Kuniholm has transmitted to his students the discipline and excitement of field research. For instance, his 2001 Progress Report states that with three students, "14,500 kilometers of driving in the summer of 2001 produced 395 sets of samples from 43 sites in Italy, Greece and Turkey, with promises of more to come." In addition to providing site-specific dates, Kuniholm emphasizes long-term testing of microclimatic models that refine the chronology by adjustments for variable lengths of growing seasons and the relationship to carbon uptake, as reported recently in the journal *Science*.

Kuniholm is indeed the proselytizer for dendrochronology, a distinguished and enthusiastic teacher of archaeological science, and a scholar who has contributed to many of the hot topics in environmental, landscape, and site-based archaeology. he has certainly become a spokesman for the integration of science and archaeology.

Neff Receives SAA's Award for Excellence in Archaeological Analysis

Dr. Neff's interest in instrumental neutron activation analysis and statistical modeling of compositional data began with his doctoral research on Plumbate pottery in southern

Mesoamerica in the 1980s. Dr. Neff joined the Missouri University Research Reactor team as research scientist in 1990. There, he helped develop an extensive NSF-funded program to make INAA available to archaeologists at low cost. He provided high-quality statistical analyses and sound archaeological interpretation, and he developed innovative techniques, like clay temper simulation modeling. His collaborative publications appear in scores of journals and books. Dr. Neff continues to push the frontier of ceramic analysis with a powerful new technology, inductively coupled plasma mass spectrometry at California State University, Long Beach, where he is associate professor and heads the laboratory. Although a relatively young scholar, Dr. Neff's substantial influence on the field of ceramic analysis has already been felt.

Rapp Receives SAA's Fryxell Award for Interdisciplinary Research

The 2003 winner of SAA's Fryxell Award for Interdisciplinary Research is Dr. George Rapp. Affectionately known as 'Rip' Rapp, he has been and remains a leading figure in geoarchaeology. The author of numerous articles and chapters on research in the Old and New Worlds, Dr. Rapp is especially well known for his books, *Archaeological Geology* and *Geoarchaeology: The Earth-Science Approach to Archaeological Interpretation*. In 1977, Rapp organized the Archaeological Geology Division of the Geological Society of America, the central organization for geoarchaeologists. Dr. Rapp is a dedicated teacher and Dean at the University of Minnesota, and many of his students are now practicing geoarchaeologists and prominent figures in the field. He initiated and for years maintained the "Directory of Graduate Programs in Archaeological Geology and Geoarchaeology." For his theoretical and substantive contributions to geoarchaeology and for his dedication to education, the Society for American Archaeology is honored to present this award to Dr. George Rapp.

Dating

W.J. Rink, Associate Editor

The proceedings of the 10th International Conference on Luminescence and Electron Spin Resonance Dating (LED 2002) are now available. The proceedings are published in *Quaternary Science Reviews* (Quaternary Geochronology) in Vol. 22, pp. 951-1382, May 2003 issue, and in an upcoming volume of *Radiation Measurements* (the contributions are presently available on-line as articles in press). The conference, held at the Desert Research Institute in Reno, Nevada, USA June 24-28, 2002 attracted more than 100 specialists, including many students in these fields. New developments in luminescence dating highlighted the conference. In dating applications (*Quaternary Science Reviews* portion) there are

numerous papers dealing with the use of these methods on loess, dunes, fluvial sediments, and archaeological deposits, and emphasis on the problems of bioturbation in the dating applications. A variety of fundamental studies (*Radiation Measurements* portion) include those on hardware development, and special problems in radiation dosimetry in dating. There were two other meetings recently held for those interested in learning about luminescence and ESR dating: The Second North American Luminescence Dating Workshop in Albuquerque, New Mexico on August 14-16, 2003 (more information at <http://www.ees10.lanl.gov/osl/NALDW2.htm>) and the UK Luminescence and ESR Meeting in Aberystwyth, Wales on September 8-10, 2003 (further information at <http://www.aber.ac.uk/quaternary/uk2003/>).

What is a Geoarchaeologist Anyway?

Frederic Pearl, Associate Editor for Geoarchaeology



As I write this, my first column as the new geoarchaeology editor, I am sitting with my laptop on the beach of a South Pacific tropical island, watching the sunset, and pondering what it means to be a geoarchaeologist. It is our first day, and the field crew has finished up, and now it is time to reflect on the events of the day and plan tomorrow's strategy for better understanding the prehistory of this beautiful island.

As the Associate Editor for Geoarchaeology for the *SAS Bulletin* this may come as a shock to you (especially the editor!), but I've decided that I'm not a geoarchaeologist. Sure, geoarchaeology provides the foundation for every project I'm associated with, I run a listserv for geoarchaeologists (garch-l), and I'm the editor of this column, but I'm finding it increasingly difficult to call myself a geoarchaeologist when it is but one tool in my archaeological bag of tricks. As a graduate student I loved specializing in geoarchaeology because it enabled me to do something special, and distinctly contributory, for the project. It required me to spend a lot of time working alone, exploring the landscape or one profile or another. My knowledge was unique on the project, and my input was listened to with profound admiration (or consternation depending on the situation). However, I found that as a Principal Investigator on comprehensive archaeological projects I was no longer able to devote as much time as I use to to geoarchaeological pursuits. There was too much more that I had to know, and too much more that I had to do to spend enough time contemplating natural site formation processes on a ridge overlooking the site.

Like many of you, my true aim is to understand prehistory in a comprehensive, robust fashion. To that end, understanding the earth, its dynamic processes, and the impact they have on site preservation or destruction are inseparable from good

archaeology. As I'm not a specialist, I must simply be an archaeologist. I'll tell you what though...I've discovered that most of you are just like me. That is, you respect geoarchaeology (that's why you are reading this column), but in order to be a geoarchaeological specialist requires a full-time dedication. Nowadays I still head up to that ridge as often as I can to survey the landscape, I spend as much time as I can in the trenches, and I drink a few beverages with my colleagues discussing what's really going on at the site. By the way, if every time you think you understand the local geomorphology but go around a bend in the river and see a new exposure, and experience renewed confusion...that's normal. Most importantly you know what needs to be done, or are willing to learn, and you know what can be done with geoarchaeological expertise. These days, you need to know when you are over your head. Good archaeologists need to keep up on geoarchaeological techniques, and need to know the tremendous potential for geoarchaeological studies to contribute to a better understanding of the past. That is, after all, why we're here. My advice other than reading is to go to meetings and attend the geoarchaeology sessions to see what your colleagues are up to.

Geoarchaeologists made a very strong showing at the Society for American Anthropology meeting this year in Milwaukee. According to the SAA overall attendance was down, but I've never seen a better attendance at the Geoarchaeology Interest Group meeting. Indeed, since its inception in 1998 the GIG has become one of the largest interest groups within the SAA. If you missed this year's meeting then you missed some great geoarchaeology sessions. My favorites included the Fryxell Symposium: The Earth Sciences and Archaeology: Papers in Honor of George (Rip) Rapp, Jr; general sessions, Applications of GIS and Remote Sensing in Archaeology, and Case Studies in Paleoclimate and Geomorphic Change; and a symposium, Advances in Geophysical Applications and Archaeological Research Design.

For me, this year's highlight was the GIG sponsored symposium, Managing Cultural Resources with Geoarchaeology. Though I'm not a member of the CRM community, I think this is the area where resource managers have made the greatest progress in the last decade. There was a time not long ago that geoarchaeologists were considered a fringe group with only limited potential to aid archaeological (not to mention anthropological) research. Today the techniques employed by contracting archaeologists to help resource managers manage their properties are quite sophisticated. There is clearly a sense now that in order to understand the archaeological record that an understanding of medium time-scale geological processes (on the order of thousands of years or longer) are required.

Possibly the most important theme between papers this year was the potential for geoarchaeology to develop predictive site models that can be used for area management. While archaeologists continue to be skeptical of predictive site models, resource managers are finding them essential in providing protection to vast and diverse landscapes.

If you haven't been to a conference in a while, now is your chance. Several upcoming conferences of interest to geoarchaeologists are listed in this issue of the *SAS Bulletin*. I always have a great time. I hope to see you at one of them.

(SAS 25th Anniversary, continued from page 1)

Year	President	Secretary-Treasurer	Editor
1979	Karl Butzer	Rainer Berger	Suzanne De Atley
1980	R.E. Taylor	Matthew Hall	Suzanne De Atley
1981	Jonathon Ericson	David Weide	Suzanne De Atley
1982	John Weymouth	Elizabeth Coughlin	Suzanne De Atley
1983	George Rapp, Jr.	Thomas J. Riley	Suzanne De Atley
1984	Rainer Berger	Barbara Luedtke	George Rapp, Jr.
1985	Joseph Michels	John Twilley	George Rapp, Jr.
1986	Joseph Lambert	Prudence Rice	Pat Martin
1987	Jeffrey Dean	Irwin Rovner	Pat Martin
1988	Garman Harbottle	Patricia Crown	Pat Martin
1989	Doug Price	Patricia Crown	Pat Martin
1990	Suzanne DeAtley	Rob Sternberg	Rob Sternberg
1991	James Burton	Chris Prior	Rob Sternberg
1993	Erv Garrison	Chris Prior	Rob Sternberg
1995	Pat Martin	Chris Prior	Chris Nagle
1997	Rob Sternberg	Felicia Beardsley	Rob Tykot
1999	Chris Prior	Felicia Beardsley	Rob Tykot
2001	Arleyn Simon	Felicia Beardsley	Rob Tykot
2003	Greg Hodgins	Colleen Stapleton	Rob Tykot

Vice Presidents appointed by the Executive Board have included Steve Shackley, Elizabeth Lawlor, Foss Leach, Arleyn Simon, Jim Burton, and Christian Wells. Foss Leach, Curt Beck, Bob Maddin, Daniel Wolfman served as consulars. Chris Prior began many years of official and unofficial service in 1980.

The office of the General Secretary was established in 1981, with R.E. Taylor assuming the post. This office was intended to provide administrative continuity to the organization. All business affairs including the maintenance of the membership files and legal records are to be maintained by the General Secretary. Records were computerized in 1981. Erv Taylor held this position for more than 20 years until it was taken over by Rob Sternberg in the summer of 2002. Chris Prior, Elizabeth Stilwell, and Donna Kirner have served as Associate Secretaries-general.

The official organ of the SAS has been its *Newsletter*, changing its name to the *Bulletin* with volume 12. It is currently in its annual volume 26. Newsletters were quarterly from the start. The length was 4-6 pages through volume 5. The first 10-page issue was 10:1, with subsequent page length records increasing to 16 pages in 10:3, 24 pages in 15:1, 28 pages in 20:1/2, and 32 pages in 21:1/2. After several years with occasional combined issues, the *Bulletin* has returned to coming out on a quarterly basis. Some other milestones: the first stapled issue was 7:1, and 8:3 thereafter. Bitnet email addresses first appeared in 10:1, with more than half of the officers and editorial staff showing email addresses by 12:1. The cover went glossy with 24:1. A CD-ROM of pdf files for the first 25 volumes of the *Newsletter/Bulletin* is currently under preparation by the General-Secretary's office.

An Editorial Staff for the Newsletter was first listed in 11:1, with associate editors at that time in archaeological chemistry, archaeometallurgy, environmental archaeology, geoarchaeology, geology, remote sensing. The archaeometallurgy column, started in 1985 by Martha Goodway,

continues to this day, the longest run of any of our associate editors. Book reviews became regular with a new associate editor in 12:3. The list of associate editors has included: Joseph Lambert, Martha Goodway, David Yesner, Julie Stein, James Ebert, Rob Sternberg, Prudence Rice, Sue Mulholland, Rob Tykot, Delwen Samuel, Mark Nesbitt, Robin Burgess, Charles Kolb, Carl Heron, David Landon, Richard Evershed, Michael Glascock, Donna Kirner, Apostolos Sarris, Jack Rink, Michael Waters, Linda Scott Cummings, Michael Richards, Mark Hall, Nora Reber, Frederic Pearl, and Colleen Stapleton. Judy Holz and Jody Dalton also served as assistants to the *Bulletin* editors.

The *Journal of Archaeological Science* was floated as a potential journal for SAS in 3:1 in a message from President Butzer. Special subscription rates for SAS members became available in 1979. The cover of *JAS* has stated since 2000 that it is "published in association with the Society of Archaeological Sciences." One of the *JAS* editors informally sits on the Executive Board of SAS, as does an editor of *Archaeometry*. SAS also selects one of the managing editors of *Archaeometry*. A less formal discount subscription rate agreement also exists for SAS members for the journal *Archaeological Prospection*.

Gar Harbottle developed the first SAS poster in 1980 (4:2). A later poster was produced under the guidance of Erv Taylor. The current SAS logo was developed by Betsy Lawlor in 1994 (17:3). A fancier membership brochure came out in 1994 (17:4). And you may have seen our portable membership display at meetings around the globe.

The first international endeavor of SAS was at the Pacific Science Congress, Dunedin, New Zealand, 1983 (4:2). Foss Leach and R.E. Taylor served as co-conveners of the symposium "Archaeological Science in the Pacific Region." Informal relations with the International Symposium on Archaeometry remain strong. Sarah Wissemann serves as the SAS Representative on the ISA's Standing Committee. The recently named R.E. Taylor student poster award is given by SAS to the outstanding student poster at the International Symposium on Archaeometry, and to the outstanding student archaeometry poster at the SAA.

Foss Leach got SAS online, starting with the electronic bulletin board ArchSci in 1991 (14:1). This morphed into the listserv SAS-Net and the ftp site SAS-Depot later in 1991 (14:4). Jim Burton is now responsible for the listserv, and also got our web site up in 1997, which can now be found at the domain name www.socarchsci.org. A number of back issues of the *Bulletin* are available as pdf files from the web site.

Plenum Press and now Kluwer Publishers, in cooperation with the SAS, has issued five volumes in the book series *Advances in Archaeological And Museum Science*. The editorial board for this series has included Martin J. Aitken, Edward V. Sayre, R.E. Taylor, and Robert H. Tykot. Volumes to date are: *Phytolith Systematics*, Susan C. Mulholland, and George Rapp Jr. (eds.), 1992; *Chronometric Dating in Archeology*, R.E. Taylor and Martin J. Aitken (eds.), 1997; *Archaeological Obsidian Studies*, M. Steven Shackley (ed.); 1998; *Science and Technology in Historic Preservation*, Ray A. Williamson and Paul R. Nickens (eds.), 2000; *Biogeochemical Approaches to Paleodietary Analysis*, Stanley H. Ambrose, and M. Anne Katzenberg (eds.), 2001.

We look forward to the next 25 years. We anticipate continuing our successes of the past, but improving upon these with new ideas and new energy from you, our members. Let us know what you think!

UK Archaeological Science 2003 Oxford, England

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The premier meeting for Archaeological Science in Britain was held in Oxford in April 2003 and hosted by the Research Laboratory for Archaeology and the History of Art, University of Oxford. The conference itself was held in the peaceful surroundings of St. Anne's College and the weather was wonderful (we always talk about the weather in England). Over 120 people attended the talks, which were divided into a number of thematic sessions. The sheer scope of archaeological science never fails to amaze me, from material science to DNA, but in the end all of us have the same common purpose – to answer questions about past peoples who may have left no other traces of their existence but the sampled materials we analyse, whether bones, pots or stones.

Several groups were present in strength, and it was good to see that many graduate students were presenting their work either as a poster or as a paper, although the posters also had to be presented as a two minute talk (with one overhead allowed). The first thematic session on Geoarchaeology ranged from bone degradation (M. Collins, Newcastle), lipid biomarkers in soil such as sterols, stannols and bile acids for understanding ancient manuring practices (I. Simpson, Stirling), and calcium carbonate granules produced by earthworms – useful for resolving stratigraphic uncertainty and possibly providing carbon for dating – these granules first being studied by Charles Darwin (M. Canti, English Heritage).

The next morning seemed to be devoted to stable isotope analysis, with the exception of the first paper, in a session organised by Jessica Pearson entitled 'Human and Animal Lifeways'. For stable isotope analysis you need bone or hair, animal or human, but the first paper of the session considered what plant DNA studies can tell us about the human past. Plant DNA seems to be a neglected source of information compared to the number of studies focused on human DNA, but Terry Brown (UMIST, Manchester) showed how Italian emmer wheat landraces contain DNA information which has important implications for understanding the arrival of agriculture (and hence the Neolithic) in Italy, and how in several important respects the DNA analysis of the domesticated cereals might avoid some of the problems associated with human DNA studies. Then came a succession of papers on stable isotopes from Mike Richards (Bradford), the Evershed lab, the Oxford lab, the Newcastle lab, Andrew Millard (Durham) and Noreen Tuross (Smithsonian, Washington DC), although Noreen talked about something completely different from her abstract.

Mike Richards talked about the stable isotopic analysis of woolly mammoth hair samples (or should that be wool?) with the idea of trying to understand why these extinct mammals had higher nitrogen isotope values than other herbivores from the same site. Was this a reflection of migratory behaviour or due to some other cause?

The increasingly problematic effect of past climate and environment on stable isotopic values was explored by R. Stevens from the Oxford lab in her study of Palaeolithic horse collagen c. 40,000 BP to the present. Then Noreen Tuross tossed her small bombshell into the session with a description of the wildly varying nitrogen isotope ratio values for, of all things, ferns. These ferns were collected from an abandoned pioneer farmstead in New England where the forest had regenerated in the last 100 years. What caused these values to fluctuate in what is basically the same population of the same species of fern? Answers to the stable isotope community please – nobody at the meeting could explain, let alone Professor Tuross. Andrew Millard applied a Bayesian statistical approach to the quantification of dietary composition from stable isotope data and incidentally came up with the joke of the conference – my equations are bigger than your equations (you had to be there).

This conference featured two sessions devoted to the analysis of two archaeological sites. So after the stable isotopes (with a little DNA), the afternoon concentrated on Catalhoyuck. Famous as the site that inspired Ian Hodder, and now being excavated under his direction, the delicious irony is that one of the leaders of post-processualism is throwing every scientific application available at it. Talks ranged from the radiocarbon dating, dendrochronology, strontium isotopes, stable isotopes, trace elements, organic residues from pots and so forth. The coordination of the sampling strategies needed to provide materials for analysis and the tracking of samples and results is a formidable task, as will be the final excavation report, as Wendy Matthews explained. Integrating the results with archaeological interpretations, indeed how interpretations might change because of the results, is going to be fascinating to watch and might have broad implications for the relationship between archaeological theory and science and field practice.

I'm afraid that the next day my concentration wandered so some talks linger in the memory more than others. The theme for Friday morning was Technological Studies. Pretty pottery from Islamic period Spain was analysed in order to find out how the craftsmen achieved the remarkable lustre seen on these vessels (T. Pradell, Barcelona). The question was whether this lustre was an intentional by-product of the glazing process, or an accidental benefit. It was interesting to see how the quantity of silver used decreased over time and copper lustres came to the fore – this was not necessarily due to increased cost but to a genuine change in fashion. Ancient British metallurgy was represented in two papers, with one concentrating on the early production of steel via blooms from the smelting process (C. Salter, Oxford); the other paper was a useful typology of prehistoric crucibles that was based on functional criteria, rather than shape or size (J. Bayley, English Heritage). A final paper of the session dealt with a most unusual subject – the equipment of a Renaissance laboratory, in the

days when alchemy was science, but vessels of standard size and manufacture were required for the alchemist/scientist to carry out his experiments.

After lunch, the afternoon's session began with the Leo Biek Memorial Lecture, in honour of the life and work of the eminent archaeological scientist. This was given by Prof. Terry O'Connor (York) who spoke on bone taphonomy – what have we learned from several decades of study, and what direction future research should take, and the relationship between field studies and laboratory experiments and observations.

The rest of the day was taken up with the second site session, Old Scatness in the Shetland islands, about as far away from Catal Hoyuck in geography and climate as it is possible to be. Old Scatness is a settlement that spanned the Iron Age and Pictish periods (400 BC – 850 AD), continues into the Norse and Post Mediaeval periods, with the most recent activity on the site dating to the early twentieth century. As with Catal Hoyuck a range of investigations have been carried out, including dating methods (radiocarbon, OSL and archaeomagnetism), paleoenvironment, bioarchaeology, land management practices as evidenced from soil studies, metallurgy and user-friendly digital finds recording.

The final session was called 'Future Directions in Archaeological Science'. A paper by C. Nielsen-Marsh (Newcastle lab) showed that there are tremendous prospects for ancient protein studies. Using MALDI-MS a protein sequence for osteocalcin was obtained from ancient extinct bison bones >55,000 yrs BP. Osteocalcin is a very short, relatively abundant and stable bone protein and so was ideal for this study. Although at first sight this work seems to have limited usefulness, the prospects are there for a greater understanding of protein degradation and survival in fossils, and hence over deep time.

The only other DNA paper was included in this session because the speaker was unable to get to the conference for the Lifeways session. M. Weale (UCL) examined human Y chromosome sequence data collected from the British male population in a transect across England and North Wales. DNA samples were also collected from the putative homeland of the Anglo-Saxons, Friesland, and from Norway. The aim of the research was to look for evidence of Anglo-Saxon migration into England. There were highly similar Y chromosome sequences between Friesland and central England, but not Wales. Complicated statistical analyses suggested that there was both mass migration and continuous gene flow of Anglo-Saxon Y chromosomes into central England, contributing 50-100% of the gene pool at that time, implying population replacement in some areas.

Another future direction for archaeological science is closer relationships with archaeological theorists, according to Andy Jones (Southampton). We are probably all aware of the 'rejection' of science by certain theorists in the past, and how the teaching of social theory dominates in many British university archaeology departments. Yet perhaps there is a realisation that the divisions between science and theory in archaeology lead nowhere. The idea of 'materiality' in archaeological theory views material culture as a medium for propagating social activities, and in this view the mechanical

and physical properties of material culture are acknowledged as important. So not only are the symbolic and social meanings of objects important but also how they were made and used, the choices of materials, provenance, etc. – in fact, as Jones said, all the things that archaeological scientists already know about! It was good to hear that the theoretical divide is bridgeable after all.

At the end of the conference various groups were sounded as to their willingness to host the next UK Archaeological Science meeting in 2005. At the moment it's between Bradford and York. Hope to see you all in the North of England – speakers are welcome from all countries and all areas of archaeological science.

Archaeological Science News

Ninth Century BCE Iron Smithy Found in Israel

The earliest known iron workshop in the eastern Mediterranean - dating to the ninth century BCE - has been unearthed in excavations conducted at Tel Beth-Shemesh by Shlomo Bunimovitz and Zvi Lederman on behalf of the Institute of Archaeology of Tel Aviv University. It is generally believed that iron came into use in about 1200 BCE but gradually replaced bronze as the metal of choice only some two hundred years later, when the techniques of steeling and heat-treating of iron became common practice. Until now, there have been no substantial finds of early iron mongering in the Near East, and this has meant that archaeologists' understanding of early blacksmith activities and capabilities was based solely on their finished products. Bunimovitz and Lederman's discovery enables, for the first time, a detailed study of iron technology in the formative and crucial period when iron was first introduced into common use. Following the identification of the find as an iron smithy, Bunimovitz and Lederman joined forces with Prof. Thilo Rehren of the Department of Archaeological Materials and Technologies at the Institute of Archaeology, University College, London. The team, together with Xander Veldhuijzen of UCL, has been excavating the site since 2001. For more info, visit the website at <http://www.tau.ac.il/humanities/archaeology/News/iron-news.htm>

Annotated Bibliography of Research in Paleoecology

This is an announcement for an online survey of influential literature in the broad field of paleoecology. The goal of the survey is to create a bibliography that represents the important directions of research in paleoecology. This bibliography is developed by anonymous contributions from anyone whose research or teaching is influenced in some way by work in the field of paleoecology, not necessarily only from people who consider themselves paleoecologists. The bibliography and annotations may be viewed as a formatted list or imported into EndNote software.

The motivation for this survey is to demonstrate the current research areas in paleoecology for an upcoming discussion at the annual meeting of the Ecological Society of America (ESA) in Savannah, GA on the "Future of Paleoecology", sponsored by the Paleoecology Section of ESA. With many investigators

pursuing new directions and techniques, exciting new developments are occurring in paleoecology. This community-wide discussion will focus on where the field is headed. The online survey is designed so people not attending the discussion may share thoughts electronically. Already, the list of references is impressive, many with insightful comments attached to individual references, but some major sub-fields of paleoecology are underrepresented. We hope you will contribute and make this survey a success. The survey is at: <http://www.life.uiuc.edu/hu/ESAsurvey/> For more information, please contact: Dan Gavin, Post-Doc Associate, University of Illinois, Urbana, IL 61801; email dgavin@life.uiuc.edu

CALPAL Update

The CALPAL program (Cologne Radiocarbon Calibration & Palaeoclimate Research Package) has recently been updated. The new version includes a dialog called the CalCurveComposer (CCC), and an upgrade of the Calpal Radiocarbon Calibration Curve (CC=Calpal2003). With the CCC you now have fingertip control over the construction of (max 100) Glacial and Holocene radiocarbon calibration curves, with complete quantitative error analysis on both time scales (14C and calendric) in the age range 0-60 ka. Data entry is based on an ADD/REMOVE dialog for an input of (max) 100 different calibration data files with (max) 10000 dates. CC construction options are: a) SELECTION of CC data files; b) CHOICE of SYMBOLS, COLOURS and SIZE of error bars; c) CHOICE of CC data interpolation METHOD (splines, polynomials); d) SLIDER-CONTROL of CC spline stiffness; e) NAME of new CC; f) STORAGE of CC-data, interpolation method, and error function; g) DELETE Function for new CCs considered obsolete.

The output of the CCC is an immediately working CC in the age range covered by the selected data (e.g. 0 to 60 14C-ka). CalCurve errors are based on a (smoothing) polynomial of 6th order run through the (14C-age) differences between entered caldata and constructed CalCurve. Note that, as a rule, the CC-errors increase with the selected CC-smoothness. As a first application, we have used the new CCC to build an updated Glacial CC (called CalPal2003), based on the following data sets: INTCAL98-tree, Barbados U/TH-corals, PS2644, Suigetsu-1, Suigetsu-3, and Cariaco-2000. The new CalPal2003 is similar to the now obsolete CalPal2001 for ages 0-25 ka 14C-BP, but is constructed to be smoother in the age-range 25-28 ka 14C-BP (i.e. the European Gravettian). Once the relevant data sets have been entered, it takes little more than a few clicks to produce an updated CC. The program can be downloaded (scientific freeware) from <http://www.calpal.de>

Archaeometry 2004 Zaragoza (Spain)

The 35th International Symposium of Archaeometry, to be held in Zaragoza (Spain) in 2004 has been renumbered to the 34th because the 2003 meeting in China was postponed. The symposium web site is <http://www.archaeometry2004.info>. There you will find a preinscription form that you can complete in order to receive further information on the meeting.

Archaeological Ceramics

Charles C. Kolb, Associate Editor



This issue includes ten topics: 1) John G. Hurst (1927-2003), 2) Linda Manzanilla — Kudos, 3) Books related to archaeological ceramics; 4) Books to be Published in 2003; 5) Previous Meetings; 6) Forthcoming Meetings; 7) Ceramic Research Queries; 8) Exhibition; and 9) Internet sites, and 10) Brief Notes and News.

John G. Hurst (1927-2003)

Our British colleague Paul Courtney (Leicester, UK) reported that John Gilbert Hurst, archaeologist, born 15 August 1927, died in hospital 29 April 2003 after being violently attacked by thugs in the street of his home village in Leicestershire some weeks before. John had been recovering from head injuries from this horrific event but had a relapse. He graduated with honours in prehistoric archaeology from Trinity College, Cambridge, in 1951, but taught himself about the period 400-1600 CE and recognized the main pottery types in East Anglia from the period 650-1100. The ability to date these ceramics would lead to the identification and dating of early towns, spawning the field of medieval archaeology. He became a leading authority on medieval pottery (both domestically made and imported from the Continent) and deserted medieval villages, and fostered rescue archaeology in the UK. John was appointed to the inspectorate of ancient monuments in the Ministry of Works (later the Department of the Environment) in 1952, and became principal inspector in 1973, and assistant chief inspector from 1980 to 1987. The inspectorate was attached to English Heritage in 1984. He was elected Fellow of the Society of Antiquaries of London in 1958 and served as Vice-President from 1969 to 1973; he was elected Fellow of the British Academy in 1987 and awarded an honorary doctorate by the University of York. His expertise in Spanish majolica resulted in election as an honorary member of the Asociación Española de Arqueología Medieval (Madrid) in 1993. On 8 May, The Society of Antiquaries awarded him, posthumously, the society's Gold Medal.

Many scholars know him as the excavator of Wharram Percy deserted village, as a founding member of the Society for Post-Medieval Archaeology, and from his publications on European ceramics. He was a mentor to many students of European ceramics and had attended the Society for Historical Archaeology/Society for Post-Medieval Archaeology Special Joint Conference in Williamsburg, Virginia in 1997. Among his notable volumes are *Medieval Pottery from Excavations: Studies Presented to Gerald Clough Dunning*, edited by Vera I. Evison, H. Hodges, and J. G. Hurst (London: John Baker, 1974); *Pottery Produced and Traded in North-West Europe 1350-1650*, John G. Hurst and David S. Neal (Rotterdam Papers 6, Museum Boymans-van Beuningen, 1986); and *English Heritage Book of Wharram Percy: Deserted Medieval Village*, Maurice Beresford and John Hurst (London: Batsford, 1990). He was

also the subject of a festschrift, *Everyday and Exotic Pottery from Europe c.650-1900: Studies in Honour of John G. Hurst*, edited by David Gaimster and Mark Redknap (Oxford: Oxbow Books, 1992). He authored more than 200 papers on medieval archaeology and will be missed by friends and colleagues, and by scholars of medieval pottery.

Additional information about John is available in lengthy obituaries: *The Independent* by Andrew Saunders, 9 May 2003, <http://news.independent.co.uk/people/obituaries/story.jsp?story=404517>; *The Guardian* by Christopher Dyer, 13 May 2003, <http://www.guardian.co.uk/obituaries/story/0,3604,954613,00.html>; *The Times* by Martin Biddle, 15 May 2003, <http://www.timesonline.co.uk/printFriendly/0,,1-45-680589,00.html>; and *The Telegraph* (no byline), 26 May 2003, <http://www.opinion.telegraph.co.uk/news/main.jhtml?xml=/news/2003/05/23/db2302.xml>.

On 31 May, Paul Courtney reported to the HISTARCH listserv "I attended the funeral of John Hurst yesterday [Friday, 30 May 2003] which was held in Leicester (UK) and a reception held afterwards at the University's Centre for English Local History. John's son-in-law, archaeologist Bob Croft, appropriately read an extract from Oliver Goldsmith's poem, *The Deserted Village*, at the service. A large number of people turned up often from long distances. Many reunions took place of people who had not met in decades and who will perhaps not meet again. Many felt it was the end of an era."

Linda Manzanilla — Kudos

Linda Manzanilla (Universidad Nacional Autónoma de México, México, DF, México) is one of 21 women among a total of 90 newly elected members (72 regular and 18 foreign associates) of the U.S. National Academy of Sciences in 2003. Dra. Linda R. Manzanilla Naim is a former co-editor of the *Society for American Archaeology's* journal *Latin American Antiquity* and is Licenciatura en Arqueología, Escuela Nacional de Antropología e Historia (1974), Maestría en Ciencias Antropológicas, especialidad de Arqueología, en la Escuela Nacional de Antropología e Historia de México. Her 1979 Magna Cum Laude Master's thesis was entitled *Comentarios en torno a un proceso histórico: la constitución de la sociedad urbana en Mesopotamia (cuarto milenio a.C.)*. She also holds a doctorate in Egyptology (Doctorado en Egiptología) from University of Paris IV (Sorbonne) where her 1982 thesis was *Hypothèses et indices du processus de formation de la civilisation égyptienne (cinquième et quatrième millénaires avant Jésus-Christ)* (Mención: Très Bien. II). A resume that includes a list of her 100+ publications since 1975 may be found at http://swadesh.unam.mx/iiahome/curr_1.htm - 53k. Linda joins her fellow archaeologists Patty Jo Watson (Washington University, St. Louis) and Joyce Marcus (University of Michigan) among 70 other anthropologists (nine of whom are women) to be honored. Linda is the only woman foreign associate and only Mexican among these colleagues. A listing of the 2003 class may be found in *Science* 300(5621):883-884 (9 May 2003) and at <http://www4.nationalacademies.org/nas/nashome.nsf>. The latter also has a complete tabulation by discipline. Congratulations to Linda, a colleague and friend who, like Joyce Marcus, studies ceramic figurines and pottery vessels as a

part of explicating larger archaeological questions related to settlement systems and urbanization.

New Books

Moche Portraits from Ancient Peru by Christopher B. Donnan (Austin: University of Texas Press, 2003. 220 pp., 258 color photos, 58 line drawings, ISBN 0-292-71622-2, \$39.95, hardcover). Chris Donnan, Professor of Anthropology at UCLA, is also the author of *The Burial Theme in Moche Iconography* (Donnan, and Donna McClelland, Washington: Dumbarton Oaks, Trustees for Harvard University, 1979); *Moche Art and Iconography* (Los Angeles: UCLA Latin American Center, University of California, 1976); *Moche Art of Peru: Pre-Columbian Symbolic Communication*, rev. ed., Los Angeles: Museum of Cultural History, University of California, 1978); *Moche Occupation of the Santa Valley, Peru* (Berkeley: University of California Press, 1973); *Ceramics of Ancient Perú* (Los Angeles: Fowler Museum of Cultural History, University of California, 1992); *Royal Tombs of Sipán*, 2nd ed. (Walter Alva and Christopher B. Donnan, Los Angeles: Fowler Museum of Cultural History, University of California, 1994), and *Moche Fineline Painting: Its Evolution and Its Artists* (Donnan and Donna McClelland, Los Angeles: Fowler Museum of Cultural History, UCLA, 1999).

The Moche of the north coast of Peru inhabited an arid coastal plain, bordered on the east by the Andean cordillera and on the west by the Pacific Ocean between approximately 100 and 800 CE. They occupied the area between Piura and Huarney, a distance of approximately 550 kilometers from north to south. A majority of their settlements were located in a series of valleys whose rivers cut across the coastal plain. By channeling the rivers into a complex network of irrigation canals, the Moche extended cultivable land, which supported abundant horticulture. The Moche resided in an area formerly occupied by highly stratified societies that constructed monumental architecture. They took the arts, technology, and social organization they inherited from these preceding cultures and developed them to form their own distinctive culture. A wide variety of crops were grown, including corn, beans, guava, avocados, squash, chili peppers, and peanuts. The Moche were also sustained by oceanic and riverine resources, including marshes, and lagoons, which produced fish, shrimp, crabs, crayfish, and mollusks. Domesticated llamas, guinea pigs, and ducks were additional sources of food, along with other animals, birds, snails, and wild plants, which were occasionally hunted or gathered. With this abundant and nutritious diet, the Moche sustained a dense, highly stratified population and could allocate large numbers of workers to the construction and maintenance of irrigation canal systems, pyramids, palaces, and temples.

The Moche almost certainly practiced the system of economic redistribution characteristic of Andean people, while the surplus supported a corps of full-time artisans who created objects for the elite. The lords used many of these items to demonstrate their power and wealth; others they gave to lesser nobility to maintain social and political allegiances. Supporting skilled craft specialists created an ideal climate for stimulating artistic excellence and encouraging the innovation of sophisticated technology. The Moche are well known for their

sophisticated weaving, ceramics, and metallurgy, but especially for the creation of beautifully modeled and painted ceramic vessels. Using the medium of three-dimensional ceramic vessels that could contain liquids, Moche artisans typically formed the heads of the individuals they wished to portray, though sometimes they fashioned full figures with realistic portrait faces. True portraiture was among the greatest achievements of Moche potters. They skillfully captured the facial features of specific individuals and instilled a lifelike quality in each portrait. Nearly all of the Moche portrait head vessels depict adult males, although some children are also shown. No lifelike portrait of an adult female has been identified. In depicting a range of physical types, these vessels exemplify the portraiture of a living people. The vessels depicted lifelike animals, plants, anthropomorphic deities, hunting and fishing activities, mountain tableaux, combat rituals, and elaborate ceremonies. Donnan states that the representations ranged from the pomp and power of enthroned rulers to the travails of the maimed and the blind.

In this superbly illustrated and compellingly written volume, Donnan presents the first wide-ranging, systematic study of the Moche portraits and draws upon more than 900 specimens from museums and private collections around the world (300 of which are illustrated here in full color). He documents how the portrait tradition evolved, how the portraits were produced and distributed, who they portrayed, why they were made, and how they were used in Moche society. This analysis is supported by extensive archaeological evidence, which provides the context for portraits found in Moche tombs and midden deposits, as well as useful information for identifying the headdresses and ornaments worn by the individuals portrayed. The narrative includes a preface and nine chapters: "Introduction," "Evolution and Distribution of Portraits," "How Portraits Were Made," "Headdresses," "Ornamentation," "Multiple Portraits of Individuals," "Warriors and Captives," "Individuals Portrayed at Different Ages," and "Observations and Conclusions." The text is augmented by endnotes, references cited, and a topical and proper noun index. This book is a splendid combination of archaeology, art history, and ceramic technology, and will be valuable to scholars concerned with stratified and ranked societies, ceramic ethnoarchaeology, and craft specialization.

The book is available from the University of Texas Press (P.O. Box 7819, Austin, TX 78713-7819; street address: 2100 Comal, Austin, TX 78722), telephone 512/471-7233, Fax 512/232-7178; website at utpress@uts.cc.utexas.edu

Ancestral Hopi Migrations by Patrick D. Lyons (Anthropological Paper Number 98, Tucson: University of Arizona Press, 2003. x + 142 pp., 25 illustrations, ISBN 0-8165-2280-4, \$16.95, paper). Patrick D. Lyons, a preservation archaeologist at the Center for Desert Archaeology in Tucson, was a former Emil W. Haury Fellow in the Department of Anthropology, University of Arizona (1994-1997). Lyons received his doctorate from the University of Arizona in 2001, submitting a dissertation entitled *Winslow Orange Ware and the Ancestral Hopi Migration Horizon*. His ceramic compositional and whole vessel analyses were funded by the National Science Foundation and the University of Arizona's Anthropology Department. Hector Neff and Michael Glascock at the Missouri University Research Reactor (MURR) provided

guidance for the compositional analysis. Whole vessel studies were undertaken at the Field Museum of Natural History, Arizona State Museum, the Western Archaeological and Conservation Center, and the Amerind Foundation.

The volume focuses chronologically on the period A.D. 1250-1450 and the Homol'ovi region surrounding Winslow, Arizona, considered as the ancestral home of the ancient Hopi people. The region includes the villages of the Hopi Mesa and his research connects them with the larger traditional territory that extends well beyond the current reservation boundaries. Archaeological investigations at Homol'ovi ("the place of the mounds or small hills" in Hopi) date to Jesse Walter Fewkes's initial work in 1896, although Lyons relies heavily on the Homol'ovi Research Program (HRP) initiated in 1985 by E. Charles Adams, Curator of Archaeology at the Arizona State Museum.

Lyons begins with an introduction to theories and methods employed for the anthropological study of human migrations. He considers culture history and migration, the latter defined as an event and a process, before considering Jeffrey Clark's enculturation and co-residence paradigm explicated in *Tracking Prehistoric Migrations: Pueblo Settlers among the Tonto Basin Hohokam* (Anthropological Paper 65, Tucson: University of Arizona Press, 2001). Lyons discusses the feasibility of tracking ancient migrations with chemical and mineralogical compositional analyses by which he takes a "multidimensional approach" that follows the pioneering efforts of Anna Shepard (*Ceramics for the Archaeologist*, Washington, DC: Carnegie Institution of Washington, 1985) and more recent studies by María Nieves Zedeño (*Sourcing Prehistoric Ceramics at Chodistaas Pueblo, Arizona: The Circulation of People and Pots in the Grasshopper Region*, Anthropological Paper 58, Tucson: University of Arizona Press, 1994). Lastly, he reviews briefly the concept of style, following the work of Margaret Ann Hardin (*Gifts of Mother Earth: Ceramics in the Zuñi Tradition*, Phoenix: Heard Museum, 1983) and Dorothy Washburn (for example, *A Symmetry Analysis of Upper Gila Area Ceramic Design*, Papers of the Peabody Museum 68, Cambridge, MA: Harvard University, 1977). Theoretically he follows Clark in the assessment of temporal and spatial distributions of utilitarian pottery vessel forms and decorated ceramic forms and types.

In Chapter 2 Lyons reviews the key archaeological patterns that allow researchers to trace the movements of ancestral Hopi groups. The Kayenta, Tusayan, and Winslow branches of the Anasazi are documented prior to a discussion of the archaeological evidence (ceramics, lithics, and architecture). For the ceramics he reviews vessel functions, use-wear patterns, spatial and temporal distributions, and the traits of perforated plates. He then turns to other ceramics including babe-in-cradle effigies and effigy handles, colanders, rivet attached handles, and the Maverick Mountain pottery series. Kiva types and other migration markers are evaluated prior to the modeling of the scale of ancestral Hopi migration. Lyons also employs room counts and dendrochronological data in this evaluation.

Chapter 3 is devoted to the archaeological history of Homol'ovi and emphasizes the history of eight villages in relation

to Winslow Orange Ware and the people of Homol'ovi. The ware has three series: 1) slipped vessels (with three types), 2) dark-paste vessels (three types), and 3) unslipped light-paste vessels (four types). Lyons selected 422 samples of pottery (379 sherds from 27 sites in six regions) and clays (five alluvial clays, 13 clays from archaeological contexts, and 26 primary clays) for Instrumental Neutron Activation analysis at MURR. The INAA laboratory procedures and statistical analyses (accompanied by bivariate plots) are detailed in an appendix (pp. 101-106). This study revealed three major compositional groups: 1) Local Group (n = 168 sherds), consisting primarily of Winslow Orange Ware but also including Homolovi Orange and Homolovi Gray. The results suggest that Winslow Orange Ware circulated from Homol'ovi to Anderson Mesa, the Verde Valley, and the Tonto Basin. 2) Puerco Group (n = 39) consisting of specimens from the Puerco Ruin and Wallace Tank Ruin. 3) Hopi Group (n = 67) including Jeddito Orange Ware vessels made on the Hopi Mesas. These specimens came from a variety of contexts. Lyons then compares these results with compositional groups defined by other investigators (Tridan, Duff, Zedeño, and Douglass, among others).

The whole vessel analysis included 1,135 specimens at the Field Museum (primarily from the Watron collection acquired in 1901); 902 vessels were from the Homol'ovi I site. The vessel forms were dominated by bowls with jars and pitchers the next most frequent. Five major wares were identified: Winslow Orange (n = 466, with a high proportion of ladles and pitchers), Jeddito Yellow (n = 448), Jeddito Orange (n = 45, lacking mugs, cups, and exotic forms), Hopi White (n = 82), and White Mountain Red (n = 53, lacking pitchers and exotic forms). By exotic forms, Lyons means seed jars and colanders. He next assesses painted decoration and defines six styles: Pinedale, Jeddito, Tuwiuca, Awat'ovi, Sikyati, and Kayenta. His analysis verifies the stylistic layout system devised by Watson Smith in 1971. Lyons then considers the ancestral Hopi pottery tradition of Homol'ovi and examines vessel forms including cups, miniature pitchers, and bird effigy vessels. He concludes that the inhabitants of Homol'ovi produced Winslow Orange Ware and associated utility wares within the stylistic and technological canons of the ceramic traditions of the Hopi Mesas. Architectural evidence supports the thesis that the builders and inhabitants of the Pueblo III-Pueblo IV villages of the Winslow region were immigrants from the north (p. 61).

The discussion in Chapter 4, "Salado and Roosevelt Red Ware Revisited," builds upon the previous research of Patricia Crown (*Ceramics and Ideology: Salado Polychrome Pottery*, Albuquerque: University of New Mexico Press, 1994). Crown's INAA analysis involved 215 sherds from 23 different sites and an evaluation of 779 vessels from 77 sites. Mustering his own and more recent data derived from INAA, petrography, XRD, XRF, and binocular microscopy, Lyons postulates that ancestral Hopi groups were responsible for the origin and spread of Roosevelt Red Ware (RRW) between A.D. 1280 and 1450. Initial production of RRW is summarized from Point of Pines, Chodistaas Pueblo and the Grasshopper Region, the Bailey Ruin, and the Silver Creek Drainage. Production continued more recently in the Upper Little Colorado River Valley, Upper Aravaipa Valley, Safford Valley, Globe-Miami Region, Phoenix

Basin, Upper Gila Valley (New Mexico), and Lower San Pedro River Valley. There is an especially well-documented discussion of settlement and ceramic variability among the ancient migrants. Lastly, Lyons reevaluates Crown's model of immigrants as part-time specialists, drawing upon Prudence Rice's paradigm (*Evolution of Specialized Pottery Production: A Trial Model*, *Current Anthropology* 22:219-240, 1981) and Dean Arnold's ethnoarchaeological data (*Ceramic Theory and Cultural Process*, New York: Cambridge University Press, 1985). Lyons's data support Crown's contention that the movement of these groups is linked to the origin of the Salado polychromes and further indicates that these immigrants from the north and their descendants were responsible for the production of Roosevelt Red Ware throughout much of the Greater Southwest.

Lyons next moves beyond the "traditional" ceramic technological analyses and prototypes by employing oral tradition in archaeological research. Here he references Jan Vansina's premise (*Oral Tradition as History*, Madison: University of Wisconsin Press, 1985) that oral tradition is a combination of past events and present contexts and that both aspects need to be recognized when unwritten accounts are the subject of historical research (p. 83). Themes and trends in Hopi oral accounts of their origin and migrations are correlated with the archaeological data and other anthropological evidence in Chapter 5. He compiles a list of Hopi clan names and their geographical associations in an effort to assess clan migrations. Clans and phratries of southern and northern origins are also reviewed. Lyons infers the movement of large numbers of people from the Kayenta and Tusayan regions of northern Arizona to every major river valley in Arizona, parts of New Mexico, and northern Mexico. He emphasizes numerous points of agreement between archaeology and oral tradition, contending that appreciating the scale of population movement that characterized the late prehistoric period is a prerequisite to understanding regional phenomena such as Salado and to illuminating the connections between tribal peoples of the Southwest and their ancestors.

This compelling narrative is accompanied by 25 figures, 24 tables, an appendix, 519 references, an 8-page triple-column conflated subject and proper noun index, and abstracts in English and Spanish. Building upon earlier studies, the author has used chemical sourcing of ceramics and the analyses of painted pottery designs to distinguish among traces of exchange, emulation, and migration. He documents strong similarities among the pottery traditions of the Kayenta region, the Hopi Mesas, and the Homol'ovi villages, near Winslow, Arizona. The assemblage of archaeological ceramic data derived from INAA and whole vessel analyses plus the use of oral accounts of Hopi origins, history, and migrations for the period between A.D. 1250 and 1450 provide a unique set of methods that elucidate both the pottery and the people. I would have liked to see a more detailed discussion of the INAA analyses of the 43 clay specimens (pp. 43-45, 101-107) in relation to the 379 sherds that were analyzed, but Lyons's assessment is, nonetheless, a valuable contribution to our understanding of the population dynamics of the American Southwest.

Wesley Bernardini was the recipient of the Society for

American Archaeology's 2003 Dissertation Award for his Arizona State University dissertation, **The Gathering of the Clans: Understanding Ancestral Hopi Migration and Identity: A.D. 1275-1400**, awarded in December 2002. He developed an innovative model of serial migration based upon Hopi oral history and tested the model using a combination of architectural and ceramic data, INAA, and an assessment of rock art. His thesis is that exchange relationships often precede migration, and he concludes that each ancestral Hopi village had a distinct array of trade pottery owing to the variable social ties of each group. Bernardini further argues that these socioeconomic ties were the basis for small, serial migrations that may be tracked by clan motifs that occur in rock art (petroglyphs). Readers will also be interested in Bernardini's article "Transitions in Social Organization: A Predictive Model from Southwestern Archaeology," *Journal of Anthropological Archaeology* 15(4):372-404 (December, 1996). Both researchers employ INAA and other ceramic studies as well as architectural information. Lyons adds oral histories to the mix, while Bernardini uses clan motifs depicted in rock art. However, although Lyons had concluded his research before Bernardini's dissertation was completed, these two assemblages of data appear to corroborate the migration hypothesis that Lyons advances. The University of Arizona Press (355 South Euclid, Suite 103, Tucson, AZ) may be reached by toll-free telephone at 800/426-3797; the Internet site is <http://www.uapress.arizona.edu>

Geochemical Evidence for Long-Distance Exchange, edited by Michael D. Glascock. *Scientific Archaeology for the Third Millennium*. Westport, CT and London: Bergin and Garvey (2002). vii + 282 pp. ISBN 0-89789-869-9, \$64.95 (hardbound). The 13 chapters in this volume emphasize archaeometry and archaeological chemistry in elucidating long-distance commerce. Five contributions focus on obsidian analyses while seven chapters are concerned with ceramic materials, and all of these utilize the facilities at MURR (Missouri University Research Reactor), in Columbia, Missouri. Glascock provides a cogent introductory essay (pp. 1-11) in which he discusses the method and theory and concepts related to the studies. The ceramic chapters are: Enrique Rodríguez-Alegria, "Indigena Ware: Spain to the Valley of Mexico" (pp. 13-31); Timothy K. Perttula, "Archaeological evidence for the long-distance exchange of Caddo Indian ceramics in the Southern Plains, Midwest, and Southeastern United States" (pp. 89-107); Darrell G. Creel, Tiffany Clark, and Hector Neff, "Production and long-distance movement of Chupadero Black-on-White pottery in New Mexico and Texas" (pp. 109-132); Anne M. Cobry and Donna C. Roper, "From loess plains to high plains: The westward movement of Upper Republican pots" (pp. 153-166); Danielle A. Parks and Hector Neff, "A geochemical vector for trade: Cyprus, Asia Minor, and the Roman East" (pp. 205-214); Leon Jacobson, Warren S. Fish, and Willem A. van der Westhuizen, "XRF analysis of pottery from Mutokolwe, a Khami settlement from the Soutpansberg Mountains, South Africa" (pp. 215-228); and Christophe Descantes, Hector Neff, and Michael D. Glascock, "Yapese prestige goods: The INAA evidence for an Asian Dragon Jar" (pp. 229-256). The volume may be ordered from Bergin and Garvey (88 Post Road West,

Westport, CT 06881; <http://www.greenwood.com>

The Archaeology of the Clay Tobacco Pipe is a series published by British Archaeological Reports (BAR), edited by P. J. Davey. BAR titles are published by Tempvs Reparatum or Archaeopress and are available from David Brown Book Company (P. O. Box 511, Oakville, CT 06779, telephone 800/791-9354, e-mail david.brown.bk.co.@snet.net) and Hadrian Books Ltd (122 Banbury Road, Oxford OX2 7BP, UK). Volumes VIII and XIII-XVI are still in print and are available from Oxbow Books (www.oxbowbooks.com). BAR designations with "S" indicate the International Series e.g., BAR S60, those without the "S" are in the British Series, BAR 63. The volumes in the series are: I. Britain: the Midlands and Eastern England (BAR 63, 1979); II. America I (BAR S60, 1979); III. Britain: The North and West (BAR 78, 1980); IV. Europe I (BAR S92, 1980); V. Europe 2 (BAR S106i and ii, 1981); VI. Pipes and Kilns in the London Region (BAR 97, 1981); VII. More Pipes and Kilns from England (BAR 100, 1982); VIII. America II (BAR S175, 1983); IX. More Pipes from the Midlands and Southern England (BAR 146i and ii, 1985); X. Scotland (BAR 178, 1987); XI. Seventeenth and Eighteenth Century Tyneside Tobacco Pipe Makers and Tobacconists, by Lloyd Edwards (BAR 192, 1988); XIII. The Clay Tobacco Pipe Industry in the Parish of Newington, Southwark, London, by Colin Tatman (BAR 239, 1994); XIV. The Development of the Clay Tobacco Pipe Kiln in the British Isles, by Allan Peacey (BAR 246, 1996); XV. Port Royal, Jamaica, by Georgia Fox (BAR S809, 1999); and XVI. Negotiating African-American Ethnicity in the 17th-Century Chesapeake, by J. Cameron Monroe (BAR S1042, 2002). The individual tables of contents are listed on the Society for Clay Pipe Research Internet site at <http://www.scp.r.fsnet.co.uk/> A BAR volume to be published in 2003 will be a major study of the Pollock firm in England by Paul Jung.

Books to be Published in 2003

Treatise on Geochemistry, 10 vols., Heinrich D. Holland and Karl K. Turekian (executive editors), Amsterdam and New York: Elsevier, 2003 7,800+ pp., 180 chapters, 230 authors. ISBN 0-08-043751-6, hardbound. Introductory offer (valid through three months after the month of publication); USD \$3,675 / EUR 3,860 (The regular price will be USD \$4,595 / EUR 4,825); print and electronic formats. Elsevier has announced the forthcoming multi-volume work, *Treatise on Geochemistry*, a single work that will provide comprehensive coverage of the full range of disciplines and topics in the field of geochemistry. The application of chemistry to the study of the Earth has ancient roots. In the 20th century the subject became an organized and identifiable discipline called geochemistry, in the main, due to the pioneering work of F. W. Clarke and V. M. Goldschmidt, partly because of innovations in instrumentation, sampling techniques, and methodology, and to some extent because of new theoretical insights. The *Treatise on Geochemistry* seeks to present a comprehensive, integrated summary of the present state of the field. Nine volumes deal with the several major parts of geochemistry. The tenth is dedicated to sets of tables and a detailed subject index. Each volume consists of fifteen to twenty five chapters

written by recognized authorities in their fields, and selected by the Volume Editors in consultation with the Executive Editors. Emphasis has been placed on integrating the subject matter of the individual chapters and the several volumes. The subject index is designed to provide ready access to this integration. The volumes and their editors (and affiliations) are: Vol. 1: Meteorites, Comets, and Planets - Andrew M. Davis, University of Chicago, Chicago, IL, USA; Vol. 2: The Mantle and Core - Richard W. Carlson, Carnegie Institution of Washington, Washington, DC, USA; Vol. 3: The Crust - Roberta L. Rudnick, University of Maryland, College Park, MD, USA; Vol. 4: The Atmosphere - Ralph F. Keeling, University of California, San Diego, La Jolla, CA, USA; Vol. 5: Surface and Ground Water, Weathering, Erosion and Soils - James I. Drever, University of Wyoming, Laramie, WY, USA; Vol. 6: The Oceans and Marine Geochemistry - Harry Elderfield, University of Cambridge, Cambridge, UK; Vol. 7: Sediments, Diagenesis, and Sedimentary Rocks - Fred T. Mackenzie University of Hawaii at Manoa, Honolulu, HI, USA; Vol. 8: Biogeochemistry - William H. Schlesinger, Duke University, Durham, NC, USA; Vol. 9: Environmental Geochemistry - Barbara Sherwood Lollar, University of Toronto, Toronto, ON, Canada; and Vol. 10: Indexes.

Several volumes warrant a closer look by readers of this column. Volume 5: Surface and Ground Water, Weathering, Erosion and Soils has several objectives. 1) Present an overview of the composition of surface and ground waters on the continents and the mechanisms that control the compositions. 2) Present summaries of the tools and methodologies used in modern studies of the geochemistry of surface and ground waters. 3) Present information on the role of weathering and soil formation in geochemical cycles: weathering affects the chemistry of the atmosphere through uptake of carbon dioxide and oxygen, and paleosols (preserved soils in the rock record) provide information on the composition of the atmosphere in the geological past. The chapters (with authors and affiliations) include: 1. Soil Formation (Ronald Amundson, University of California, Berkeley, Berkeley, CA, USA); 2. Modeling Low-Temperature Geochemical Processes (Darrell K. Nordstrom, US Geological Survey, Boulder, CO, USA); 3. Mineral Dissolution Kinetics (Susan L. Brantley, Pennsylvania State University, University Park, PA, USA); 4. Mass Balance Approach to Interpreting Weathering Reactions (Owen P. Bricker, US Geological Survey, Reston, VA, USA, Carl J. Bowser, University of Wisconsin, Madison, WI, USA, and Blair F. Jones, US Geological Survey, Reston, VA, USA); 5. Natural Weathering Rates of Silicate Minerals (Arthur F. White, US Geological Survey, Menlo Park, CA, USA); 6. Plants and Mineral Weathering: Present and Past (Elizabeth K. Berner, Yale University, New Haven, CT, USA; Robert A. Berner, Yale University, New Haven, CT, USA; and Katherine L. Moulton† [deceased] Kent State University, Kent, OH, USA); 7. Geochemical Weathering in Glacial and Proglacial Environments (Martyn Tranter, University of Bristol, Bristol, UK); 8. Erosion and Sedimentation Rates Based on Cosmogenic Isotopes (John O. Stone, University of Washington, Seattle, WA, USA); 9. The Major Element Composition of Surface Waters and Fluxes to the Ocean (Michel Meybeck, Université

de Paris 6, Paris, France); 10. The Trace Element Geochemistry of Surface Waters (Jerôme Gaillardet, Institut de Physique du Globe de Paris, Paris, France; Bernard Dupré, Université Paul Sabatier, Toulouse, France; and Jérôme Viers, Université Paul Sabatier, Toulouse, France); 11. Dissolved Organic Matter in Fresh Waters (E. Michael Perdue, Georgia Institute of Technology, Atlanta, GA, USA; and Ritchie, Georgia Institute of Technology, Atlanta, GA, USA); 12. Stable Isotopes in Hydrologic Studies (Carol Kendall, US Geological Survey, Menlo Park, CA, USA); 13. Radiogenic Isotopes in Weathering and Hydrology (Joel D. Blum, University of Michigan, Ann Arbor, MI, USA; and Yigal Erel, The Hebrew University, Jerusalem, Israel); 14. Geochemistry of Saline Lakes (Blair F. Jones, US Geological Survey, Reston, VA, USA; and Daniel M. Deocampo U.S. Geological Survey, Reston, VA, USA); 15. Geochemistry of Ground Water (Francis H. Chapelle, US Geological Survey, Columbia, SC, USA); 16. Ground Water Dating and Residence Time Measurements (Fred M. Phillips, New Mexico Tech, Socorro, NM, USA); 17. Deep Fluids in the Continents: I. Sedimentary Basins (Yousif K. Kharaka, US Geological Survey, Menlo Park, CA, USA; and Jeffrey S. Hanor (Louisiana State University, Baton Rouge, LA, USA); 18. Deep Fluids in the Continents: II. Crystalline Rocks (Shaun Frape, University of Waterloo, Waterloo, ON, Canada); and 19. Soils and Global Change in the Carbon Cycle over Geological Time (Greg J. Retallack, University of Oregon, Eugene, OR, USA).

Volume 7: Sediments, Diagenesis, and Sedimentary Rocks covers the formation and biogeochemistry of a variety of important sediment types from their initial formation through their conversion (diagenesis) to sedimentary rocks. The volume deals with the chemical, mineralogical, and isotopic properties of sediments and sedimentary rocks and their use in interpreting the environment of formation and subsequent events in the history of sediments, and the nature of the ocean-atmosphere system through geological time. The chapters include information on the mineralogy and chemistry of modern marine and non-marine sediments; geochemistry of sands, sandstones, and mudstones; interstitial waters and early diagenesis of marine sediments; the origin of the “green minerals” of glauconite, etc.; late diagenesis and mass transfer in sandstone-shale sequences; carbonate and siliceous sediment biogeochemistry and diagenesis; Precambrian chert geochemistry; organic diagenesis and biomarkers; geochemistry of coal, oil, and gas; marine phosphorite formation and diagenesis; manganese-sulfur- and iron-rich sediment geochemistry; geochemistry of marine and non-marine evaporites; the geochemical effect of impact events; chronometry of sediments and sedimentary rocks; and the evolution of the ocean-atmosphere system as deduced from biogeochemical and isotopic features in sedimentary rocks. The chapters (with authors and affiliations) include: 1. Mineralogy and Chemistry of Modern Marine and Non-marine Sediments (Yuan-Hui (Telu) Li, University of Hawai’i at Manoa, Honolulu, HI, USA; and Jane S. Schoonmaker, University of Hawai’i at Manoa, Honolulu, HI, USA); 2. Geochemistry of Fine-Grained Sediments and Sedimentary Rocks (Bradley B. Sageman, Northwestern University, Evanston, IL, USA; and Timothy W. Lyons,

University of Missouri, Columbia, MO, USA); 3. Interstitial Waters and Early Diagenesis (William R. Martin, Woods Hole Oceanographic Institution, Woods Hole, MA, USA; and Frederick L. Sayles, Woods Hole Oceanographic Institution, Woods Hole, MA, USA); 4. Green Clay Minerals (Bruce Velde, Ecole Normale Supérieure, Paris, France); 5. Late Diagenesis and Mass Transfer in Sandstone-Shale Sequences (Kitty L. Milliken, University of Texas at Austin, Austin, TX, USA); 6. Formation and Early Diagenesis of Carbonate Sediments (John W. Morse, Texas A&M University, College Station, TX, USA); 7. Diagenesis of Sedimentary Carbonate Rocks (Kyger C. Lohmann, University of Michigan, Ann Arbor, MI, USA); 8. The Diagenesis of Biogenic Silica: Chemical Transformations Occurring in the Water Column, Seabed, and Crust (David J. DeMaster, North Carolina State University, Raleigh, NC, USA); 9. Formation and Geochemistry of Precambrian Cherts (Eugene C. Perry, Northern Illinois University, DeKalb, IL, USA; and Liliana Lefticariu, Northern Illinois University, DeKalb, IL, USA); 10. Organic Diagenesis, Biomarkers, and Stable Isotopes of C, N, and S (Brian N. Popp, University of Hawai'i at Manoa, Honolulu, HI, USA); 11. Formation of Coal (Robert B. Finkelman, US Geological Survey, Reston, VA, USA; and William H. Orem, US Geological Survey, Reston, VA, USA); 12. Formation and Geochemistry of Oil and Gas (R. Paul Philp, New Mexico Tech, Socorro, NM, USA); 13. Marine Phosphorites (Craig R. Glenn, University of Hawai'i, Honolulu, HI, USA; Ian Jarvis, Kingston University, Kingston upon Thames, UK; and David Soudry, Geological Survey of Israel, Jerusalem, Israel); 14. Manganiferous Sediments, Rocks, and Ores (J. Barry Maynard, University of Cincinnati, Cincinnati, OH, USA); 15. Sulfur-rich Sediments (Martin B. Goldhaber, US Geological Survey, Denver, CO, USA); 16. The Geochemistry of Mass Extinction (Lee R. Kump, Pennsylvania State University, University Park, PA, USA); 17. Chronometry of Sediments and Sedimentary Rocks (William B. N. Berry, University of California, Berkeley, Berkeley, CA, USA); and 18. Evolution of Sedimentary Rocks (Jan Veizer, University of Ottawa, Ottawa, ON, Canada; and Fred T. Mackenzie, University of Hawaii at Manoa, Honolulu, HI, USA).

The Pottery of Zia Pueblo by Dwight P. Lanmon and Francis H. (Frank) Harlow (Santa Fe, NM: SAR Press [School of American Research], 2003. ISBN 1-930618-26-3, ca. 390 pp., 700 color photographs, map; \$59.95, paper), due to be published in the Summer of 2003. This volume is designed to be the definitive treatment of Zia Pueblo's long and complex ceramic history. Featuring nearly 700 full color photographs, hundreds of design details, and profiles of important Zia potters, it establishes (the Press asserts) "a new standard of excellence in the study of Southwestern Pueblo pottery." The authors are leading authorities in the study of Pueblo ceramics and they provide a comprehensive analytical timeline for the key phases and critical innovations in Zia Pottery from the Spanish colonial era to the present. There are 14 chapters: Chapter One: Introduction (The Setting, The History of Zia Pottery, The Pottery, Analyzing Zia Pottery, and The Organization of this Book); Chapter Two: Identifying and Dating Zia Pottery (Features Useful in Identifying and Dating Zia Pottery, Other Changes after 1920); Chapter Three: Puname Polychrome,

1700-1760 (Late Jemez River Polychrome or Very Early Puname Polychrome); Chapter Four: San Pablo Polychrome, 1760-1820 (San Pablo Polychrome); Chapter Five: The Capped-Spiral Design, 1800-1930 (San Pablo Polychrome Examples, 1800-1820; Trios Polychrome Examples, 1820-1860; and Zia Polychrome Examples, 1860-1930); Chapter Six: Transitions and Influences on Polychrome Jar Design Styles (Transitional Jars with Geometric Designs, 1840-1890, Zuñi Design Influence, 1890-1930, and Miscellaneous Designs, 1890-1920); Chapter Seven: Jars with Arc Designs (Reflected Arcs, 1880-1900, and Rainbow Arcs, 1880-1930); Chapter Eight: Jars with Band Designs (Shoulder-Band Evolution, 1860-1930, and Multibanded Ancestors, 1860-1910); Chapter Nine: Jars with Rectangles, Plants, Lines, and Hachure (Split Rectangles, 1880-1910; Plant-Life Patterns, 1880-1920; Crisscross Hachure, 1900-1930; and Black-Edged-Red Path Lines, 1880-1930); Chapter Ten: Jars with Feather Designs and Colored Slips (Capped-Feather Designs, 1890-1940, and Black and/or White on Red or Orange-Tan Slip, 1900-1930); Chapter Eleven: Birds, 1820-1930 (Birds, 1820-1870, and Birds, 1860-1930); Dating Zia Pottery Decorated with Birds, about 1880-1910; Chapter Twelve: Other Animals, 1870-1930; Chapter Thirteen: Food Bowls, Dough Bowls, and Canteens; and Chapter Fourteen: Individual Potters and their Products, Limitations of this Study, The Alphabetical Roster of Identified Potters, and The Future). The volume also has two appendices (Appendix A: Potters Working at Zia Today, Appendix B: A 1920s Photo Album of Zia Pottery), endnotes, a bibliography, photo credits, and an index. For additional information, contact SAR Press (P.O. Box 2188, Santa Fe, NM 87504-2188; telephone 888/390-6070; Internet access <http://www.sarweb.org> .

Earthenware in Southeast Asia edited by John Miksic (Singapore: Singapore University Press, 2003, distributed by the University of Hawai'i Press. ca. 480 pp., ISBN 9971-69-270-8, \$56.00 cloth), is due in June 2003. This volume brings together a collection of essays by major archaeologists working on Southeast Asian ceramics produced from the 11th through 14th centuries. Earthenware is the most important material in Southeast Asian archaeology, yet there has been little published work aimed at understanding and dating earthenware artifacts and materials on a regional basis. This volume draws together essays from Southeast Asia's top archaeologists, and includes contributions from every country in the region. Additional information is available from the University of Hawai'i Press (2840 Kolowalu Street, Honolulu, HI 96822-1888 USA; telephone 800/650-7811; Internet http://www.uhpress.hawaii.edu/cart/shopcore/?db_name=uhpres

Previous Meetings

Scientific Examination of Art: Modern Techniques in Conservation and Analysis, one of the Arthur M. Sackler Colloquia of the National Academy of Sciences, was held 19-21 March 2003 at the National Academy of Sciences in Washington, DC. This meeting was chaired by Torsten Wiesel and Roald Hoffmann and organized by Barbara Berrie, E. René de la Rie, Janis Tomlinson, John Winter. Among the 20 presentations was one on 20 March entitled "Ceramics" given by Pamela Vandiver (Smithsonian Center for Materials

Research and Education). Other papers were presented on topics including painting, paper, photographic art, stone sculpture, biodeterioration, infrared reflectography (IRR), imaging techniques, infrared multispectral imagery, modern paints, modern paintings, Raman microscopy in the identification of pigments, and paint media analysis.

The Society for American Archaeology annual meeting was held from 9-13 April 2003 in Milwaukee, Wisconsin. There were 91 scheduled presentations that involved ceramics, including eight posters. The culture areas and numbers of presentations were: Mesoamerica (35 – predominantly the Yucatecan Lowlands, Meseta Central, Gulf Coast, and Guatemalan Highlands), although two presenters were absent; American Southwest (14); Western South America/Andes (10 — in the main, Peru or Ecuador); American Midwest and Plains (7); Europe (6 – one each concerning England [Cornwall], Greece, Crete, and Cyprus, and two on Hungary); Southwest Asia (5 – one each from Egypt, Turkey, Syria, Israel, and the Caucasus); East Asia (2 – China and Taiwan); American Southeast (2); and General Method and Theory (2). There were also one each concerning ceramics from the Old and New Worlds, Alaska, California, Eastern North America [Chesapeake Bay area], Caribbean, Lowland South America, Sub-Saharan Africa [Ethiopia], and Indian Subcontinent [Indus Valley]).

The SAA presented two Awards for Excellence in Archaeological Analysis. Carol Kramer was a posthumous recipient. Kramer, the citation reads, “began her lifelong commitment to ethnoarchaeological research while conducting archaeology in the Near East in the 1970s. With an eye toward improving the interpretation of the archaeological record, she documented the relationship between village architecture and social status in her 1982 book *Village Ethnoarchaeology*. In 1979, she edited the seminal book, *Ethnoarchaeology: Implications of Ethnography for Archaeology*, which introduced archaeologists to the possibilities of ethnoarchaeology. In the 1980s she turned her attention to ceramics; her 1985 review of ceramic ethnoarchaeology serving as a standard reference for ceramic specialists. In the 1980s, she began a rigorous study of urban potters in western India. Published in 1997, *Pottery in Rajasthan* underscored the importance of social relations and scalar issues in ceramic distribution studies. Her book, *Ethnoarchaeology in Action*, published in 2001 and coauthored with Nicholas David, provides a primer for anyone considering ethnoarchaeological research. Dr. Kramer taught for 20 years at the City University of New York (CUNY) and the University of Arizona, where she mentored and inspired a new generation of ceramic specialists and ethnoarchaeologists.” An Award for Excellence in Archaeological Analysis was also presented to Hector Neff (see page 5).

George (Rip) Rapp (University of Minnesota) received the Fryxell Award for Interdisciplinary Research for his achievements in geoarchaeology and archaeological geology (also see page 5). Kathleen Deagan (University of Florida and Florida Museum of Natural History) and José María Cruxent were recipients of the SAA's Book Award for their scientific and popular volumes published in 2002 by Yale University Press,

Archaeology at La Isabela: America's First European Town and Columbus's Outpost among the Tainos. Wesley Bernardini was the recipient of the SAA Dissertation Award for his Arizona State University dissertation, *The Gathering of the Clans: Understanding Ancestral Hopi Migration and Identity: A.D. 1275-1400*, awarded in December 2002. He developed an innovative model of serial migration based upon Hopi oral history and tested the model using a combination of architectural and ceramic data, neutron activation analysis, and as assessment of rock art.

“Ceramic Figurines IV: Further Interpretations from Mesoamerica and the American Southwest” was a symposium organized by Charles C. Kolb (National Endowment for the Humanities) and Cynthia Otis Charlton (Independent Scholar), and chaired by Kolb. The session abstract was: “The study of ceramic figurines from archaeological sites in Mesoamerica and the American Southwest has experienced a resurgent interest and interpretation. Figurines are no longer relegated to appendices or as mere counts in final reports, and now figure prominently in providing direct and indirect evidence of the sociocultural, economic, and belief systems of the people who made and used them. The contributions to this symposium focus on figurine assemblages from Preclassic, Classic, and Postclassic cultures in Mexico as well as the American Southwest. They include new analyses and interpretations that can and are being undertaken using “old” collections as well as recently excavated specimens.” Presentations included “Tie to the Land: Domestic Symbolism and Figurines from Early Agricultural Sites in the Tucson Basin” by Susan Stinson (University of Arizona); “Ceramic Figurines: A Neglected Resource for Understanding Sculpture” by Billie Follensbee (Southwest Missouri State University); “Snapshots from the Pyramid of the Moon” by Janet Montoya (Arizona State University) [cancelled due to Janet's imaging work on the Challenger disaster for NASA]; “Faces from Afar: Figurines from a Rural Teotihuacán Site” by Cynthia Otis Charlton (Independent Researcher); and “Fragments of Figurines - Evidence from an Old Collection” by Cynthia P. Pinkston (University of Maryland), which concerned ceramic figurines collected at Monte Alban and other archaeological sites in Oaxaca in 1884-1885. Cynthia Otis Charlton served as discussant.

“Rethinking Craft Production: the Nature of Producers and Multi-Craft Organization” was a symposium organized and chaired by Izumi Shimada (Southern Illinois University). The sessions abstract read “In the in study of ancient craft production there has been undue reliance on ethnographic and ethnoarchaeological data and associated models of production organization and a seemingly widespread propensity to emphasize hierarchical relations between elite individuals and non-elite producers. Taking advantage of recent excavations of craft workshops in various parts of the world, this symposium reassesses the directions and emphases of the archaeological study of past craft production examining the nature of crafters and “horizontal relations” among crafters working conterminously in proximal locations. The papers included “The Nature of Crafters and Multi-craft Organization: Issues, Approaches and Pre-Hispanic Andean Examples” by Izumi

Shimada (SIU); "Middle Sicán Multi-craft Production: Resource Management and Labor Organization" by David J. Goldstein and Izumi Shimada (both, Southern Illinois University); "A Peek Inside the City" on Middle Horizon Conchopata (AD 550-1000) by William H. Isbell (Binghamton University); "A Reason for Being: Artisans in the 16th Century: by Susan E. Ramirez (History, DePaul University); "Classic Maya Craft Specialists at Aguateca, Guatemala" by Takeshi Inomata (University of Arizona); "Diachronic Change in Crafts and Centers in South-Central Veracruz, Mexico" by Barbara L. Stark (Arizona State University); "'Hecho en México,' or Where Were These Ceramic Artifacts Fabricated in Classic Period Teotihuacán, México (ca. 50-750 CE)" by Charles Kolb, (National Endowment for the Humanities); "Flexibility in Household Craft Production: Multi-crafting and Production Intensification" by Barbara Mills (University of Arizona); "Dynamics of Craft and Community in Late Prehistoric Europe" by Peter Wells (University of Minnesota); "Craft Production Played a Key Role in Economic, Social, and Political Dynamics in Late Prehistoric Europe"; and "Patterns of Craft Organization for Multiple Crafts in the Indus Valley Civilization" by Mark Kenoyer (University of Wisconsin, Madison, and Heather Miller (University of Toronto, Mississauga). The discussant was Elizabeth Brumfiel (Albion College). Shimada anticipates adding a few additional contributors and has negotiated with a press to publishing these papers.

The John A. Pope Memorial Lecture was given at the Freer and Sackler Galleries, Smithsonian Institution, Washington, DC, on 13 May 2003. Wang Qing-zheng, Deputy Director of the Shanghai Museum and a distinguished scholar of Chinese ceramics, presented "Glazes for the Chinese Court: Ru, Guan, and Ge from an Archaeological Perspective." The lecture (given in Chinese with simultaneous English translation) considered new research about three celebrated porcelain glazes of the Song and Yuan dynasties and included basic information about kiln site excavations. Blue-green glazed Ru Ware is now known from two kiln sites. Guan Ware with a characteristic "fish-scale" shiny glaze is still the subject of a scholarly dispute about northern and southern variants and potential origins. Ge Ware is mostly grey green and characterized by an unusual 5 or 6 spur kiln furniture (with Mongolian script identifying it as Yuan) and has thin yellow and larger black line crazing. Ding and Ching ceramics were also considered briefly; early specimens of the former have "tear marks" (runs) in the glaze but the later Five Dynasties Ding have no tear marks. Mr. Wang also reported the discovery of a black glaze kiln site, a Chinese blue-and-white manufactory, and a Tang whiteware porcelain site. Specimens of the latter reached Samarra, Iraq, and other sites in the Middle East.

The Fourth Symposium on Archaeometry of the Hellenic Society of Archaeometry was held 28-31 May 2003 at the National Hellenic Research Foundation in Athens. The Hellenic Society of Archaeometry (HSA) is a non-profit Scientific Association founded in 1982. Its purpose is to promote the application of Science and Technology in the fields of Archaeology, History of Art and generally all issues concerning the cultural heritage. Members of the HSA are the majority of

scholars engaged in such activities, within the Universities, Archaeological Service and Research Centers in Greece and abroad, as well as in the private sector. There were 85 oral presentations and 128 posters. The program, abstracts of the papers, and authors' affiliations are available on the Internet at http://www.archaeometry.gr/symposium2003/pages_en/main.htm

Individual non-symposium papers included "Luminescence Dating Beyond Pottery: A Review" by N. Zacharias and C. T. Michael. The symposium "Clays and Pottery I and II" included 10 papers: "Neutron Activation Analysis of Hellenistic pottery from Boeotia" by A. Schwedt, V. Aravantinos, A. Harami, V. Kilikoglou, H. Mommsen and N. Zacharias; "Comparative Analysis of Ancient Ceramics by Instrumental Neutron Activation Analysis, Inductively Coupled Plasma Spectrometry and X-Ray Fluorescence Analysis" by A. Tsolakidou and V. Kilikoglou; "Imported and Local Pottery from Eastern Mediterranean Sites of the Early Byzantine Period: The Case of Eleutherna, Crete" by A. Yangaki, E. Aloupi, V. Kilikoglou, A. Tsolakidou and P. Themelis; "Some New Evidence on Compositional and Technological Aspects of the Neolithic Ceramics of Knossos: Implications" by S. Dimitriadis and N. Efstratiou; "Technological Trajectories in EBA West Crete: Investigating Change in Pottery Technology at Chania during the Earlier Prepalatial Period" by E. Nodarou, P. M. Day, V. Kilikoglou, A. Hein, and M. Andreadaki-Vlasaki; "Minoanisation in the South-east Aegean: Pottery Fabrics from Miletus and Iasos" by C. Knappett; "EHII Pottery from Thebes: An Integrated Typological, Technological and Provenance Study" by J. Hilditch, E. Kiriati, and K. Psaraki; "From Sherds to Technological and Cultural Landscapes: Ceramic Analysis, Ethnoarchaeology and Replication Experiments in the Study of the Kythera Island Project Survey Pottery" by E. Kiriati; "Secrets of Attic Black and Red Glazes: From Theory to Practice" by E. Aloupi; and "Technological Investigation of Aegean Faience" by Y. Maniatis, M. S. Tite, D. Kavoussanaki, and M. Panagiotaki.

The session on "Organic Residues" had four ceramic-oriented papers: "Characterisation of Organic Residues from Prehistoric Aegean Pottery" by O. Decavallas, R. Treuil, and M. Regert; "Organic Residues from the Late Neolithic Makriyalos Cooking Pots, North Greece" by D. Urem-Kotsou, K. Kotsakis, C. Beck, and E.C. Stout; "Organic Residue Analysis in Storage Vessels from Bronze Age Greece" by M. Roumpou and C. Heron; and "Development of Fast Derivatization Procedures for the Chemical Investigation of Organic Residues in Early Byzantine Transport Containers from Ephesos/Turkey" by R. Linke, S. Stanek, S. Lochner, and E. Rosenberg.

There were 24 poster presentations about ceramics: "Heavy Mineral Characteristics of the Ceramics and the Source Materials from the Ada Tepe Area, SE Bulgaria" by G. Ajdanlijsky, G. Nekhrizov, and D. Zlatanov; "Studies on Apulian Red-figured Pottery Coming from Archaeological Sites in Apulia, Southern Italy" by R. Albergo, P. Bruno, M. Caselli, R. Laviano, A. Mangone, and A. Traini; "Clay Head of Uncertain Provenance from a Late Avar Period (8th c.) House (Budapest/Aquincum, Filatori Dam)" by M. Balla, P. Zsidi, and L. Schilling;

“Spectroscopic Investigations on “Glazing” Techniques in Ceramics of the Caltagirone Area (central-southern Sicily): An Attempt to Understand Manufacturing Sequences used from the “Castellucciano Period” (V-VI cent B.C.) up to the XIII, XIV and XVI cent A.D.” by G. Barone, V. Crupi, S. Galli, S. Ioppolo, G. Sabatino, and M. Triscari; “Atomic Absorption Analysis of Greek Pottery from Dobrudja” by M. Belc, L. Buzoianu, E. Chirlia, and D. Ionescu; “Regional Production Centers of Iron Age Pottery Wares in Philistia” by D. Ben-Shlomo; “Another (Mud)brick on the Wall: Scientific Analysis of Bronze Age Earthen Construction Materials from Mochlos (East Crete)” by C. Frederick and E. Nodarou; “Archaeometric Investigations on Archaic Coarse Pottery from Sibari (Calabria, Italy)” by S. Galli, G. Barone, V. Crupi, F. Longo, S. Luppino, D. Majolino, and G. Spagnolo; “Archaeometric Study of Ceramic Amphorae from the Sicilian Area (Gela)” by S. Galli, G. Barone, V. Crupi, F. Longo, D. Majolino, P. Migliardo, and G. Spagnolo; “Non-destructive Quantitative XRF Analysis on Greek Archaic Pottery of the Alaimo’s Sanctuary in Lentini, Sicily” by L. Grasso, L. Pappalardo and F. P. Romano; and “Refractory Ceramics from Politiko-Phorades (Cyprus)” by A. Hein, V. Kassianidou, and V. Kilikoglou. Other posters were: “Technological Investigation of the Black and Red Gloss Paints on Polychrome Vessels from Attica” by D. Kavoussanaki, Y. Maniatis, and N. Malagardis; “An Interdisciplinary Study of Bronze Age Pottery Production and Supply at Kolona, Aegina” by E. Kiriati, A. Tsolakidou, E. Kartsonaki, A. Pentedeka, I. K. Whitbread, and W. Gauss; “On the Origin of Stamped Amphora from Thracian Sites in Bulgaria” by I. Kuleff, T. Stoyanov, and E. Pernicka; “Metallurgical Ceramics: Analysis on Crucibles and Moulds from Kommos, South Crete” by C. Oberweiler, Y. Maniatis, and J. Shaw; “Characterization of Maltese Pottery of the Late Neolithic, Bronze Age and Punic Periods by Neutron Activation Analysis” by H. Mommsen, A. Bonanno, K. Chetcuti Bonavita, I. Kakoulli, M. Musumeci, C. Sagona, A. Schwedt, N. C. Vella, and N. Zacharias; “The Study of Bricks of Roman Monuments in Greece” by I. Papayianni and M. Stefanidou; “Thin Sectioning Neolithic Identities: Red Monochrome Pottery from Middle Neolithic Sesklo” by A. Pentedeka and K. Kotsakis; “Diffraction Analysis of the Roman Terra Sigillata Ceramics from the Workshop of La Graufesenque (France)” by Ph. Sciau, L. Vendier, E. Dooryhee, and A. Vernhet; “Compositional Patterns of Black on Red Ware from Eastern Macedonia and Potential Raw Material Sources” by T. Tsolakidou, V. Kilikoglou, D. Malamidou, and Z. Tsirtsoni; “New Evidence for Wine Production in East Crete in the Hellenistic Period. Confirmation Through Thin-Section Petrography” by N. Vogeikoff-Brogan; “A Contribution to the Technological Study of Large Storage Jars: A Comparative Analysis of Ancient and Modern Jars and Raw Materials from Messenia” by D. Yannopoulou, E. Konstantinidou, and E. Kiriati; and “The Use of Technological Features in Macroscopic Examination and the Analytical Methodology of Archaeological Ceramics. Field of Operation: Temple of Vrysinas Rethymno” by G. Kordatzaki, I. Tzahili, and E. Aloupi.

Società Italiana di Fisica 1953-2003 Jubilee of the International School of Physics “Enrico Fermi”) offered Course CLIV: “Physics Methods in Archaeology, at Villa Monastero,

Varenna, Lake Como, Italy 17-27 June 2003. The eight course topics included: Elemental analysis and microanalysis; Dating techniques; Methods for colorimetric characterization; Optical analysis and image processing; Microclimate and environment interaction with cultural heritage; Methods for multivariate analysis of data and catalogue methods; Pottery and glass studies; and Archaeometallurgy. The comprehensive course fee was EUR 1,300. Additional information is available on the Internet at <http://www.sif.it/sif/varenna/2003-course-1.html> SAS *Bulletin* editor Rob Tykot was the only instructor from the United States (kudos to Rob).

The Lecturers and Seminar Speakers were: M. Bacci (Istituto di Fisica Applicata “Nello Carrara” del CNR, Firenze, Italy); M. J. Baxter (Mathematics Section, Department of Chemistry and Physics, The Nottingham Trent University, UK); D. Camuffo (Istituto di Scienze dell’Atmosfera e del Clima del CNR, Padova, Italy); G. DeMortier (Laboratoire d’Analyse par Reactions Nucleaires LARN, Facultés Universitaires N-D Paix Namur, Belgium); R. M. Hedges (Research Laboratory for Archaeology and the History of Art, University of Oxford, UK); C. Lahanier (Laboratoire de Recherche des Musées de France, Paris, France); P. A. Mando (Dipartimento di Fisica, Università di Firenze, Italy); A. Oddy (The British Museum [Former Keeper of Conservation], London, UK); E. Pantos (Synchrotron Radiation Source, Daresbury Laboratory, UK); E. Pernicka (Institut für Archaeometallurgie, TU Bergakademie, Freiberg, Germany); M. Tite (Research Laboratory for Archaeology and the History of Art, University of Oxford, UK); R. H. Tykot (Department of Anthropology, University of South Florida, Tampa FL, USA); and G. A. Wagner (Forschungstelle Archaeometrie der Heidelberger Akademie der Wissenschaften, Max-Planck-Institut für Kernphysik, Heidelberg, Germany). Directors of the Course were: M. Martini (Dipartimento di Scienza dei Materiali, Università di Milano Bicocca, Italy); M. Milazzo (Istituto di Fisica Generale Applicata, Università di Milano, Italy); and M. Piacentini (Dipartimento di Energetica, Università di Roma, “La Sapienza”, Italy). The Scientific Secretaries were: E. Sibilgia (Dipartimento di Scienza dei Materiali, Università di Milano Bicocca, Italy) and A. C. Felici (Dipartimento di Energetica, Università di Roma, “La Sapienza”, Italy). The latter is the contact for more specific information: A. C. Felici, Dipartimento di Energetica, Università di Roma, “La Sapienza”, Via A. Scarpa 14, 00161 ROMA (Italy); telephone ++39-06-49766322, FAX ++39-06-44240183, e-mail varenna@uniroma1.it

The Study Group for Roman Pottery Annual Weekend Conference 2003 was held at Segedunum Roman Fort, Museum and Bath-house, Wallsend, UK, 4-6 July 2003. There were guided tours of the museum and reconstructed buildings at Segedunum. Papers include the pottery from Segedunum, pottery from Arbeia, the Carlisle kiln, early pottery from Colchester, late Roman/Byzantine pottery from Devon, Samian pottery contracts, pot drawing reproduction, and Hadham products. Alice Lyons is the Hon. Secretary SGRP and reports that additional information is available on the Internet at <http://www.SGRP.org>

Feast, Fast or Famine: An International Conference on Food and Drink in Byzantium was held 11-12 July 2003 in

Adelaide, Australia. The Australian Association for Byzantine Studies sponsored this XIIIth conference held in collaboration with the University of Adelaide Research Centre for the History of Food and Drink on the inner city campus of the University of Adelaide and the adjacent North Terrace cultural precinct. Additional information is available on the Internet at http://www.mcauley.acu.edu.au/aabs/aabs_2003.htm

Among the papers were several related to ceramics. "Late Antique and Middle Byzantine Cookery: Methods and Utensils" by Tim Dawson (University of New England, Australia). Abstract: The urban sophistication of the culture of the early Roman Imperial era had seen a wide range of methods and implements for preparing food and drink. Despite the contraction and relative impoverishment of the medieval empire, this sophistication was far from lost amongst the wealthy. At lower social levels, cookery continued much as it had done for thousands of years. Beginning with some examples from the early imperial era, surviving items, pictorial and literary material will be presented to illustrate the continuity of methods and forms in fixed and mobile hearths, cookware and utensils through late antiquity and the middle Byzantine period. Romans also applied particular ingenuity to serving heated and chilled drinks.

"Food and Drink in Early Byzantium: A New Web Resource" by Wendy Mayer (Australian Catholic University). Abstract: The more than 800 authentic homilies of John Chrysostom offer a window onto the daily life of people who lived in the cities of Antioch in Syria and Constantinople in the late fourth and early fifth centuries. Anecdotes and exempla include information about the diet of infants and of small children and adults, drinking parties, dinner parties, food production, tableware, the effects of too much food or drink, ascetic diet, special diets prescribed patients and a great deal more. This paper offers a tour of the new web knowledge-base being constructed by a team at the Centre for Early Christian Studies, Australian Catholic University. The knowledge-base aims to make searchable all of the information about daily life contained in this important corpus, which includes a reasonable amount of information concerning food and drink.

Forthcoming Meetings

Important Announcement: The 35th International Symposium on Archaeometry to be held in Zaragoza (Spain) in 2004 has been renumbered to be the 34th because the meeting of 2003 in China has been delayed. The website for the symposium is <http://www.archaeometry2004.info> where there is a preinscription form that you can fill in order to receive further information of the meeting. This notice was provided by Josefina Perez-Arantegui (chairperson) and Mario Vendrell (inscription and abstract handling), ARCHAOMETRY 2004, Zaragoza, Spain.

The 76th Pecos Conference is scheduled from 14-17 August 2003 at Paquimé, Casas Grandes, Chihuahua, México. There will be a mini-symposium "Progress in the Casas Grandes Culture and the State of Chihuahua Archaeology" on 15 August. One notable presentation, "Firing Experiments of Pottery of Casas Grandes Culture," is authored by Eric Blinman and Tim Maxell. For additional information, contact direccion.mcn@inah.gob.mx

Mayólica from the Spanish World is the title of a symposium scheduled 28-29 August 2003 at the Museum of International Folk Art, the Palace of the Governors, and the Office of Archaeological Studies, each a unit of the Museum of New Mexico. The symposium is organized around the topic of the exhibition *Cerámica y Cultura: the Story of Spanish and Mexican Mayólica*, which closes 8 September 2003. The purpose of the symposium is to bring together scholars from different disciplines—art history, archaeology, history, architectural history, conservation, ceramics, material culture studies, etc. to discuss the status of current research on historic mayólica from the Spanish and Latin American world and formulate future research. There are overriding questions concerning nomenclature, dating, distribution, and materials that will benefit from round table discussions with people from different disciplines. The hope is that the end result will offer some systematic approaches to the documentation of both archaeological and historical collections that would benefit us all. The length of papers will be determined by the number of presenters, but optimally limited to 20 minutes. For questions or more information, please contact Alessa Greenway Palacio (Assistant Curator, *Cerámica y Cultura*) or Laura May (Programs and Information Coordinator), agreenway@moifa.org or lmay@moifa.org at the Museum of International Folk Art, P.O. Box 2087, Santa Fe, New Mexico 87504; telephone 505-476-1203, FAX 505-476-1300. A lecture series presented in conjunction with the exhibition *Cerámica y Cultura: The Story of Spanish & Mexican Mayolica* was held from March into June, see <http://www.moifa.org/current/mayolicaprogram2.htm> These included March 9, Cynthia Robinson (Assistant Professor of Art History, Islamic & Medieval Art, University of New Mexico), "Islam in the Iberian Peninsula: Three Case Studies in Cultural Dialogue"; April 6, Robin Farwell Gavin (Curator of Spanish Colonial Collections, Museum of International Folk Art), "The Story of Spanish and Mexican Mayólica"; May 11, Cordelia Snow (Historic Archaeologist, New Mexico State Historic Preservation Division), "Objects Supporting Ideas: A Study of Mayólica and Mores from Archaeological Sites in New Mexico"; and June 8, Florence Lister (Independent Historic Archaeologist), "Pot Luck: A Personal Adventure with Mayólica."

The American Schools of Oriental Research annual meeting scheduled for 19-22 November 2003 in Atlanta, GA, includes a session entitled "Artifacts: The Inside Story." This session welcomes submissions in which the analysis of Near Eastern artifacts by means of physical or chemical techniques has led to a new or re-interpretation of the archaeological record. This year's theme will focus on high-temperature pyrotechnological industries according to the chair, Elizabeth Friedman esf@hydepark-chicago.org. One session is planned for four speakers, with papers limited to 25 minutes. Abstracts up to 250 words were to be submitted, with a preregistration form, via the ASOR website at <http://www.asor.org/AM/am.htm>; the preregistration form is at <https://www.bu.edu/asor/preregsecure2.html>.

Ceramic Ecology XVII: Current Research on Ceramics – 2003, the 17th Annual Ceramic Ecology Symposium is scheduled for the American Anthropological Association

Annual Meeting to be held in Chicago, Illinois, 19-23 November 2003. The symposium co-organizers are Charles C. Kolb (National Endowment for the Humanities) and Louana M. Lackey (Maryland Institute College of Art) and the session is chaired by Kolb. The symposium abstract and individual papers (in order of presentation) follow. Michael Galaty (Millsaps College) will serve as the discussant. The papers in this international and interdisciplinary symposium reflect a number of approaches within the framework of Frederick Matson's concept of Ceramic Ecology, set forth in his volume, *Ceramics and Man* (1965). In this work Matson, a ceramic engineer, archeometrician, ceramic ethnoarchaeologist, and ethnographer, stated that "unless ceramic studies lead to a better understanding of the cultural context in which ceramic materials were made and used, they form a sterile record of limited worth." Ceramic Ecology as a methodological and theoretical approach has as its paramount goal a better understanding of the peoples who made and used pottery and seeks to redefine our comprehension about the significance of these materials in human societies. The concept of Ceramic Ecology is contextual, interdisciplinary, and analytical. On the one hand, it seeks to evaluate data derived from the application of physiochemical methods and techniques borrowed from the physical sciences within an ecological and sociocultural frame of reference. It relates environmental parameters, raw materials, technological choices and abilities, and sociocultural variables to the manufacture, distribution, and use of pottery and other ceramic artifacts. On the other hand, interpretation of these data and explanations of the ceramic materials utilize methods and paradigms derived from the social sciences, humanities, and the arts. The concept of Ceramic Ecology forms an implicit or explicit basis of the investigations reported by archaeologists, ethnographers, and others in this symposium in which emphasis is placed upon the technological and socioeconomic aspects of ceramic materials regardless of chronology or geography. It also demonstrates the value of the cross fertilization which results when investigators ranging from art historians and professional potters to ethnoarchaeologists and archeometricians come together in a forum devoted to a topical consideration: ceramics. These papers continue a symposium series initiated at the 1986 AAA meeting by students of ceramic materials who are members of the informal "Ceramic Studies Interest Group," an organization formed at Matson's suggestion.

Sandra L. López Varela (Universidad Autónoma del Estado de Morelos), Magorzata Daszkiewicz (ARHEA-Warsaw), Gerwulf Schneider (Freie Universität Berlin) and Ewa Bobryk (University of Warsaw) "Learning Maya Pottery from K'axob through Archaeometry." Since the 1960's, Maya ceramic research has used the type-variety system as a principle tool of classification. The system still embraces the diachronic aims propounded by the Boasian research program of the early 20th century that turned pottery into a cultural and chronological translator of the past par excellence. The source of their interpretation is based on a sequence of physical characteristics and styles, subjectively defined by the analyst, without the objective approach demanded by scientific archaeology. Critical to ceramic studies at least in Mesoamerica is the fact that the analyst has rarely asked natural scientists to give social answers

from scientific knowledge since raised questions are not addressing anthropological issues, rather more precise characterization of physical attributes. At K'axob we understand the past, by building up a detailed scientific program, based on recent social postmodern paradigms enhanced by a suite of techniques emerging from a wide range of disciplines to move from ceramic data to socially meaningful interpretations. In this paper, we encourage use of archaeometric studies to reveal the elusive presence of Maya potters and the society in which they live.

Samuel V. Connell (CILHI) "Revising Diversity Analysis of Ceramics: Gauging Regional Consciousness around Xunantunich, Belize." I will use analysis from the Late Classic (AD 600-900) Maya community of Chaa Creek, Belize, to outline a simple way to calculate the degree of diversity among samples of ceramics taken from many excavation operations at household platforms of varying size and complexity. The analysis traces a shift in the degree of stylistic diversity represented within the region that suggests a change in the nature of regional consciousness overlaying a local community consciousness. This increasing regional homogeneity can be tied to the growth in power of the political center of Xunantunich. The role that studies of ceramic diversity can play in terms of interpreting social process will be greatly enhanced by these results. Christopher Gunn (University of Kentucky) "Petrographic and Chemical Perspectives on the Production of Muna Slate Wares in the Terminal Classic Northern Maya Lowlands." In this paper I present the results of petrographic and chemical analyses of Muna Slate ware, the predominant slipped ceramic ware in the Northern Maya Lowlands during the Late and Terminal Classic Periods (600-1000 A.D.) of Maya prehistory. Recently, it was hypothesized that Muna Slate wares were centrally produced and distributed from the Puuc Hills site of Sayil (Smyth and Dore 1994; Smyth et al. 1995). Given that Muna Slate wares may be considered utilitarian subsistence items (*sensu* Brumfiel and Earle 1987), this suggestion runs counter to several arguments that ancient Maya utilitarian ceramics production is associated with outlying communities and that their distribution is localized. Petrographic analyses of Muna Slate wares from three sites in the northern Lowlands - Kiuic, Labná, and Ek Balam - produced data that indicated significant variation between ceramics from these sites, indicating the absence of a centralized production location. Subsequent chemical analyses of these sherds, conducted with an electron microprobe, examined the clay matrix and aplastic inclusions incorporated within the ceramic fabric. The results obtained through the chemical analyses provide important information about the composition of ceramic raw materials, especially the volcanic ash used as a temper in some Muna Slate Wares. Further, this chemical information provides some potential explanations of the variation observed in ceramics during the petrographic analyses.

Kristin Sullivan (Arizona State University) "The Production and Distribution of Ultrafine Paste Ceramic Vessels and Figurines in the western lower Papaloapan basin of Veracruz, Mexico." I examine the distribution of ultrafine paste ceramic vessels and figurines in order to evaluate whether both types of ultrafine paste artifacts were produced and distributed in a

similar manner in the western lower Papaloapan basin of Veracruz during the Classic period (ca. A.D. 200-900). In formulating this model, I draw on ethnographic and archaeological studies of ceramic vessel and figurine production from other parts of lowland Mesoamerica. The results of this study reflect the complex economic setting in which ultrafine paste ceramic vessels and figurines were being produced and distributed in the western lower Papaloapan basin during the Classic period. The area where ultrafine paste ceramic vessel production has already been established in excavation shows the highest proportion of ultrafine paste ceramic vessels and figurines, indicating that ultrafine paste figurines may also have been produced there. The distribution of ultrafine paste ceramic vessels is somewhat more complex and may reflect small-scale ultrafine paste ceramic vessel production at Nopiloa a locale far from the known ultrafine paste production area, but near a possible kaolin clay outcrop. I relate these findings to previous archaeological and ethnographic studies of ceramic vessel and figurine production, and discuss possible reasons for distinctions in the production and distribution spheres of the ultrafine paste artifacts. I also present avenues for future research concerning both ultrafine paste artifacts and figurine production in general in the western lower Papaloapan basin.

Wesley Stoner and Christopher A. Pool (both University of Kentucky), Hector Neff (presently, California State University at Long Beach), and Michael D. Glascock (University of Missouri Research Reactor) "Coarse Orange Pottery Exchange in Southern Veracruz: A Compositional Perspective on Centralized Craft Production and Exchange in the Classic Period." The compositional techniques of instrumental neutron activation analysis (INAA) and petrographic point counting were employed to investigate the production and distribution of Coarse Orange jars in the Classic Period Sierra de los Tuxtlas, Southern Veracruz, Mexico. Arnold et al. (1993) have suggested that the Comoapan production locality at Matacapán produced this ware for exchange throughout the Tuxtlas. Compositional data from a regional sample of Coarse Orange ceramics and raw materials strongly support this hypothesis (Stoner 2002; Neff and Glascock 2002). Additionally, the distributions of ceramic and clay groups provide information regarding the general nature of resource procurement and the organization of ceramic production and exchange in the Tuxtlas. The two largest ceramic compositional groups (Group 1 and Group 5) overlap greatly with the east-to-west separation of the two clay compositions found in the Tuxtlas. This suggests the existence two distinct zones of resource procurement, production and distribution with only minimal interaction between the two during the Classic period. There is, however, evidence that suggests Comoapan acted as a centralized producer and distributor of Group 1 Coarse Orange in the eastern half of the study area. Besides the two major Coarse Orange compositional groups found in the Tuxtlas, several other recipes were identified that may best be considered localized zones of low-intensity production and distribution.

Cynthia N. Pinkston (University of Maryland) "Across Time and Space: Comparing Cultural Contexts of Two Different Ceramic Traditions as a Strategy for Increasing Knowledge."

Separated by half the globe and in physically different environments, the cultures and ceramic traditions of Bronze Age Thera and Pre-Columbian Oaxaca may seem unusual choices for any comparison. Yet ceramics were omnipresent in both, and they share other similarities. Used for everyday and ritual purposes, ceramics witness status, interaction through exchange or trade, and a thorough knowledge of the necessary technology for creating these and other specialized objects important to the life ways of these earlier peoples. Utilizing studies such as the *Proyecto Especial Monte Alban, 1992-1994*, *Thera and the Aegean World III*, and other sources, this paper will discuss how investigating the Ceramic Ecology of these two cultures enlarges our understanding of both.

Christine M. Shriner (Departments of Geological Sciences and Classical Studies, Indiana University at Bloomington) and James G. Brophy (Department of Geological Sciences, Indiana University at Bloomington) "Beyond Ceramic Regionalism: Provenance Determination with an Electron Microprobe Mineral Composition Databank." Recent geological field and laboratory work has resulted in the development of an igneous source material databank for the western portion of the South Aegean Volcanic Arc (Aegina, Methana, Poros and Melos, Greece). The igneous reference materials were sampled from these four islands. Minerals within these samples were then analyzed by electron microprobe to develop a mineral composition databank against which mineral compositions in individual artifacts could be compared. The purpose of this databank is to produce high-quality, quantitative data that can be used for the provenancing and sourcing of artifactual material, e.g. ceramics and millstones. Sherd P1169 from Lerna, an important proto-urban settlement in the southern Aegean, offers an example of how this mineral databank can be successfully used to determine specific geographical provenance. P1169 is a type 6 askos (Cycladic duck vase?) from Lerna III/Phase C or D (2450/2350-2200/2150 B.C.) The fabric consists of pervasive microlite feldspar and some amphibole. On stylistic grounds it has been suggested that this askos is similar to a profile from Phylakopi I (Early Cycladic IIIB) on Melos. However, to date it has only been possible to assign a regional provenance of "from the Cyclades" to the ceramic vessel. Comparison of amphibole compositions in the sherd with the South Aegean Volcanic Arc mineral databank indicates a Melian provenance. The analysis has also predicted a specific volcanic source on the island.

William A. Parkinson (Florida State University) "Tribal Boundaries: Ceramic Style and Social Boundary Maintenance during the Transition to the Copper Age on the Great Hungarian Plain." In this paper, I explore the nature of boundary formation in 'tribal' societies by examining stylistic attributes within ceramic assemblages during the transition from the Neolithic to the Copper Age in the eastern Carpathian Basin. Stylistic variability is used as a measure of social interaction and can be used to identify patterns of boundary maintenance within the Late Neolithic (Tisza-Herpály-Csszhalom Complex) and Early Copper Age (Tiszapolgár) cultures that occupied the region. The patterns indicated in the assemblages from the Körös River Valley suggest that social boundaries became more fluid and permeable at the beginning of the Copper Age, allowing more

extensive interaction across larger social networks. Traditional explanations of the social changes that occurred at the end of the Neolithic in the region have focused upon shifts in economic organization or upon influence from 'external' forces via migration. The patterns presented here, combined with the results of recent research into the Copper Age, suggest that the various changes in social organization may be attributed to scalar stress associated with the internal organization of societies during the Late Neolithic.

Kathleen M. S. Allen (University of Pittsburgh) "Technological Style and Iroquois Pottery: An Examination of Patterns of Ceramic Variability and Social Boundaries." Pottery making is a shared activity that unites potters in a network of personal relationships and knowledge within the wider cultural sphere. These relationships, both at the personal and wider social scales, have an effect on the choices made in pottery production and on continuity and change in production over time. Aspects of the technology of production are examined for 200 utilitarian pottery vessels from two early historic Seneca village sites. Vessel morphology, construction and decorative techniques are analyzed as is evidence for utilization. Analysis of the patterns of technological variability in this sample of pottery provides information on the choices made by potters and the ways in which groups use material culture as an expression of social boundaries.

Louana M. Lackey (Maryland Institute College of Art) "Potters, Pots, and Potsherds: Current Research in Ceramic Studies." Members of the informal "Ceramic Studies Interest Group" use a number of approaches in their search for answers to their questions. In this paper I will discuss some of their many current problems and projects in ceramic studies that have been reported to me by mail, e-mail, and telephone. Examples include work from both the Old and New Worlds — work that uses approaches that include archaeology, ethnoarchaeology, ethnography, and technical analysis. Many of these field and laboratory investigations are still in progress and have not yet reached a final "paper ready" stage. Many of the investigators of work "in progress" invite input from colleagues. Other projects have been too recently completed for a "final report" and, for others, results are in press, or have been too recently published to be generally known.

The Second International Conference on "Science and Technology in Archaeology and Conservation," will be held at the Queen Rania Institute of Tourism and Cultural Heritage, The Hashemite University, Zarqa, Jordan, from 7-11 December 2003. The First International Conference, held in Jordan and organized by the Queen Rania Institute of Tourism and Cultural Heritage at the Hashemite University, and UNESCO from 12-17 August 2002, was very successful and has led to the subsequent conference. Improved methods of sharing information and coordinating its distribution, work on database systems, website publications and search capabilities are among the general goals of the meeting. Multidisciplinary studies provide useful approaches to the study of material remains such as fossils, artifacts, and monuments that belong to ancient human civilizations. Many relatively new technologies have been successfully applied to the development of archaeological

predictive models. These include GIS, Aerial Archaeology, Thermographic Infrared Multispectral Scanners (TIMS), Imaging Radar, Resistivity Mapping, Magnetometer Survey, Magnetic Susceptibility Surveys, Ground Penetrating Radar (GPR), Geophysical Diffraction Tomography (GDT), Virtual Reconstructions in Archaeology, Computed Topography, and Rapid Prototyping. Similarly, Bioarchaeological Analytical Techniques, Osteoarchaeology, Faunal and Lithic Analysis, Dating (Organic and Inorganic Materials), Biomaterials (Bone, Residues), Technology & Provenance (Stone, Plasters, Pigments, Ceramics, Glass, Metals), Remote Sensing in Archaeology and Mitigation Investigations have converted archaeological studies from its classical approach to a dynamic one that integrates modern Science and Technology.

The main topics to be covered: include: Archaeology; Tourism and Sustainability; Cultural Heritage Management; Vandalism; Archaeological Information System (AIS); Geographical Information System (GIS); Information Technologies (IT): Stone Weathering; Restoration of Monuments and Historical Artifacts; Policies and Strategies in Conservation; Archaeometry; Museology; Imaging And Non-Destructive Techniques; Ancient Art and Technologies; Landscape Archaeological Conservations; Environmental Impact Assessment on Cultural Heritage; and Heritage Management in Crises and Conflicts. For additional information, contact Prof. Dr. Talal Akasheh via e-mail: takasheh@index.com.jo or fax: 00962-5-382 6613; or Mr. Maher Abu Jafar via e-mail: mjafar@hu.edu.jo

Society for Historical Archaeology: A session entitled "French Colonial Archaeology of the Southeastern United States, Gulf Coast, and the Caribbean Region" has been proposed as a session for inclusion at the Society for Historical Archaeology annual meeting in St. Louis, Missouri, January 2004. The idea for this session stems from the "French Colonial Pottery Conference" held in September 2002 in Marksville, Louisiana. The majority of the published archaeological material regarding France's role in the European settlement of the Western Hemisphere is representative of the colonial territory north of the 33rd parallel. While there has been much field research in the "southern-half" of the colonial territory it has yet to be compiled. The purpose of this session will be to pull together various aspects of this "southern-half" of the French colonial frontier of the late 17th, 18th, and early 19th centuries. Possible topics for the session include, but are not restricted to: Material culture studies; architecture, plantation and town planning; licit and illicit trade, cultural interaction, slavery and plantation system, urban vs. rural, etc.; and theoretical issues, such as cultural heritage, preservation, and management, notions of social identification, new definitions or understandings of social categories. Papers are not restricted to terrestrial sites and may include submerged/shipwreck sites as well, and papers are not restricted only to sites below the 33rd parallel. "There is a good chance that the papers from this session will result in publication as an edited volume of essays." The coordinator of this effort is Meredith D. Hardy, Department of Anthropology, Florida State University, 1847 W. Tennessee Street, Tallahassee, FL 32304, e-mail merhardy@JUNO.COM

Ceramic Research Query

Condition Glossary for Maiolica Tiles: Appearing in the Conservation DistList, Date: 28 March 2003, From: Duygu Cleere duyguclere@hotmail.com Subject: Condition glossary for maiolica tiles. "I am involved in a National Trust project as a part of my conservation degree at the Institute of Archaeology, London. I am compiling a glossary of terms for recording the condition of the maiolica tiles in the Vyne House, Hampshire, UK. I would like to find out if anyone is aware of the examples of glossaries on the condition assessment of maiolica tiles in particular, and if anyone with experience in this area is aware of any unpublished material or has any suggestions which might be helpful." Duygu Cleere

Exhibition

Ceramic Trees of Life: Popular Art from Mexico is a bilingual exhibition at the Fowler Museum of Cultural History (UCLA) in Los Angeles that runs from 4 May to 14 December 2003. The exhibition has more than 65 examples of the symbolic "Trees of Life," elaborate ceramic candelabra-like constructions, dating from the 1950s through the 1990s. The majority of the specimens come from the potting villages of Izúcar de Matamoros, Metepec, and Acatlán de Osorio. Works by Herón Martínez and three families (Soteno, Flores, and Castillo) are featured. The historic background of the tradition and the evolution of the trees as ritual objects and as high-demand collectibles are reviewed.

Internet Sites

assemblage: The Sheffield Graduate Journal of Archaeology 7 (April 2003) includes an article by Chris Cumberpatch entitled "The Transformation of Tradition: the Origins of the Post-medieval Ceramic Tradition in Yorkshire." The URL is <http://www.shef.ac.uk/assem/issue7/cumberpatch.html>.

The Pottery of Trenton Society (P.O.T.S.) Newsletter is now on line, according to George L. Miller (URS Corporation, Florence, New Jersey). P.O.T.S. is an organization made up of historical archaeologists, ceramics historians and collectors interested in the Trenton, New Jersey pottery industry. Trenton hotelwares and white granite toilet wares are often recovered from historic sites in the American Northeast. Trenton has been described as the Staffordshire of America and had many potters from the Civil War period until the 1930s. Recent excavations of the pottery sites funded by the New Jersey Department of Transportation have produced a wealth of material from these potteries and some of this information is now available in the P.O.T.S. Newsletter as well as transcriptions of some important primary documents. The URL is <http://potteriesoftrenton.org/publish.html>

Ancient Ceramic Technology and Production in Cyprus is an Internet site that concerns a large multidisciplinary study of ancient ceramic technology in Cyprus from Late Neolithic to the Hellenistic period. The dissemination of the results from these studies combines archaeological, historical, geographical, and analytical scientific components aspects. The publication of the results is challenging due to the multidimensional nature of the information to be presented. Hence, a web-centric

database approach provides a solution while allowing a convenient means of early communication and information exchange between the project participants and the archaeological science community. The artifacts presented in the database testbed are from the Nicosia Museum Collection. Project design and management is under the direction of Eleni Aloupi and Vassos Karageorghis; archaeological database by Anna Lekka and Nota Kourou; XRF analysis by Andreas Karydas and Themis Paradellis; SEM by Eleni Aloupi; XRD by Vassilis Perdikatsis; Geological Survey laboratory experiments by Eleni Aloupi, Yannis Bassiakos, and Lina Kassianidou in collaboration with Kostas Xenofontos (Geological Survey, Department of Cyprus); video and image recording by Takis Kokkinias; video montage by Peter Belessis and Despina Katselli; software design and development by Peter Belessis and Vassilis Travlos; and modern reproduction of ceramic artifacts by Xara Bachariou-Agelidou. The work is funded by THETIS, the A. G. Leventis Foundation, and Greek-Cypriot Bilateral Collaboration Programme.

Written in Dynamic HTML and powered by JavaScript, the site pioneers a new approach to information retrieval: a web-centric database front end for the presentation of multi-dimensional information. Screen space is maximized and field retrieval is achieved in a single-screen CD-type interface that displays the values of primary record fields. Scrolling is avoided in favor of updatable-moveable windows that display the values of user-selected secondary fields. All records are stored in a server-resource-minimizing client-side JavaScript array. The data, therefore, can be processed and analyzed by the user off-line. Graphs are created dynamically, upon user request, from a text table, by a custom Java applet that allows both linear and logarithmic viewing, zooming and mouse-sensitive hot spots for feature identification. Linear viewing is the only function available currently; the site may be accessed at <http://www.archaeometry.gr/thetis/research/cyprus/cyprus.htm>

Also available on these web pages are several relevant publications: "New Technologies in Cypriote Archaeology: A Current Research Program on Ancient Ceramic Technology, OWLS Conference, Munster, May 1996," authored by Vassos Karageorghis, Nota Kourou, and Eleni Aloupi, in OWLS IV Conference Proceedings: Optical Technologies in the Humanities, G. von Bally, ed., Springer-Verlag, Heidelberg, 1997 (ISDN: 3-540-63280-8), In addition there is a paper from the Greek Society for Archaeometry session "Characterisation - Technology and Provenance Studies III: Ceramics," entitled "Multidisciplinary Survey of the Pottery Collection in the Nicosia Museum (Cyprus) using Non-destructive analysis and Digital Recording Techniques" authored by E. Aloupi, A. Karydas, P. Kokkinias, D. Loukas, T. Paradellis, A. Lekka, and V. Karageorghis.

News Briefs

Phil Betancourt: The Archaeological Institute of America's Gold Medal Award for Distinguished Archaeological Achievement was awarded recently to Philip P. Betancourt, the Laura H. Carnell Professor of Art History and Archaeology at Temple University (Philadelphia, PA), where he has taught since 1970. He is also Adjunct Professor in the Department of

Art History at the University of Pennsylvania and has served as the Executive Director of the Institute of Aegean Prehistory since 1990. Phil worked on archaeological sites in the United States and in Greece prior to focusing his research on Crete beginning in 1976. He has been the author or editor of numerous books, book chapters, and articles, many related to ceramics. Among his notable works are *Vasilike Ware: An Early Bronze Age Pottery Style in Crete* (Betancourt in collaboration with Thomas K. Gaisser, Göteborg, Sweden: Paul Åströms Förlag 1979); *Cooking Vessels from Minoan Kommos: A Preliminary Report* (Los Angeles: Institute of Archaeology, University of California, Los Angeles, 1980); *The Cretan Collection in the University Museum, University of Pennsylvania* (Betancourt with photographs by Harrison Eiteljorg II, Philadelphia: University Museum, 1983); *East Cretan White-on-Dark Ware: Studies on a Handmade Pottery of the Early to Middle Bronze Age* (Betancourt, with contributions from Thomas Bakas, Philadelphia: University Museum, 1984); and *The History of Minoan Pottery* (Princeton: Princeton University Press, 1985).

Nature: <http://www.nature.com/nsu/030331/030331-5.html>
 “New dating trick for bricks: Old building materials show their age when you roast them” by Philip Ball (3 April 2003). Ball writes that “Roasting ancient building materials might help archaeologists to date them. Bricks swell very slowly as they age, because they absorb moisture. Heating dries them out. How much they shrink indicates how old they are because it is proportional to how long they have been wicking up water, argue Moira Wilson of the University of Manchester Institute of Science and Technology, UK, and colleagues. The researchers performed a series of experiments with new and old bricks. First they found that newly fired bricks, aged naturally in air over several months, contract to their original dimensions after a couple of hours of heating at 450° C. Next, they artificially aged new bricks by exposing them to very hot steam. A few hours’ steaming seemed to have a similar effect to a few centuries of normal ageing. Dry heating nonetheless restored the bricks to their original size. This suggests that heat treatment might return even old bricks to their freshly fired state. Finally, the team was surprised to find a similar relationship between shrinking and age for building blocks 20 years old, 120 years old, or Roman samples 1,900 years old. This is despite the fact that the technological process of firing clay has changed considerably over the past two millennia. At present, archaeologists measure ceramics’ age using a method called thermoluminescence, which reveals when clay minerals were last heated — when they were fired in a kiln, in other words. This is accurate only when artefacts are at least a few hundred years old. The new method might work for more recently fired clay materials or settle debates about older ones. “It’s the old artefacts that archaeologists often argue about,” says team member William Hoff. The new findings could also help builders and engineers estimate how much new brickwork might expand in the future. Builders include gaps called movement joints to take up the strain. Currently, a gap of one millimetre for every metre of brickwork is recommended, but the rate of expansion over long timescales has never really been measured before.” References: Wilson, M. A., Hoff, W.

D., Hall, C., McKay, B., and Hiley, A. “Kinetics of moisture expansion in fired clay ceramics,” *Physical Review Letters* 90, 125503, (2003).

Cambridge Evening News: 19 April 2003, “New Cancer Centre Set to Feature Iron Age Find.” When the new Cancer Research Centre is built in Cambridge it will have a unique feature – the cast of an Iron-Age pottery kiln. The large Roman kiln dating from 50 to 70 CE was dug up by archaeologists excavating the site at Addenbrooke’s Hospital, along with a wealth of artefacts from the period. Impressed by the Conquest Period kiln in particular, Cancer Research UK has decided to preserve it for posterity and incorporate it into their new centre. The fragile three-pit kiln – its central pit alone measures 80 cms wide by 1 metre 30 cms and 70 cms wide – has been encased in a rubber and silica cast. It will be peeled off and recast in concrete or bronze and reset into the floor of the new building’s entrance. Chris Evans, director of Cambridge Archaeological Unit, said the clay supports of the kiln were “quasi-sculptural” and its replica would work well in any building. “It’s a way of keeping a permanent three-dimensional record,” he said. “It’s a great creative interaction between archaeology and art.” Other finds from the site include a Roman road sitting in an Iron Age hollow-way, a cemetery containing graves of several of the region’s wealthy Iron Age citizens, fine brooches and pottery and a large fragment of carved stone, believed to be a piece of “folk art”, a very important find. Some of the items will be exhibited in the new building when it is completed in 2005.

Daily Telegraph (UK): June 4, 2003, “Wedgwood to Shed 1000 Jobs.” Pottery company Wedgwood Group has announced plans to close two of its UK factories with the loss of more than 1,050 jobs. A company spokesman confirmed that earthenware factories in Hanley and Tunstall, Stoke-on-Trent, would shut later this year when production of its Johnson Brothers brand moves to the Far East. A further 275 workers at the affected plants will transfer to Wedgwood’s sites at Barlaston and Longton, Staffs, which will continue to manufacture the premium quality Wedgwood-branded china and earthenware. The spokesman said a total of 761 jobs would be lost at the Eagle Pottery and Alexandra Pottery factories, with a further 297 workers axed in the earthenware-related infrastructure.

CSA Newsletter Volume XVI, No. 1 (Spring 2003): CSA, the Center for the Study of Architecture/Archaeology, is devoted to advancing the use of computers and digital technologies in the service of architectural history, archaeology, and related disciplines. In this issue of the newsletter, Harrison Eiteljorg II reports the “Termination of the CSA Archaeological Projects Database,” and asks “Was it a good idea, or have search engines made it unnecessary?” <http://www.csanet.org/newsletter/spring03/nls0305.html>

Note: The *Society for Archaeological Sciences* (SAS) web page is <http://www.socarchsci.org>

A new section of the AAA, the Society for Anthropological Sciences (also SAS, or SASci), may be visited at <http://www.anthrosciences.org/>



Book Reviews

Mark Hall, Associate Editor

Proceedings of the 32nd International Symposium on Archaeometry, 15-19 May 2000, Mexico City. Luis Barba (ed.) 2002. CD-ROM. UNAM, México. \$20.

Reviewed by Irene E. Schrüfer-Kolb, Associate Lecturer, Classical Studies, The Open University in the South, Foxcombe Hall, Boars Hill, Oxford OX1 5HR, United Kingdom

The proceedings of the 2000 Archaeometry Conference at Mexico City, one in a long established series of biannual meetings held at varying international locations to discuss current developments in archaeological science, have for the first time been presented exclusively in electronic format. The conference organisers decided against a printed version in favour of one CD-ROM, the system requirements for this being PC Windows 95/98/ME/2000 (or Macintosh Mac OS 8, 9, and 10), Intel Pentium II processor or equivalent and 64MB RAM. The intention behind this choice of modern media is obvious: a CD-ROM generally is quite user-friendly, compact, interactive and a cost-efficient medium for using colour and multimedia.

However, my first encounter with this CD-ROM was not particularly user-friendly: 64MB RAM is not inconsiderable and, although I personally am lucky to have access to a powerful computer, I doubt that everybody interested in the 2000 proceedings has a suitable machine at their hands. Less well-equipped institutions or individuals, or potential readers without computer access, are at a clear disadvantage. Easy access and as wide a readership as possible should be a top priority for any publication. Although more expensive overall, the 2000 conference proceedings would have benefited from a simultaneous publication of an electronic and a printed version. In this case, to save costs, an interactive web document could have replaced the CD-ROM.

Equally, accessing the CD-ROM did not prove easy. It may be a problem of my particular copy, but it required one working day and the help of a system administrator to get the programme running. Running the CD-ROM on a top-of-the-range laptop of 1999 failed because not all files could be read, nor could they be read on a borrowed top-of-the-range laptop of 2002. The CD could finally be read in on a standard PC made in 1999, and we believe the higher sensitivity of laptop disk drives to be the cause. We then resorted to the inconvenience of copying the CD-ROM onto a zip disk and transferring the content to the hard disk of my computer.

Introduction

After this shaky start, one click on the “archaeometry” starter application and I was greeted by a beautiful 3D color animation of six ancient Latin American deities, flying through

the universe and assembling in two opposing groups of three on an H-shaped tapestry. A shining star and several flashing yellow lights also move through the animation. This takes nearly two minutes (on my Celeron processor). This appears to be a symbol of a Latin American creation scene, but unfortunately, although this tapestry is the conference logo depicted on the case of the CD-ROM, there is no explanation or legend of exactly what it represents. Another drawback is that the animation, as atmospheric as it is to look at, cannot be skipped. This would have been especially helpful if one uses the disk repeatedly or wishes to have just a quick look. However, all documents on the disk can be started individually, thus avoiding the problem of a lengthy start-up. The starter animation also revealed the use of Shockwave Flash throughout the CD-ROM, thus explaining the high RAM requirements.

Once the starter animation is complete, the user is greeted by a new screen, which displays an introduction to the conference and a navigation menu to the left. The introduction briefly outlines the history of the Archaeometry conference series and the institutions and venues involved in the organisation of the 32nd symposium in Mexico City. A total of 60 papers and 210 posters were presented in six areas – biomaterials, ceramics and glass, dating, field archaeology, metals and stone, pigments and plasters – over five days, 58 of which have been included in the proceedings. It is not made clear how this selection was made, nor whether only papers or also poster presentations were included. Only during careful reading of individual papers did I find out that in fact both were. Already in the introduction it is mentioned that the contributions have not been refereed. A further glance at the credits reveals the statement that all papers have just been textually copied, and that therefore all errors, including “the whole sense and meaning, as well as the orthography and grammar” remain the authors’ responsibility alone. This declaration causes immediate wariness and disappointment to the reader, as this usually affects the quality, validity and significance of individual contributions. It also affects the status of the papers for the authors themselves, as a refereed paper is considered academically more important.

Navigation

Similar in layout to frames in a web page, a main menu situated to the left of the text pages represents the central navigation tool of the CD-ROM. It is divided into seven functions: *author*, *title*, *fields*, *abstracts*, *images*, *credits* and *exit*. Individual contributions can be accessed through *author*, *title*, *fields* and *abstracts*.

The most convenient way for browsing is *fields*. This function leads to a clickable submenu listing the six main conference topics, each leading to a clickable list of contributions. Another click on the title opens the first page of the respective paper. Further navigation within the text is by means of flashing next page and previous page buttons at the bottom of each page. Although this is simple to navigate, repeated clicking can be somewhat cumbersome when reading longer texts. As many readers today are used to viewing Internet pages, the use of scroll bars might have been more convenient. This layered access structure by field proves very clear and easy to navigate downwards, but there is no back or

home function to return to the individual lists of contributions or the sub-menu of fields. If one wishes to access a paper from a different session, one needs to return to the main menu and start the navigation anew.

Author and *title* functions, on the other hand, are meant to help access specific papers. Both lead to clickable alphabetical lists (title sorting including a/the), which in turn open the papers. However, once in the text, there is no back or home function to return to the list and one has to start afresh from the main menu. *Abstracts*, on the other hand, reveal a complete sequence of abstract texts, ordered alphabetically by author. There is no link to the main body of the text. None of the three functions provides a search facility; instead one needs to click through the lists to find a particular item. This is particularly tiresome in the case of 58 abstracts.

Images, finally, provide some lively insights into the running of the conference, including a conference photo, pictures of the venue, poster and paper sessions, excursions and the tempting social programme of food, music and dance. Unfortunately, there are no captions to explain to the uninitiated the fun everybody visibly had. Also, the conference photo, despite being enlargeable, remains blurred. There is no additional outline silhouette providing people's names, as sometimes the case at other conferences, so no participant can be identified. Mere coincidence, this?

Generally, although the CD-ROM claims to be interactive, little use has been made of its potential. Using for example the HTML format, and hence Internet browser features, would have substantially improved its user-friendliness. At the top level, there is no general search function and no subject index. Within individual contributions, figure references are not clickable in the text, thus requiring thought-interrupting back and forward clicking, nor are the figures enlargeable. There are also no clickable cross-references to other related papers in the proceedings. Scroll bars and a return to first page function would have been equally helpful. Papers cannot be searched by word and printed only if opened individually in browser format. Though of minor importance, once the main menu has been used, the introduction can no longer be accessed. Only the exit button and a fresh start get you there.

Content

In my opinion, the aim of any conference proceedings, and indeed paper, should be to inform both the specialist and the interested non-specialist. Due to the comparative lack of textbooks in archaeological science, also students are likely readers. In order to assess to what extent this goal has been achieved, in addition to selective reading, I chose to closely examine contributions in the two fields I know most (metals) and least (bioarchaeology). As a whole, the proceedings cover a truly extensive range of archaeometric applications, yet the number of contributions varies per main topic. There are 16 papers dealing with ceramics and glass, 13 with stone, pigments and plasters, and 12 on field archaeology, but only 8 on metals, 7 on biomaterials and just two on dating. Ceramics and glass contributions mainly deal with compositional, microstructural, materials behaviour and provenance studies, as do the papers on stone, pigments and plasters. Field archaeology principally

covers applications such as geophysics, remote sensing, phosphate and soil analysis. The two dating papers discuss the respective application of TL and ESR dating to two case studies.

The 8 papers on metals almost exclusively cover non-ferrous and precious metals; there is only one swiftly dealing with the conservation of an Iron Age iron furnace in South Africa. Demortier and Ruvalcaba-Sil examine Achaemenid and Mexican-Colombian gold soldering and depletion gilding techniques by RBS and PIXE, while Gondonneau, Guerra and Cowell discuss methodological studies for gold provenancing by LA-ICP-MS. There are more papers on copper alloys: Sarthre et al. investigate varying tin contents and replacement by lead in Celtic tin bronze coins from France by NAA, EPMA, optical metallography and experimental casts. Vlachou, Janaway and McDonnell concentrate on the properties of argentiferous copper alloys used for Late Roman coinage. Kasztovszky et al. attempt to link the chronology of Roman brooches from Hungary to their varying alloy composition through the use of PGAA. Franco et al. examine manufacturing techniques of a copper ceremonial crown from Mexico by SEM-EDAX, and Costa et al. study the composition and properties of Punic gilded silver jewellery from Ibiza, again by SEM-EDAX and photothermal analysis. All except the South African contribution certainly meet the research standards of their countries and although aims, methods, and background are well outlined in all of them, individual results and their interpretation vary according to the expertise and experience of the teams.

The 7 biomaterials papers on the other hand vary, for the non-specialist reader, from the quite technical to the easily understandable. Two particularly accessible contributions stand out. First, Beaubien and Kaplan, who examine Guatemalan clay-textile composites used for ceremonial gear by SEM-EDS and laboratory replicas. This text is good, well structured, to the point, using plain language, and hence easily understood. The topic and analytical results are unusual and, together with the text make for an interesting and informative read. The second contribution, by Price, Manzanilla and Middleton, studies migration to Teotihuacan through strontium isotope analysis of bone and teeth. The fascinating concept behind this technique is well explained before research hypotheses are raised and tested by analytical results. Results are then put into a wider context and tested against other sites in the vicinity. This excellent paper provides information at varying levels, from a clear methodological introduction to the outline of a sophisticated combined archaeological and archaeometric approach and the detailed discussion and interpretation of laboratory data.

Overall, the quality of papers ranges from the very well crafted to the meagre, reflecting the proficiency of the researchers as much as the current state of research and the financial situation in the laboratories of their countries of research. Nevertheless, this considerable variation could have been somewhat controlled by editing the contributions prior to publication. Some articles are rather technical in their presentation of methods and results and therefore do not facilitate getting the message across to the interested non-specialist. Unfortunately, several papers do not discuss their results in a wider archaeological context, which can make the relevance of individual results difficult to assess. Archaeometry

in particular is a field of interdisciplinary research, and there is a need to translate results to all parties involved. Hence, only a detailed comparison, integration and discussion of data in a wider archaeological framework helps to overcome apprehension and scepticism among a humanities-based community of anthropologists, archaeologists and historians, wondering what all this data accumulation is about. It is only in this way that the true value of scientific methods applied in archaeological research can be shown.

Even more disappointing than the fact that the papers are un-refereed, are the numerous editorial lapses throughout the proceedings, such as missing photomicrographs (e.g. fig. 10b in Sarthre et al.) or incomplete footnotes (e.g. Gondonneau, Guerra and Cowell). In addition to the occasional typo in nearly all contributions, there are layout (e.g. apparently part of abstract missing in Harrison and Hancock) and font incompatibilities (such as Greek font) in several of them. English language slippages by non-native speakers, sometimes standing in the way of text clarity, could have been easily avoided by editing, or at least proof-reading, by a native speaker before submission. Laudably, extensive use of colour illustrations has been made throughout the CD-ROM, usually impossible with print media because of the high cost. However, unintended by the authors, many figures were poorly reproduced in the proceedings. Often, the picture and legends are too small and blurred, thus making text and diagrams unreadable and the depicted object unidentifiable (e.g. Alonso-Olvera, Tzompantzi-Reyes, Mendoza-Anaya and Rodriguez-Lugo; Stephan).

Conclusions

Notwithstanding numerous editorial shortcomings, the proceedings provide a useful tool to obtain an excellent overview of recent developments in the field of archaeological science. A wide range of archaeometric techniques and their potential applications are presented and the benefits of specific methods for solving archaeological questions demonstrated. The decision to use electronic format for the proceedings has to be congratulated, as this medium generally offers a whole new range of interactive uses and allows the extensive use of colour illustrations. It is hoped that future Archaeometry symposia will continue to foster this seed, cultivating the roots developed on Mexican soil.

Beyond Foraging and Collecting: Evolutionary Change in Hunter-Gatherer Settlement Systems. Edited by Ben Fitzhugh and Junko Habu, Kluwer Academic/Plenum Publishers, New York, 2002, xvi + 442 pp., 82 figures, 24 tables, index. ISBN: 0-306-46753-4.

Reviewed by William C. Prentiss, Department of Anthropology, The University of Montana, Missoula, MT 59812, USA

Lewis Binford's forager-collector model of hunter-gatherer settlement systems has been profoundly influential within archaeology. It provided researchers with not only ideas about how hunter-gatherers position themselves in reference to

resources but provided ecological predictions as to the contexts whereby these systems could be expected to most effectively operate. Further, it offered "middle range" expectations as to how variability in settlement behavior might be recognized archaeologically. While providing important ecological insights into variability in hunter-gatherer socio-economies, Binford's work stopped short of examining evolutionary change in mobility and subsistence regimes over long time spans. Ben Fitzhugh and Junko Habu's edited volume, *Beyond Foraging and Collecting*, provides this critical next step, providing a forward by Binford himself (with co-author Amber L. Johnson) and 11 case studies in three parts, whose goal is to explore and assess the forager/collector model's utility for understanding socio-economic evolution over the long term.

Following Habu and Fitzhugh's excellent introduction to the volume, Part I, titled "Regional Scale Processes of Settlement Pattern Change" includes four studies exploring the structure of settlement patterns in a variety of contexts. Kenneth A. Ames provides a much overdue assessment of the utility of the forager-collector continuum for understanding hunter-gatherers in coastal contexts where a significant portion of a group's mobility is accomplished using boats. He discovers that while the size of foraging areas for terrestrial and aquatic hunter-gatherers is about the same, some other elements may be different. Most significantly, Ames notes that while classic collectors typically produce specialized resource collection camps at some distance from residential bases, aquatic hunter-gatherers, such as those of the North American Northwest Coast rarely produce these since most food is harvested and transported in boats. Thus, while economically they still fit the collector model, their archaeological signature is somewhat different. Junko Habu explores changes in settlement patterns between the Early and Middle Jomon periods of the Kanto and Chubu Mountain areas in Japan. Using simple but effective quantitative methods, she demonstrates that due to changes in resource structure, Southwest Kanto area collectors shifted to a more residentially mobile forager strategy. Meanwhile, population movement out of the Kanto region resulted in population packing in the Chubu Mountain context eventually giving rise to the large Middle Jomon villages of this area. The important message of this work is that some significant patterns of change can be at least a partial consequence of historical contingency. James M. Savelle examines the late prehistory of the Canadian Central Arctic region, noting that when the Little Ice Age (ca. 1450 B.P.) drove temperatures down, Thule whaling societies of the Canadian Arctic Archipelago were apparently driven south where they were most likely integrated into the more adaptively flexible mainland groups. Savelle makes the important argument that some systems (Thule whalers for example) may be structured in such a way that they have reduced ability to restructure in the face of altered resource conditions than others (terrestrial collectors). Ofer Bar-Yosef reviews the archaeology of the Natufian culture of the Mediterranean Levant. Bar-Yosef demonstrates a pattern of what he calls cyclical sedentism whereby Geometric Kebaran, Natufian, and early Neolithic populations shifted back and forth between more mobile and more sedentary regimes. Interestingly, he notes that during the early Natufian, a pattern

of nonegalitarian social organization emerged in many communities. Bar-Yosef notes that an understanding of the Late Natufian is critical for explaining the origin of agriculture, which he asserts lies in the impact of resource stress associated with the cool and dry Younger Dryas climatic episode.

Part II of the volume is titled "Microevolutionary Approaches to Long-Term Hunter-Gatherer Settlement Change" and emphasizes formal modelling of the microeconomic logic behind variation in foraging strategies. Lynn E. Fisher uses evolutionary ecology's diet breadth model to provide an explanation of changes in foraging and mobility between the late Upper Paleolithic and the Mesolithic of southwestern Germany. A number of basic statistical measures clearly demonstrate change in settlement and lithic technological organization between specialized hunters of the Magdalenian versus more broad-spectrum foragers of the early Mesolithic. Although somewhat lengthy, Renato Kipnis reviews the basic literature on foraging and risk theory. Kipnis then explores the utility of lithic artifacts and rock art as measures of interaction and risk buffering in central Brazil. Although the rock art study is adversely affected by poor dating, the author makes the important point that multiple data sources can be brought to bear on complex issues such as foraging, risk management and social interactions. Following in the tradition of a number of other Great Basin researchers, David W. Zeanah uses diet breadth, patch-use, and resource transport models of evolutionary ecology to develop predictions regarding land use in the Late Prehistoric Owens Valley. Ultimately, he argues that population packing reduced opportunities for logistical mobility, thus favoring residential use of key resource patches such as the pinyon-juniper woodlands. Ben Fitzhugh, in contrast, argues that population packing favored resource intensification and greater logistical organization during the Middle to Late Holocene on Kodiak Island, Alaska. In this context, Fitzhugh's rigorous data analysis demonstrates that collecting emerged abruptly at about 3500 B.P., followed much later (ca. 1000 B.P.) by sedentism and social ranking.

Part III titled "Beyond Ecological Approaches to Hunter-Gatherer Settlement Change" provides alternative perspectives on long term change, permitting authors to explore the impacts of history, contingency, and agency on hunter-gatherer economic change. Aubrey Cannon argues that winter-village pattern collecting may have persisted for nearly 7000 years with minimal change in the central Northwest Coast of North America. Finding no significant demographic, technological, or environmental causes, he links the extraordinary pattern of stasis to "religious conservatism." Laura Lee Junker provides an extremely valuable examination of change in forager-farmer relationships in the Late Holocene Philippines. Most fundamentally, her study demonstrates that, contrary to the expectations of the revisionist school in hunter-gatherer studies, foragers are indigenous to the landscape and have maintained a variety of relationships to neighboring complex societies. Mark Aldenderfer seeks to expand the impact of the forager-collector model for explaining change in hunter-gatherer systems. He demonstrates rapid change from forager to herder in three Andean contexts and suggests that consideration of the concepts of history, agency, contingency, and cultural logic can enhance

our understanding of these transitions. T. Douglas Price closes the volume with his short but informative Afterword chapter reviewing the history of the forager-collector continuum and current perspectives in hunter-gatherer archaeology.

This volume will have impacts in several critical areas. First, it provides significant insight into variability in the structure of hunter-gatherer settlement systems in different environments. Ames provides a particularly good example of this. Second, nearly all the works in this volume demonstrate that simple neo-evolutionary models will nearly always be insufficient as explanations for long-term change. Change in many contexts is highly variable and even cyclical, depending upon local and regional conditions and demography. Finally, these papers demonstrate that while microeconomic logic helps understand the structure of human adaptation, evolutionary change is a more complex process, affected by general processes, but also historically contingent events as so aptly outlined by Aldenderfer. As pointed out by Binford and Johnson, several authors cite cultural conservatism as explanations for data indicating cultural stasis. These explanations, while incomplete, show that archaeologists have recognized a problem worthy of further study. Perhaps the next major archaeological work on hunter-gatherers will look even deeper into evolutionary processes to account for this phenomenon. Meanwhile, *Foragers and Collectors* is an important work that will be widely read by professionals and students alike despite its high price tag. The editors should be congratulated for pulling together this excellent review of the state of the art in hunter-gatherer settlement and subsistence research in archaeology.

Archaeological Theory and Scientific Practice. Andrew Jones, Cambridge University Press, Cambridge, 2002. 222 pp., 13 line drawings, 12 graphs, 12 maps. ISBN: 0-521-79393-9.

Reviewed by Yastami Nishida, Niigata Prefectural Museum of History, Nagaoka 940-2035, Japan

What the author writes about is not special. His main theme is the dichotomy between theoretical archaeologists and archaeological scientists. But, is it true that only these two kinds of archaeologists exist in this world? A few extremists might be objective, but in contemporary archaeology, scientific analyses cannot be interpreted without a theoretical framework, and interpretations cannot ignore scientific analyses. This difference in cognition may come from the different circumstances the archaeologists are placed. At least in Japan, the post-excavation works are not so segmented as described in this book. Another questionable claim is that archaeology is the only discipline where science and art meet. An attractive feature of archaeology is surely the co-operation of social and analytical science, though it is not the only research area where multiple sciences are involved. Larger scale conglomeration is in process in the area of cognitive science, involving psychology, linguistics, computer science, brain science, behavioural science, and neurology, amongst others.

The author's attitude towards the application of scientific methods to archaeological objects is rather questionable. There

have been many misguided analyses, or premature interpretations of the results in the past. He mentions the latter problem but the former problem is more difficult to resolve. Jones has an optimistic attitude towards lipid analysis, but the degradation of fatty acids is somehow not considered at all. Japanese archaeologists have tasted a bitter experience: a Palaeolithic scraper, once said to have trace of a now extinct elephant lipid, turned out to be a fake. Of course, this is an extreme example of failure, but we do know the weak points of this analysis. Organic residues do not follow the same routes of decomposition, and trace analysis is always in danger of contamination. In Japan, there have been continuous experiments on assuring absorption rates of different lipid acids into vessel walls. In the case of Jones' example, how could barley lipids penetrate the vessel walls by only storing barley inside? As far as the method is explained, sterols were not analysed for, and it is the sterols, which can assure where the lipid acids came from.

This is not a particular point to be questioned. What is more, is that the author simply *takes* the scientific analyses as truth. Results of the analyses may be truths, but they may not be accurate representations of what the past people had left. The witnesses who could assure us on the results are all gone and crosschecking is all that can support the results now. Unfortunately, some analytical techniques are not repeatable once the test has been done. Data that are not likely may be treated as outliers, but is it enough? Don't we also have to consider what made it an outlier? Can we believe the statistics that create groups? Palynology, for instance, is done asserting that not all pollen is preserved. The pollen production differs by species also the affects the results; results would also differ whether a feature was buried over a short time or left open for a long time. The palynologists make interpretations regarding those problems. The life history of artifacts does not end by their deposition. There lies a process of decomposition, which lasts much longer than the active life of artefacts.

For an archaeologist working in Japanese prehistory, the number of finds from Orkney is miniscule in comparison. Usually in Japan, hundreds to thousands of boxes full of pottery sherds await cleaning, fitting, drawing and analysis. Also the excavation results of Barnhouse seem easy to understand. If we accept the analytical results presented, those Neolithic people were so kind to archaeologists, leaving their wastes in an orderly manner. In this sense the book should be suitable for introductory students. Reiterations and the bibliography may be also useful for students.

The Body. Edited by Sean Sweeney and Ian Hodder, Cambridge University Press, Cambridge, 2002. 176 pp., 17 figs, 4 plates, index. ISBN: 0-521-78292-9.

Reviewed by John Carman, Department of Archaeology, University of Cambridge, Cambridge CB2 3DZ, UK

This edited volume contains a range of papers from scholars in different disciplines – from both the sciences and the humanities – examining aspects of how we understand and

experience the human body. The book derives from a series of public talks given as part of the Darwin College Lecture series held annually in the University of Cambridge, UK. Each series of Darwin Lectures has a theme, and individual lectures relate to that theme as they may. Other Darwin Lecture series – similarly published – have covered such topics as 'Colour', 'Memory', 'Time', 'The Fragile Environment', and 'DNA'. The series forming the content of Sweeney and Hodder's book was held in 1999, when the editors were both Fellows of Darwin College. Sean Sweeney is a geneticist now based in the Department of Biochemistry and Biophysics, University of California, San Francisco. Ian Hodder will be well known to archaeologists as a founder of the 'postprocessual' school of archaeological theory: previously based in Cambridge, he now teaches in the Department of Cultural and Social Anthropology in Stanford University. Together they have produced a thoughtful and topical volume.

The individual contributions are arranged in a convenient and seemingly logical flow. Starting with the role of molecular biology in understanding the growth process, through the achievements of the Human Genome Project, to questions of ethics in reproductive science, to studying criminal violations of the body, to issues of human rights, to the place of the nude in artistic representation, to the relationship of the body to technology, the book moves finally to the story of 'Oetzi' the Iceman. This flow is one from scientific analysis of components of the body, through increasing levels of moral engagement with the treatment of the body, to the scientific study of a particular but intact body and all its trappings. Overall, the book provides a good sense of the kind of thinking about the human body currently undertaken in a wide range of disciplines.

The editors begin their Introduction by outlining some of reasons why the human body has become an object of concern in contemporary society. These include a shift in commercial focus from work to leisure, the latter located particularly on the body; changes in interpersonal – and especially sexual – relations; the feminist critique of 'the male gaze'; the wide availability of the photographic image of people; and the applications of real or pseudo-science, some of which offer an enhanced quality of life for all, others which condemn certain categories of person to a subordinate status. They go on to outline attempts in Western thought to overcome the Cartesian dualism of mind/body and culture/nature, and from there to ideas about the body as object and subject as reflected in the chapters that follow.

The line-up of contributors and the fields they cover are impressive. Richard Twyman is a molecular biologist and scientific writer based in the John Innes Centre in Norwich, England, who examines the idea that the growth of the body can be compared to the construction of a building, and outlines the processes of molecular change that give the human body its form. Peter Goodfellow is a former Professor of Genetics at Cambridge University whose contribution charts the history and achievements of genetic research in the 20th century. The philosopher Mary Warnock chaired the UK government Committee of Inquiry into Human Fertilisation and Embryology and her chapter addresses with care and clarity the ethical issues surrounding the use of human embryos in research and

the implications for human cloning. Psychologist David Canter is best known for his pioneering work in criminal profiling, and his interesting and sometimes disturbing contribution discusses how both certain types of abuse and some kinds of reductionist science can serve to reduce the way people are seen to a concern with their bodies alone. Thomas Laqueur is Professor of History at the University of California at Berkeley, and his chapter examines the dual role of the murdered body, as evidence of crime and simultaneously as focus for mourning. Griselda Pollock is a noted art historian at the University of Leeds, UK, and her paper examining the history of the representation of the naked woman – particularly as an erotic object – seeks to challenge and re-draw the usual clear line that is deemed to separate ‘art’ from ‘pornography’. Bruno Latour, who is well known for his anthropological studies of scientific practice and technological development, asks ‘what kind of body do we wish to have?’ and answers it by recommending the involvement of people with the medical and biological science and science with people. Konrad Spindler is Professor of Pre- and Protohistory at Innsbruck University and his concluding chapter tells the story of the discovery and investigation of the remains of a 5000-year old mummy retrieved from the Alps in 1991.

In appreciating the book, it is important to remember that it is produced not primarily for a specialist academic audience, but for an educated ‘lay’ readership. Accordingly, the expressly scientific contributions may not tell specialists in these fields anything new. Similarly, those with a more humanistic or social science background may find individual papers from archaeology, psychology, history, philosophy, art history, or social anthropology to be saying nothing not already encountered. The value of the book, however, lies elsewhere: in introducing to those of us (like myself) not well versed in science to current developments in, and the broader implications of, for instance, genetics and molecular biology; and to those generally distant from the sometimes apparently abstruse debates of ethics and moral philosophy to current thinking about the object of scientific analysis and its appropriate treatment.

The book is very approachable and easy to read, with occasional images to provide a respite from the text. But simply because it is designed as a ‘popular’ text for a general readership does not make it a book to be ignored by specialists. By bringing together highly varied approaches to the study of the human body the book provides an insight into an important aspect of contemporary culture of which – if we bury ourselves in our own specialist corner of it – we may otherwise lose sight. The message of the book is that there is more to the human body than can be seen from any one perspective; and more importantly, that there is more to being human than merely physical existence. The ethical and moral dimensions of all disciplines devoted to understanding how our bodies are made, used or abused, perceived and understood are present in all the contributions and serve as a linking theme binding the volume into a diverse but complete whole.

Accordingly, this book provides a coherent and approachable introduction to current themes in the study of the human body as both a biological and a cultural object, its attributes and its representation.

Meetings Calendar

Colleen P. Stapleton, Associate Editor

* = new listings; + = new information for previous listings

2004

- Jan. 2-5. 105th Annual Meeting, American Institute of Archaeology, San Francisco, California.
- Jan. 7-11. Conference on Historical and Underwater Archaeology (SHA), St. Louis, Missouri, USA.. URL: <http://www.sha.org/mt2004.htm>.
- *Feb. 8-13. 17th Australian Geological Convention, Hobart, Tasmania. <http://www.17thagc.gsa.org.au/>
- March 31-Apr. 4. Society for American Archaeology, Montreal, Canada. URL: <http://www.saa.org/Meetings/index/html>.
- May 3-7. 34th International Symposium on Archaeometry, Zaragoza, Spain. Contact: Josefina Perez-Arategui, Dpto. Quimica Analitica, Facultad de Ciencias. Email: jparante@unizar.es; web: <http://www.archaeometry2004.info>
- June 4-8, 2004. 10th International Conference on Particle-induced X-ray Emission and its Analytical Applications, Ljubljana, Slovenia. URL: <http://pixe2004.ijs.si>. Scientific program includes applications in art, archaeometry, and archaeology. Abstract deadline: Feb. 6, 2004. Contact: PIXE 2004, Jozef Stefan Institute, p.p. 3000, SI – 1001, Ljubljana, Slovenia; tel: +386-1-588-5266; fax: +386-1-561-2335; email: pixe2004@ijs.si.
- Aug. 20-28. 32nd International Geological Congress, Florence, Italy. URL: <http://www.32igc.com>. Theme: Geology, Natural Hazards and Cultural Heritage. Abstract deadline: Nov. 30, 2003. Sessions include: Geologic Hazards (S08), Cultural Heritage (S09), Geoarchaeometry: Geomaterials in Cultural Heritage (T16.01); this session will include oral and poster presentations as well as visits to Florentine museums and monuments that are related with the topic. Contact: M. Maggetti, Department of Geosciences, Mineralogy and Petrography, University of Fribourg, CH-1700 Freiburg, Switzerland, tel + 41 026 / 300 89 30; fax + 41 026 / 300 97 65; email marino.maggetti@unifr.ch.
- *Sept. 23-26. Archaeological Sciences of the Americas, Tucson, Arizona. This conference is intended to encourage regular and sustained collaboration between archaeologists, conservation scientists, natural scientists, and contract researchers. Abstract submission deadline is January 31, 2004. web: <http://w3.arizona.edu/~anthro/asa.shtml>; email R. Emerson Howell: rhowell@email.arizona.edu
- *Oct. 4-6. International Congress on Beer in Prehistory and Antiquity, Barcelona, Spain. Deadline for abstracts (English or Spanish) is April 30, 2004. For further information, email: congresocerveza@terra.es
- *Dec. 7-11. Second International Conference on Science and Technology in Archaeology and Conservation, Jordan. For more information, please contact: Prof. Dr. Talal Akasheh: email: takasheh@index.com.jo, fax: 00962-5-382 6613 or Mr. Maher Abu Jafar: email: mjafar@hu.edu.jo

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Published quarterly by the Society for Archaeological Sciences

Distributed to subscribers: \$20/year regular membership; \$15.00 student and retired; \$30.00 institutional; \$300 lifetime. Individuals add \$95.00/year for *Journal of Archaeological Science*; \$30/year for *Archaeometry*. Discounts also available on *Geoarchaeology* and other Wiley journals. Payable with major credit cards (+7%). ISSN 0899-8922.

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