SAS Bulletin

Newsletter of the Society for Archaeological Sciences

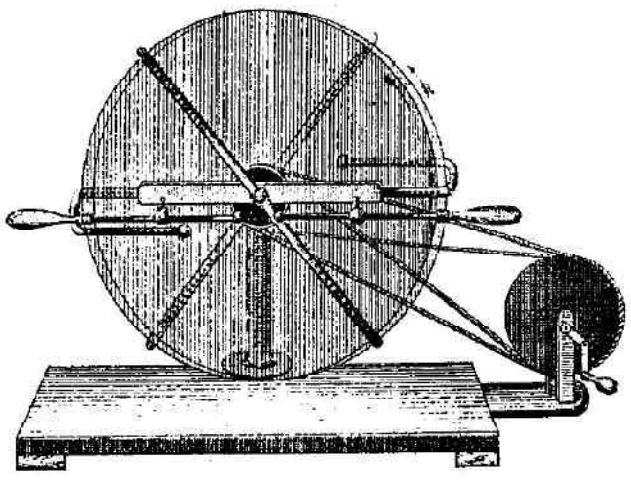
Volume 29 number 2 Summer 2006

Early Scientific Instruments Await Archaeometrists in Québec

This year, the Séminaire de Québec will host the 36th Annual International Symposium on Archaeometry (May 2-6). The seminary is an historical and archaeological treasure. It was established over 340 years ago (on March 26, 1663) by Monseigneur François de Laval, Québec's first bishop. Today, the Musée de l'Amerique Française—the oldest museum in Canada—curates portions of the seminary and its collections, much of which were accumulated in the 19th century when the seminary founded the Université Laval.

In the early days of the university, Father Demers, Father Laflamme, and others believed strongly in the value of science in education, and regularly sought to acquire early scientific instruments to enrich the university's collections. Some of the instruments include the Atwood machine manufactured in London circa 1836, which was used to test the laws of movement and falling bodies. Another is the Wimshurst electrostatic machine, manufactured in Chicago circa 1896 and used in a number of experiments, the most spectacular of which was the production of miniature lightning bolts.

The Atwood machine was invented in the late 1700s by Rev. George Atwood as a laboratory experiment to verify the mechanical laws of uniformly accelerated motion. It consists of two masses, m1 and m2, connected by an inelastic massless string over an ideal massless pulley. When m1 = m2, the machine is in stable equilibrium regardless of the position of the weights. A modern elevator with a counterbalance approximates an ideal Atwood machine; it relieves the driving motor from the load of holding the elevator car.



The Wimshurst machine, ca. 1883

The Wimshurst machine was developed by British inventor, James Wimshurst, in the late 1800s. It is an electrical generator with a distinctive appearance, having two large contra-rotating discs mounted in a vertical plane, and a spark gap formed by two metal spheres. The machine belongs to a class of generators called electromechanical influence machines. The machine is self-starting, meaning that it requires no electrical power supply to create the initial charge. The output of the machine is electricity at continuous (DC) high voltage.

At a time of exciting advances in archaeological science, these and the other scientific devices in the museum's collection should encourage those attending the Archaeometry meetings to think about, and perhaps appreciate, the roots of archaeological science.

E. Christian Wells

In This Issue

Employment Opportunities

Director of the South Carolina Institute of Archaeology and Anthropology. The South Carolina Institute of Archaeology and Anthropology (SCIAA) is seeking a full-time Director to lead it into the 21st Century. Operating within the College of Arts and Sciences at the University of South Carolina, Columbia, the SCIAA is an archaeological research institute and a state cultural resource management agency. As a research institute, the SCIAA conducts a wide variety of academic and applied research into the prehistory and history of South Carolina and the Southeastern region. Under its enabling act (S.C. Code of Ann 60-13-210), the SCIAA houses the Office of the State Archaeologist and the Maritime Research Division, which advise the state legislature and other state agencies concerning cultural resource management issues, and is responsible for the state's archaeological site files and curatorial facility. Directors Responsibilities: The Director operates directly under the general oversight of the Dean of the College of Arts and Sciences, and is expected to provide leadership to some 50 full and part time archaeologists in the pursuit of archaeological research, education, and cultural resource management. The Director's responsibilities include oversight of SCIAA's budgets, grants and contracts, organizational planning, staff supervision, development of internal university and external partnerships, and private fund raising. The Director will facilitate SCIAA research opportunities and publication, closely collaborate with the Department of Anthropology in support of its Ph.D. and M.A. graduate programs, and provide guidance and oversight to the State Archaeologist. To effectively meet these obligations, the Director is also expected to take an active role in furthering our understanding of the past through the conduct of archaeological investigations and supervision of graduate research. Qualifications: Ph.D. in Anthropology with an archaeological specialty, Archaeology, or a related field. Successful candidates will have had experience in the management of a diverse organization devoted to archeological research, cultural resource management, or a related field. A solid research and publication record is a prerequisite. Other skills of interest include demonstrated fund raising and grant writing abilities, successful management of contracts, an understanding of cultural resource management laws and regulations, specialization in North American or southeastern archaeology, and teaching experience. Applications should be mailed to Tom Leatherman, Chair of SCIAA Director Search Committee, Department of Anthropology, University of South Carolina, Columbia, South Carolina 29208, USA (leatherman@sc.edu 803-777-6500; fax 803-777-0259) Include a curriculum vitae, names and addresses of at least three references, and a letter of intent describing research and scholarly interests and accomplishments, management experience, and other experience relevant to the position. The search committee will begin reviewing applications June 1.

Director of Collections. The Paleontological Research Institution (PRI) is seeking applications for the permanent full-time position of Director of Collections. The Director of Collections is a senior staff member and the primary person in charge of caring for one of the nation's largest collections of fossils and modern shells. Duties include: (1) oversight of all maintenance, curation, conservation, storage and use of Institution's research specimen collections, Recent and fossil; (2) supervision of full- and part-time staff, volunteers, and student workers in the Collections Department; (3) oversight of collections computerization activity; (4) cultivation of prospective donors and supporting other collections fundraising activity; (5) providing advice on exhibit content in the Museum of the Earth, PRI's 18,000 square foot exhibit and education facility; and (6) maintaining a personal research program and publishing in paleontology. The successful candidate will be a highly energetic and self-motivated person, with at least a MA degree in a relevant discipline and at least three to five years of collections experience. PRI is a natural history museum founded in 1932 and affiliated with Cornell University since 2004. More information about PRI is available at www.priweb.org. Applications will be reviewed as they are received. Start date is as soon as possible after July 1, 2006. Send CV together with a letter of application and names and contact information for three references to: Director, Paleontological Research Institution, 1259 Trumansburg Road, Ithaca, New York 14850, USA, or to wda1@cornell.edu.

Curator of Collections. The Tohono O'odham Nation seeks a Curator of Collections for their Cultural Center & Museum, located 10 miles south of Sells, AZ. The Curator is responsible for the acquisition, documentation, and curation of archaeological, ethnological, historic, and artistic collections, and supervises the Archivist who is responsible for photographic, archival, and library materials. The Curator is also responsible for seeking outside funding to help care for the collections. Requirements include an advanced degree in Museum Studies, Archaeology, History or Anthropology; with an emphasis on the American Southwest, American Indian Studies, or American Indian Art, and five years experience managing collections in repositories or museums. Salary: $ 53,771.51/yr, plus benefits. To request a complete job description and application form, contact: Human Resources, Tohono O'odham Nation, P. O. Box 837, Sells, Arizona 85634, USA; tel: (520) 383-6540.

Associate Curator of Anthropology & Head of Collections. Arizona State Museum, the oldest and largest anthropology museum in the Southwest (Tucson, Arizona, USA), seeks dynamic, action-oriented scholar to serve as Associate Curator of Anthropology and Head of the Collections Division. The incumbent provides leadership and direction for the curation, study, and promotion of ASM's extensive archaeological, ethnological, archival and photographic collections, as well as its Library and Archaeological Records office. See Arizona State Museum: www.statemuseum.arizona.edu. To apply for this position go to www.uacareertrack.com. Job # 34336. You must apply for the position online.

Visiting Assistant Professor in Archaeology. The Department of Anthropology at the University of California,

Berkeley seeks a visiting Assistant Professor in archaeology for a temporary, one year appointment. The successful applicant will have expertise in the analysis of organic materials that will complement the strengths of the existing faculty, in areas including but not limited to bioarchaeology, molecular archaeology, residue analyses/organic chemistry, or zooarchaeology. The selected individual will teach two courses each semester, including one area course and one laboratory methods course. Minimum requirements: Earned doctorate in Anthropology or Archaeology. Preferred, teaching experience at college/university level. Salary commensurate with education and experience. Applications may be made by letter or electronically and should include a current curriculum vita, names and contact information for three references, brief (1 page) course proposals for at least two courses, and evidence of teaching effectiveness. Review of applications will begin May 5 and continue until the position is filled. Applications should be mailed to: Professor Rosemary Joyce, Chair, Department of Anthropology, 232 Kroeber, #3710, University of California, Berkeley, California 94720-3710, USA, or: anthro_chair@berkeley.edu.

Awards, Fellowships, and Training

R. E. Taylor Student Poster Awards. The Society for Archaeological Sciences offers prizes for the best student archaeometric posters presented at the Annual Meeting of the Society for American Archaeology and International Symposium on Archaeometry. Two awards will be presented at each event. Prizes are a one-year membership in the SAS, including the quarterly Bulletin, and a cash award of $100. The student should be the first author and the presenter of the poster. Criteria for the award are significance of the archaeological problem, appropriateness of the archaeometric methods used, soundness of conclusions, quality of the poster display, and oral presentation of the poster. To apply, send a copy of the poster abstract (indicating the student author), a correspondence address, and the name and date of the session in which the poster will be presented. Deadline for submission: April 15, 2006. Entry Collection/Contact: AJ Vonarx, SAS Membership Development, ajvonarx@email.arizona.edu, University of Arizona, Department of Anthropology, 1009 E South Campus Drive, Building #30A, Tucson, Arizona USA 85721-0030.

Institute for Archaeo-Metallurgical Studies Summer School. From 10 to 21 July 2006, at the Institute of Archaeology UCL in Central London (five to ten minutes walking from the British Museum and major main line train stations). The first week will concentrate on Ancient Mining Technology, and the second week will focus on Ancient Smelting and Metallurgy. Participation is GBP 150 for both weeks, or GBP 100 for a single week. For further information contact Professor Thilo Rehren (th.rehren@ucl.ac.uk) or follow the link at http://www.ucl.ac.uk/iams/.

Natural Environment Research Council (NERC) funded studentship at the University of Wales Swansea. NERC provides generous financial assistance to Ph.D. students. Funding will be granted to one of several proposed projects in the Department of Geography. Unfortunately, full funding is restricted to UK residents. Further details of the studentship may be obtained from the departmental web-page: http://geography.swan.ac.uk/pgrdinfo/pgradops2006.htm. The closing date for NERC applications is 24th March 2006.

Research Studentships. Topic: Coastal Change in the Mediterranean during the Late Holocene. Two AHRC-funded research studentships available from 1st July or 1st October 2006. Applications are now invited for two three-year UK Arts and Humanities Research Council-funded postgraduate project studentships to be based in the Geography Department at Loughborough University, commencing July or October 2006. This Department was rated 5 in the 2001 RAE and boasts a vibrant and well-resourced postgraduate community. These posts would be especially suited for individuals with first degrees in geography, environmental science, environmental archaeology or other related disciplines within the natural and physical sciences. Applicants should also have gained some formal postgraduate qualification. In the absence of such qualification, they must show evidence of sustained experience beyond first degree level that is specifically relevant to the doctoral research project. These studentships are available as part of a collaborative interdisciplinary project between the Classics Department at Royal Holloway, University of London, and Loughborough entitled - 'The evolution of Rome's maritime façade' - an archaeological and geomorphological study of Rome's interface with the Mediterranean sea south of the mouth of the Tiber river at Castelporziano. The project focuses on the Roman period (100BC-AD500), when the shore became the favoured 'resort' of the Roman aristocracy, and host to a dense community of maritime villas. This research aims to explore and explain how this 'maritime facade' responded to the continuing evolution of the coastline and to the environmental changes associated with this development. The first studentship will focus on the luminescence dating of the sequence of sand dunes at Castelporziano, constructing a chronological framework for dune accretion and coastline change at the distal end of the Tiber Delta. The second studentship will be concerned with establishing patterns of environmental change at Castelporziano during the Late Holocene from the analysis of cores for diatoms, pollen, plant macrofossils and insect remains. An application form for this post is available from the Postgraduate Secretary, Mrs. Diana Snaith (e-mail D.G.Snaith@lboro.ac.uk, tel: (01509 222794), or online via http://www.lboro.ac.uk/prospectus/pg/. Potential applicants are encouraged to liaise with the project supervisor, Professor Helen Rendell (H.M.Rendell@lboro.ac.uk), prior to application. Candidates should indicate which of the two projects they are applying for on their application forms. For further details of Postgraduate Opportunities in the Geography Department, please see: http://www.lboro.ac.uk/departments/gy/postgraduates/index.html. Please note that Loughborough University is an Equal Opportunities employer. Application by

CV will not be accepted unless accompanied by the University's application form. Closing date for applications: 31st March 2006.

Marie Curie Fellowships. Sponsored by the Institute of Archaeology, UCL, for the academic year 2006-07 to study in any of the following degree programmes: MA in Artefact Studies; MA in Principles in Conservation; MSc in GIS in Archaeology; MSc in Technology and Analysis of Archaeological Materials; and MSc in Conservation for Museums and Archaeology. Details about these programmes can be found at http://www.ucl.ac.uk/archaeology/masters/index.htm. Marie Curie funding aims to promote transnational mobility and is primarily for European citizens, although a certain percentage of non-European students can be funded, too. Funding covers a monthly stipend and a one-off travel allowance. Eligibility criteria include: a current offer for a place in the academic programme; not more than four years of research experience as defined by the EU, and NO doctoral degree; and suitability of the offered training for the future academic development of fellows to become teachers and researchers in archaeology. In addition to four one-year Masters' fellowships, we are offering a further four three-months fellowships for research students in the fields described by the degree programmes listed above, who would benefit from further training in the use of scientific methods in archaeology. For informal enquiries contact Professor Thilo Rehren (th.rehren@ucl.ac.uk) or Lisa Daniel (l.daniel@ucl.ac.uk). Deadline for applications is 30 June 2006. Please note that the application procedure for a place in the academic programme at UCL takes between one and two months, and has to be completed successfully before the funding deadline in order for a student to be eligible. More details can be found at: http://www.ucl.ac.uk/archaeology/funding/mariecurie.htm.

Postdoctoral Research Position. Topic: The Reconstruction of Changes in Fire Regime in Europe, Asia, and Africa over the Last 21,000 Years. NERC funded 2-year Postdoctoral Research Post (based at the University of Edinburgh). Part of a collaborative project funded by the NERC-QUEST programme. Start Date: 1st April 2006). Changes in fire regime have likely played an important role in biogeochemical cycling and climatic change since the Last Glacial Maximum (LGM), by influencing atmospheric carbon dioxide and aerosol concentrations, as well as land-surface albedo through changes in vegetation type. The aim of this postdoctoral position is to synthesise previously-published palaeo-charcoal records (as a proxy for fire history) from sites across Europe, Asia, and Africa in order to complement existing and on-going syntheses from the Americas and Australasia, and thereby achieve a global dataset of biomass burning since the LGM. This dataset will be used to evaluate how well global earth system models predict biomass burning. The synthesis involves (a) design of a suitable database for data archiving, (b) collection of individual radiocarbon-dated records, based on the literature, existing regional compilations and personal contacts, (c) mapping and analysis of these records, and (d) integration with syntheses from other parts of the world. The successful applicant will gain experience in data synthesis and in comparisons of palaeoenvironmental data with model predictions. The successful candidate will be a highly-motivated individual with a PhD in Biological, Earth, Geographical or Quaternary Sciences. Experience in statistics, GIS and database programming (ACCESS), Quaternary palaeoecology, and ecology of flammable ecosystems is highly desirable. S/he will have good written/spoken communication skills, enjoy working as part of an international team, have good organizational skills and be flexible and goal-oriented. The successful candidate will be based at the University of Edinburgh, but will be expected to spend extended periods working at Bristol University to gain appropriate experience and training in palaeodata synthesis and database techniques via collaboration with other scientists involved in the wider project. This is part of a large collaborative project, involving several UK universities, led by Professor Paul Valdes and Dr. Sandy Harrison at Bristol University, entitled 'Climate and Biogeochemical Cycles during the Last Deglaciation'. This is funded under NERC QUEST Theme 2 ('The natural regulation of atmospheric composition on glacial-interglacial and longer timescales') (see http://quest.bris.ac.uk/programme/themes/theme2.html.). Applicants should submit a covering letter, quoting the title of the postdoctoral project (Reconstruction of fire regimes), together with a full CV, and the names and addresses of three referees to the QUEST Secretary, julie.shackleford@bristol.ac.uk (and copied to Francis.Mayle@ed.ac.uk) on or before FRIDAY 24 FEBRUARY 2006. Queries and requests for further information about this position should be made to Dr. Francis Mayle, Francis.Mayle@ed.ac.uk, at the School of GeoSciences, University of Edinburgh.

Conference News and Announcements

Fourth New World Luminescence Dating and Dosimetry Workshop (NWLDDW), May 30 - June 2, 2006, Denver, Colorado, USA. Onsite Registration: May 30, 2006; Technical Sessions: May 31 - June 1, 2006; optional field excursion: June 2, 2006. The workshop will be held at the Denver Federal Center, Building 25, Main Entrance Conference Room (Map of DFC Website). This workshop is intended to give all those who have research activities or interest in luminescence dating the opportunity to discuss ideas and share problems with other practitioners. This meeting will be of interest to luminescence dating specialists, Quaternary geologists, archaeologists, dosimetric scientists and some physics researchers. The mailing list will be drawn from the Reno 2002 and Cologne 2005 LED conference, but additional requests can be added by contacting Shannon Mahan at smahan@usgs.gov. Technical Program: this workshop will follow the "tradition" set in Tulsa, OK, Albuquerque, NM, and

Halifax, Nova Scotia. Workshop presentations are planned for May 31 - June 1, 2006 (Wednesday and Thursday) at the Denver Federal Center (Building 25). We anticipate two days of presentations and some time for tours of the USGS National Ice Core Laboratory, National Water Quality Laboratory, or the TRIGA Reactor. All presentations will be oral. For more information contact: Shannon Mahan, USGS Luminescence Laboratory, MS-974, Denver Federal Center, Denver, CO 80225-00046, USA; smahan@usgs.gov; Phone: (303) 236-7928; Fax: (303) 236-5556.

The Commission on Cold Region Environments of the International Geographical Union (IGU) will organize a session on the Regional conference of the International Geographical Union (IGU) in Brisbane, Australia, 3-7 July 2006. The Session is titled "Cold region environments and global change," and contributions are welcome concerning all aspects of impacts of global change on the environments of polar, sub-polar and high mountain regions. Please refer to the following address for registration and paper submission: http://www.igu2006.org/>http://www.igu2006.org/. You are welcome to submit contributions to this session! Further information on the commission's activities can be found here: www.geogr.uni-jena.de/cre.

American Schools of Oriental Research Annual Meeting, Nov. 15-18, 2006, Washington, DC. Session - 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. Paper topics include materials characterization, raw material acquisition, workshop activity, manufacturing techniques, ancient technology, and product distribution. Please check the ASOR website for membership and participation requirements: http://www.asor.org/. Elizabeth S. Friedman, Ph.D., Department of Biological, Chemical, and Physical Sciences, Illinois Institute of Technology, 3101 S. Dearborn, Chicago, IL 60616, USA; Tel: 312-567-7973; Fax: 312-567-3494.

Archaeological Sciences of the Americas Symposium 2006, September 13-16, 2006, University of Arizona, USS Arizona Memorial Union, Tucson, Arizona. Deadlines extended: organized session proposals due: May 15, 2006; Individual submissions/abstracts due: June 1, 2006. Please go to http://asas06.ltc.arizona.edu for more information. The organizing committee of the Archaeological Sciences of the Americas Symposium is pleased to solicit contributions for 2006. ASAS encourages regular and sustained collaboration between archaeological, conservation, and natural scientists in the Americas. The meeting will be hosted by graduate students in the Department of Anthropology at the University of Arizona. The Integrative Graduate Education and Research Traineeship (IGERT) Program in Archaeological Sciences at the University of Arizona will co-sponsor this event. The Biennial Symposium will focus on studies, techniques, and approaches that emphasize the analysis and interpretation of prehistoric and historic materials, human cultures and ecology. Researchers at all levels of experience and training are invited to participate. A special invitation is extended to colleagues from Canada, Mexico, Central America, and South America. Conceptual and methodological contributions that transcend geographic boundaries of research are also encouraged; applications need not be confined to the Americas. In recognition that archaeological science represents an interdisciplinary effort, six major themes will be represented at the meeting: 1) Geoarchaeology; 2) Conservation Studies and Ephemeral Remains; 3) Spatial Analysis and Remote Sensing; 4) Chronometry; 5) Human-Environmental Interaction; 6) Material Culture Studies. Proposals of organized sessions (5-6 papers and one discussant) are due May 15, 2006. Abstracts for individually-submitted papers, posters, and computer simulations are due June 1, 2006, and are limited to 250 words. Application fees are $60 (US) for students and $90 (US) for professionals. Checks are to be made out to the University of Arizona Foundation. Please note that none of the application fee is tax deductible. For more information, visit our website or contact an organizing committee chair directly: R. Emerson Howell (rhowell@email.arizona.edu) or AJ Vonarx (ajvonarx@email.arizona.edu).

The SR2A 2006 workshop on Synchrotron Radiation in Art and Archaeology will take place on 27-29 September 2006 in Berlin, Germany. It will be organized jointly by Berliner Elektronenspeicherring - Gesellschaft für Synchrotronstrahlung m.b.H. (BESSY), Bundesanstalt für Materialforschung und -prüfung (BAM), Staatliche Museen zu Berlin (SMB) and Technische Universität Berlin (TUB). The Workshop explores the current and potential applications of synchrotron science to problems in archaeology and art conservation, bringing together key members of the synchrotron community and experts in the disciplines of Archaeology, Archaeological Science, Art Conservation and Materials Sciences. We are pleased to inform you that the SR2A conference website has now been released. Information on the conference can be accessed at www.bessy.de/workshops/. The deadline for the submission of abstracts is July 1, 2006.

SASnet News Note

James H. Burton, SASnet

SASnet has moved to a new server and the list address is changing to: SASnet@socarchsci.org. There should be no requirement on the list member's part to keep a subscription active, nor are there any changes in the way the list operates except that all new posts should be addressed as above, not to the old @lists.core.comm server.

Archaeological Chemistry: Analytical Techniques and Archaeological Interpretation

Ruth Ann Armitage, Eastern Michigan University

The 231st National Meeting of the American Chemical Society in Atlanta was the site of a special symposium entitled "Archaeological Chemistry: Analytical Techniques and Archaeological Interpretation." This two-day symposium, co-sponsored by the Division of Nuclear Chemistry and Technology and the Division of the History of Chemistry, was organized by Michael D. Glascock, Robert J. (Jeff) Speakman and Rachel S. Popelka-Filcoff of the University of Missouri Research Reactor Center. Thirty-five presentations were given on using nuclear, isotopic, atomic, and even molecular spectroscopies, as well as gas chromatographic separations, in archaeological research on materials ranging from bitumen residues on pottery to specular hematite for body decoration. The audience included speakers from institutions in the U.S., Canada, Scotland, and Israel; students, including some from the NSF IGERT program at the University of Arizona; and reporters from *Nature* and *Chemical and Engineering News* (the official ACS member magazine); as well as distinguished guests including Dr. Joseph Lambert, the 2004 recipient of the Sidney M. Edelstein Award for, amongst other accomplishments, his contributions to archaeological chemistry. An article entitled "Digging Deep into the Past" about the symposium appears in the April 24th issue of *Chemical and Engineering News*; the URL for the magazine is http://pubs.acs.org/cen/currentissue.html.

The symposium was organized into four sessions: "Textiles, Residues, and Dating Methods"; "Isotopes and Metals"; "Soils, Lithics and Inorganic Pigments"; and "Ceramics and Glazes." An ACS Symposium volume is planned, as has been done in past archaeological chemistry symposia, and should be published within the next year. The 35 presentations in this symposium were a small part of the 8,085 presentations at the Atlanta meeting.

Textiles, Residues, and Dating Methods

Dr. Glascock opened the first session with some brief introductory remarks, acknowledging those who made the symposium possible, including the American Chemical Society, which provided travel funding for many of the speakers. This session's papers were a "catch-all" of everything from forensic photography for selective sampling of delicate textiles to radiocarbon calibration in the Pleistocene. Small samples were the common thread through this session. We learned that even the smallest fragments of ancient textiles – portions often thrown away as mere "dust" – can provide sufficient material for characterization by infrared spectroscopy and SEM-EDS. Tiny amounts of organic carbon from the indigo dye trapped in a palygorskite clay matrix – the formulation of Maya Blue – were extracted using a hydrofluoric acid digestion and then radiocarbon dated using accelerator mass spectrometry. Residues on pottery from Iran were identified as bitumen, and a coating that obscures rock paintings in Idaho was tentatively (Dr. Lambert believed *too tentatively*) identified as water-deposited humic material, both using gas chromatography-mass spectrometry, and the latter by x-ray photoelectron spectroscopy as well. Three chronometry papers emphasized the potential and pitfalls of radiocarbon (Dr. Taylor suggests we choose our time periods carefully to coincide with "good" portions of the radiocarbon calibration curve) and ESR dating, as well as a new method of dating historical glass using the extent of surface hydration.

Isotopes and Metals

Strontium, carbon, nitrogen, and lead were the stars of the first afternoon session. Strontium isotopic ratios were used to determine the geographic origin of human trophy heads in Peru, and thereby give a better understanding of warfare rituals in the Andes. Carbon and nitrogen stable isotope studies helped to understand the importance of maize in the diets of inhabitants of numerous sites in South America and of seafood in prehistoric Sardinia. Lead isotope analysis provided insights into North African trade of ores, possibly much earlier than had been previously thought, and into the manufacture of illegal, but widely used, Roman curse tablets in Carthage. Two methodological reports on using laser ablation ICP-MS for isotopic measurements discussed the inherent precision needed for the interpretation of such analyses and comparison of the LA sample preparation in comparison with acid digestion. X-ray fluorescence spectroscopy using both field portable instruments and standard benchtop models was discussed by several presenters for analysis of metal artifacts from Peru and coins from both archaeological and numismatic contexts.

Soils, Lithics and Inorganic Pigments

Day two began with two presentations on soil analysis for determination of site usage in two very different locales – Mesoamerica and Iceland. Dr. Wells, currently Editor of the *SAS Bulletin*, described the use of ICP-OES analysis of soils from plazas in Honduras, while Dr. Adderly introduced the use of synchrotron radiation XRF for microanalysis of stratified soils rich in sulfur, possibly indicating processing of sulfur for use as a biocide in barrels. Analysis of geologic samples, including chert, obsidian, and iron oxides (as ochres and specular hematite), were presented by the rest of the speakers in the morning session. Isotopic analysis, specifically for ^{18}O, using LA-ICP-MS was particularly important for studies of chert quarries in Mexico. INAA remains the predominant method for provenance determination of lithics and pigments using multivariate analysis, though portable XRF measurements are proving useful for on-site analysis of materials (in this case, obsidian tools from Petén) that cannot be removed from their country of origin for analysis.

Ceramics and Glazes

The final session in the Archaeological Chemistry symposium consisted of seven presentations on the use of INAA, in one case compared directly with LA-ICP-MS, for

provenance and technological studies of ceramics and bricks. Dr. Hill was unable to attend the meeting, so the talk on Mesopotamian glazes was not presented, though it will hopefully appear in the symposium volume to be published. Three of the presentations involved historic materials from Utah, Colonial Maryland, and the Canary Islands. Dr. Ben-Shlomo, the participant who traveled the farthest to attend the symposium, presented analyses of Phillistine pottery by ICP-AES and –MS, as well as petrographic thin sections, for intra-regional provenance studies. The final presentation by Jeff Speakman showed how INAA results from MURR and Texas A&M could (or could not, as was observed in the case of the Smithsonian data) be combined to yield a large database for the compositional analysis of Mimbres pottery from the American Southwest.

In short, the many facets of modern archaeological chemistry were on display at the Archaeological Chemistry symposium: studies of trade, production, and technology of inorganic materials using traditional INAA and isotopic analyses; studies of past diet and geographic origin for human remains; recent developments in LA-ICP-MS and portable XRF as complementary or alternative methods to INAA; chronometric studies using radiocarbon and ESR; and analysis of organic materials and residues using FTIR and GC-MS. The symposium highlighted what is a truly interdisciplinary field, bringing chemists together with field archaeologists, geologists, nuclear scientists, physicists, and conservators.

Radiocarbon Calibration to Infinity and Beyond: Report from the 19th International Radiocarbon Conference

Gregory Hodgins and Warren Beck,
NSF-Arizona AMS Facility

The 19th International Radiocarbon Conference was hosted by University of Oxford's Radiocarbon Accelerator Unit, April 3rd to 7th, 2006. The meeting, held every three years, showcases continuing developments in radiocarbon research in areas of statistical methods in data handling, radiocarbon reservoir effects, extension and refinement of the calibration curve, carbon cycling within terrestrial and marine environments, earth systems and climate research, and of course applications within archaeology. A dominant topic at the meeting was recent developments in construction of the radiocarbon calibration curve. This report focuses on it exclusively, and saves other topics for future reports.

The calibration curve is fundamental to radiocarbon dating as it is the means by which radiocarbon measurements are translated into calendar dates. The limit of radiocarbon measurement is on the order of 50,000 radiocarbon years BP, and currently a consensus calibration curve (IntCal04) exists for the period covering 26,000 years ago to the present. Beyond that time, the state of radiocarbon calibration remains uncertain.

The reason behind the uncertainty is that it is likely that atmospheric radiocarbon levels in the past differed significantly from those of the present day. Evidence of this is already at hand because the existing calibration curve shows that significant deviations occurred even within the last 26,000 years. Preliminary studies of 14C records extending beyond 26,000 years have suggested that several large fluctuations might have occurred between 28 and 45 thousand years before the present. Such fluctuations could be produced because of carbon cycle changes, especially those due to changes in ocean circulation, or to fluctuations in the strength of the geo- or solar magnetic fields. For example, the Mono Lake and Laschamp geomagnetic excursions at approximately 28 and 41 ka BP respectively will likely have influenced the 14C production rate, and so should have produced visible effects on the radiocarbon age scale. Similarly, if large changes to the deep ocean ventilation rate have occurred over this period, this too could have produced significant fluctuations in apparent radiocarbon age. If unaccounted for within the calibration curve, such fluctuations would wreak havoc on any chronology based on 14C. Without a robust calibration curve the timing of crucial processes within the Upper Paleolithic, such as the dispersal of early modern humans across Eurasia, or whether or not anatomically modern humans and Neanderthals co-existed within the same landscape, and for how long, cannot be adequately resolved.

A diversity of archives of past radiocarbon levels are being studied which extend to 50 ka BP and beyond. These include radiocarbon records generated from marine and lucustrine sediment archives as well as corals and speleothems. For each of these records, a central issue relates to how the calendar age scale is generated. For some of these archives, the calendar age scale is determined using radiometric U/Th dating techniques, whereas for others, it is determined by counting sediment varves. Still others, the calendar age scale is derived using age scales provided for Greenland summit ice cores (GISP2 and GRIP), and by correlating sediment grey-scale or $\delta^{18}O$ variations with the $\delta^{18}O$ fluctuations observed in the ice cores. As each of these methods can have significant uncertainties and caveats associated with them, each radiocarbon calibration is only as good as its calendar age chronology.

A Radiocarbon Calibration Curve approved by the radiocarbon community has been updated every six years since 1992. IntCal04 was made available last summer, and contained significant advances over IntCal98. It extended the tree ring curve further back, to 12,500 years BP. It dramatically reduced the uncertainties of dates during the last gasps of the Pleistocene 16.5-11.5 Kyr BP, and it fleshed out and extended what was previously a skeletal curve from 13 Kyr BP to 26 Kyr BP.

Although IntCal04 provided a consensus up to 26000 years BP, many data sets extended well beyond this. Individually, each of these records show high internal coherence, but when

compared amongst each other the records are highly divergent beyond 30 ka cal BP. Unable to determine if any of these calibrations were robust, the IntCal04 working group decided not to use them for calibration purposes, but instead generated a composite product they called NotCal04. As the name implies it is not intended for calibration, an obvious point to anyone familiar with the staggering disagreement between data sets. Unfortunately, the user community has begun using NotCal04 to generate "calibrated" radiocarbon dates. A parallel development is a user strategy of picking and choosing among data sets for the record that best suits a particular need, essentially abandoning the concept of an internationally agreed-upon consensus calibration curve. There is nothing inherently wrong with either approach, but there is the potential for confusion if individual studies are carelessly synthesized: if different authors calibrate dates using different curves, the details about the calibration method used could be glossed over, and invalid comparisons would result.

Three factors are conspiring toward abandonment of the concept of an internationally agreed upon calibration curve, at least in the short term. First, there is a user community desperate for calibration beyond 26K. Second, a very active calibration research community, funded by paleoclimate research dollars, is improving older records and providing new records at a stunning rate. Finally, the established pattern of updating the consensus calibration curve only every six years, with the most recent update barely a year old would mean that a consensus curve for the period beyond 26K is at least four years off.

The IntCal working group is now grappling with how to best serve the User Community in a period of dynamic calibration research. At the Oxford Radiocarbon meeting, discussion was lively. Paula Reimer, of Queens University Belfast, who has coordinated production of the calibration curve for more than a decade, framed for attendees the challenges being facing the calibration research community. Presentations covered the full range of issues. Several new calibration data sets were highlighted. For example, Richard Fairbanks of Lamont Doherty Earth Observatory, presented his own calibration curve spanning 0 to 50,000 years BP, based upon 14C and uranium series measurements on Barbados and Vanuatu corals, and emphasized its unique merits. Though at present his calibration contains few data points in the 30-50 ka time range, he promises to be able to flesh out the data set soon. Meanwhile, new and updated U/Th dated speleothem records were presented by Warren Beck from the University of Arizona, and a more detailed Cariaco marine sediment record was presented by Konrad Hughen of WHOI, using a revised calendar age scale based on the U/Th dated Hulu Cave speleothem. All of these appear to be converging towards a common general calibration, though there are still significant differences.

Voicing the needs of the community of archaeological users, Paul Mellars, a Paleolithic Archaeologist from University of Cambridge, emphasized that archaeologists would be best served by a single consensus calibration curve, suggesting that confusion would result if more than one option were presented.

Formulating an appropriate response is not easy. The organizers of IntCal are considering a compromise, breaking with the six year cycle, and issuing yearly updates to incorporate the rapid appearance of new data sets. Whether or not this path is taken, it appears an unavoidable period of confusion lies ahead. Although the situation is frustrating, it is a consequence of the rapid progress toward providing reliable calibration beyond 26 thousand years and the path towards exploiting the full potential of radiocarbon measurements.

Assessment of Archaeological Site Integrity of Sandy Substrates using Luminescence Dating

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Areas of surficial sandy sediment are widespread globally, and are quite common in the southeastern United States (from East Texas to the Atlantic Coast). Interpretation of the geomorphic history of archaeological sites found within such substrates is often problematic. Site burial may be explained by more than one depositional process, and may be affected by pedoturbation, especially as sandy sediments are more prone to bioturbation than finer- or coarser-textured deposits (Michie 1987; Leigh 1998). To date, few field or post-excavation analytical methods have provided clear discrimination of these processes, although their impacts may be profound. Bateman *et al.* (2003) devised a schematic of the effect of pedoturbation on a sedimentary column, under a variety of different scenarios (Figure 1). It was concluded that, under conditions of stability or slow accretion, the entire deposit may be affected by post-depositional disturbance. Alternatively, if deposition is rapid and episodic, discrete layers may be disturbed whilst the majority of the column remains intact. Given that much archaeological work in the southeastern U.S. forms eligibility assessments for the National Register of Historic Places, and a requirement of eligibility is that sites have proven integrity, the issue of site formation processes and integrity acquires a new significance.

Although there are numerous papers on pedoturbation in the archaeological literature, there have been very few attempts to quantitatively assess the impact of bioturbation on terrestrial sediments. In archaeological terms, disturbance is often gauged through the vertical distribution of different aged cultural components, and radiocarbon dating. However, artefacts may remain stratigraphically separated in a bioturbated site (Michie, 1987), whilst organic remains for radiocarbon dating, where

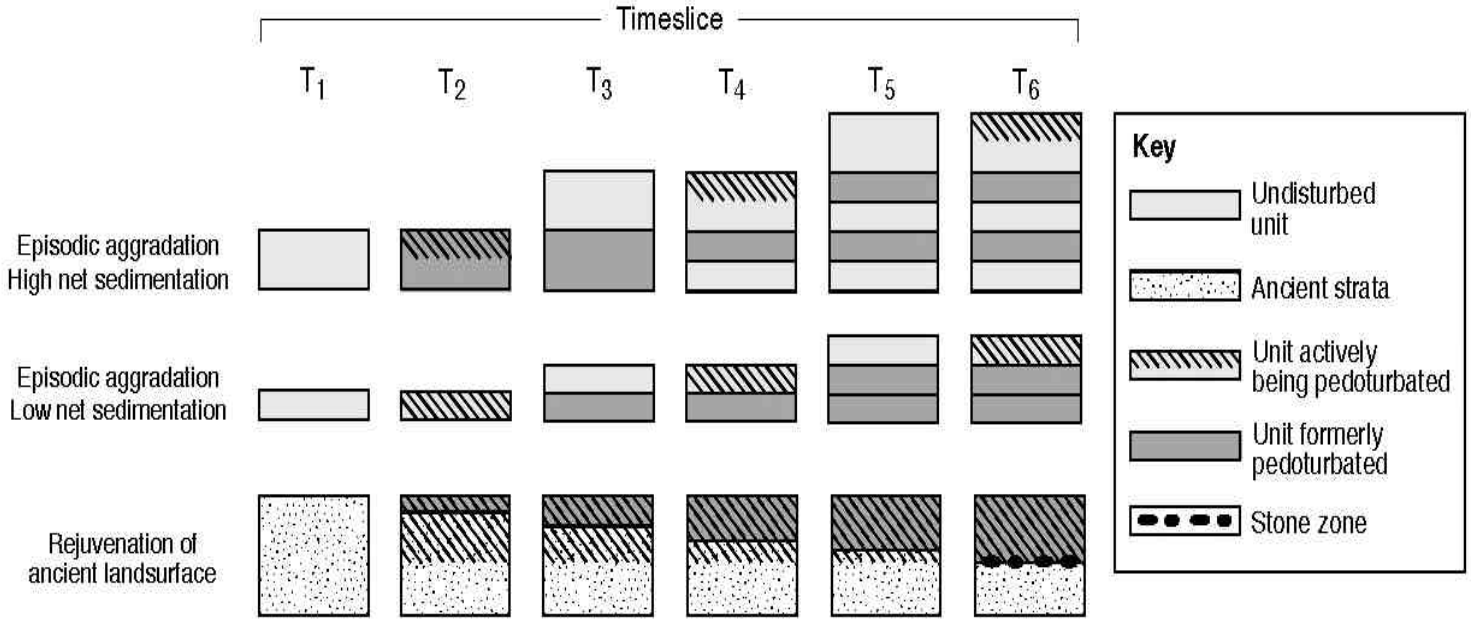

Figure 1. Hypothetical effects of pedoturbation on dynamic depositional environments (modified from Bateman *et al*. 2003).

preserved, have been shown to move vertically within profiles, thereby limiting their utility. Other indicators of severe bioturbation, such as stone zones associated with biomantles, are also problematic. Firstly, coarse fragments are rare in many sandy substrates thwarting the identification of a stone zone. Secondly, it has been noted that the best-developed stone zones are generally of Pleistocene age (Johnson *et al.*, 2005) and, thus, may not fully form over Holocene time-scales.

Luminescence dating provides a means of assessing site integrity independent of archaeology, and can be used even in structureless sands. This paper discusses work currently being undertaken on the identification of bioturbation in sandy sediments using optically-stimulated luminescence (OSL) dating and extends the work undertaken by Bateman *et al*. (2003) to consider a range of profiles with varying degrees of complexity and disturbance.

Luminescence dating

OSL dating of quartz sand utilises the accumulated charge which quartz acquires from background radioactive decay once buried. This charge, known as the palaeodose (D_e), is reset on exposure to light and accumulates in proportion to duration of burial, allowing date of deposition to be derived. An early attempt to use luminescence to identify mixing compared thermoluminescence and OSL dates from different depths of a profile (Sanderson *et al*. 2001). Close to the surface there was a significant disparity between the two ages, whereas at depth the data were consistent suggesting surface layers had been mixed, whilst the lower levels probably retained their integrity (*ibid*). This work used the traditional single aliquots (9.6 mm diameter discs) for the OSL to determine ages. However, as each aliquot is composed of *ca.* 1500 grains, each D_e is an average and much internal heterogeneity in acquired dose may be masked. As a consequence, at the single aliquot (SA) level, even with multiple replicates, sediment with a multimodal age distribution, such as one that has undergone pedoturbation, may appear to be largely homogeneous. Recent advances in the technique allow D_e to be extracted from a single grain (SG) giving the ability to determine the true distribution and range of acquired doses within a deposit. This has clear implications for assessing sample heterogeneity, and therefore for inferring degree of mixing.

A number of criteria can be defined for the assessment of site disturbance using luminescence data. Firstly, the degree of OSL reproducibility, in terms of D_e scatter and skewing of multiple measurements on a single sample. Secondly, whether there are age reversals with depth. Disturbance should merge sediments of different ages, diminishing OSL reproducibility and potentially causing age reversals. Thirdly, using SG analysis, the number of buried grains with no appreciable luminescence signal (zero dose grains), i.e. those that have been at the surface, reset and buried again recently, can be evaluated. Fourthly, whether mean D_e values generated using SA and SG produce comparable results (Duller, 2004). In a disturbed sedimentary body, it would be expected that SG D_e values would be more strongly affected by erroneously high/low values than SA results. It can therefore be hypothesised that if the two results are comparable, minimal disturbance has occurred. Finally, is the degree of agreement between luminescence and radiocarbon dates and/or diagnostic artefacts.

The following site case studies, two in Florida (Ebersbach Midden, Arbuckle Terrace) and one in Texas (Rena Branch) illustrate how luminescence data can be used to assess site disturbance. All sites have independent chronologies derived from radiocarbon and artefact ages, and show varying degrees of evidence for deposition and post-depositional disturbance.

Ebersbach Midden

The Ebersbach Midden site consists of two former beach ridges running parallel to the shore of Lake Arbuckle, in Polk County, Florida. Excavation of a pit on the younger shoreline revealed interdigitation of organic and minerogenic components. The sharp contacts between units indicated that the site was undisturbed. Luminescence ages showed clear correspondence with bracketing radiocarbon ages (Frederick *et al*. 2005; Bateman *et al*., in press). Replicate measurements of D_e from individual samples at both the SA and SG level showed a normal distribution, a high degree of reproducibility and a clear similarity between D_{e-} values derived using the two techniques. The available data indicate that the site is intact and has not suffered significant disturbance. It also demonstrates that the criteria outlined above can provide meaningful and internally consistent data in the absence of site disturbance.

Arbuckle Terrace

This site is situated on a slightly higher surface, immediately adjacent to Lake Arbuckle. Archaeological work conducted at Arbuckle Terrace yielded evidence that at least some parts of the site were intact (Frederick *et al*. 2005). Specifically, artefacts associated with an early Archaic lithic component formed a prominent peak at depth, bounded by archaeologically sterile sediment, implying that the site was intact (Figure 2). However, SA luminescence work resulted in dates much older than the accepted age for the diagnostic artefacts. Subsequent work at the SG level revealed that dates within a single sample were multimodal, with increasing spread down profile (Figure 2). SA and SG results were also markedly different, and showed increased disparity with depth. However, isolation of the dominant peak from the single grain results produces an age comparable to (albeit a little older than) that inferred from the archaeology. These results indicate that the fine-grained matrix has been disturbed whilst the larger artefacts have stayed in stratigraphic sequence. This suggests that insects may be the dominant agent of bioturbation at this site, resulting in preferential movement of fine-grained sediment to the surface (e.g. Peacock and Fant, 2002; Tschinkel, 2003).

Rena Branch

The Rena Branch site is located in Freestone County, Texas. Excavation by Prewitt and Associates, Inc., in the late 1980s revealed occupations during the Late Archaic, Woodland and Prehistoric periods, which appeared to be in largely chronological order (Klement *et al*. 1991). The site is located on an interfluvial ridge, approximately 10 m above the confluence of two small channels. Whilst the 3 m deep profile contained a preserved buried palaeosol, frequent krotovina of pocket gophers (presumably *Geomys bursarius*) were also observed throughout the column.

To summarise the OSL results for this site, D_e replicates for all samples showed multi-modal distributions, poor reproducibility and no single dominant peak in D_e (Figure 3; see Bateman *et al*., in press and submitted for fuller details). There was a mismatch between SA and SG results which was most pronounced close to the surface. High numbers of zero grains occurred in the upper 50 cm of the profile (Figure 3), implying their recent surface exposure and re-burial. Comparisons of OSL with radiocarbon and culturally-derived chronologies show poor agreement, with OSL over-estimating age, (although radiocarbon age reversals indicate that these may also not be fully reliable). The appreciable positive skewing of D_e replicates has been interpreted as translocation of older material up the profile. The SA and SG data mismatch and varying degrees of scatter indicate that mixing is probably most significant close to the surface, but may extend to a considerable depth. These results indicate that the entire column has been significantly affected by disturbance despite evidence (the buried palaeosol, cultural material) that the site was intact. In

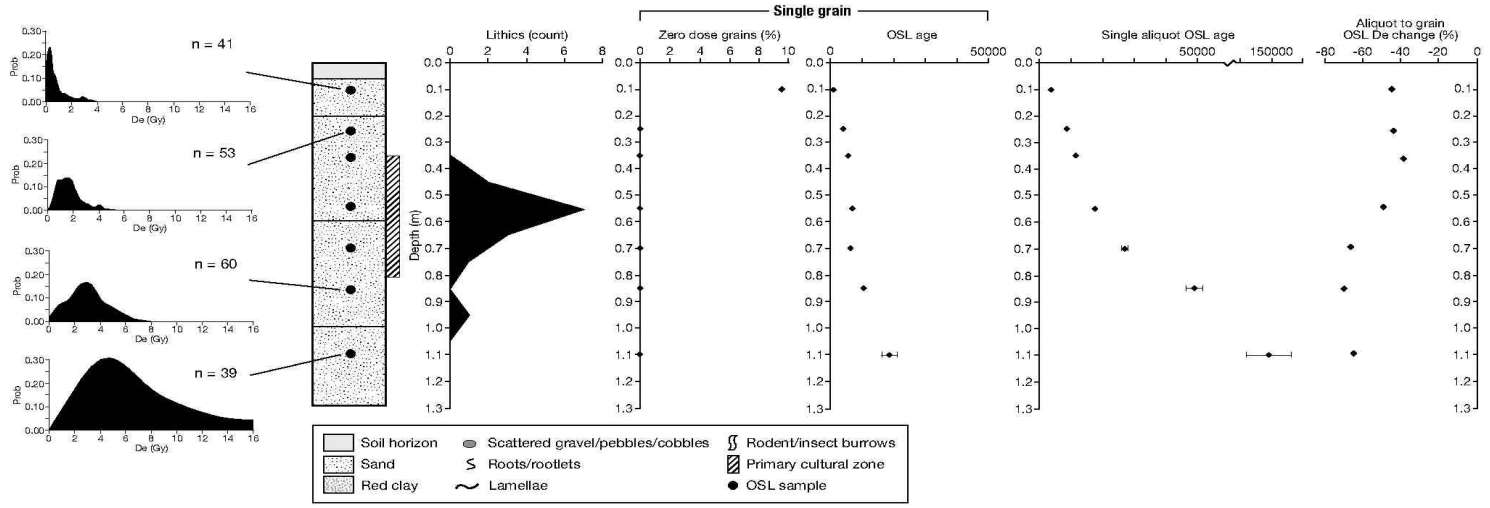

Figure 2. OSL results at the single aliquot and single grain level and independent chronology for the Arbuckle Terrace site, Florida. Notes: Left-hand probability plots of multiple SG OSL replicates of a single sample show amount of De variability within a sample. Zero dose grains were distinguished as those which returned a zero D_e value but which showed good OSL growth characteristics when subjected to laboratory irradiation.

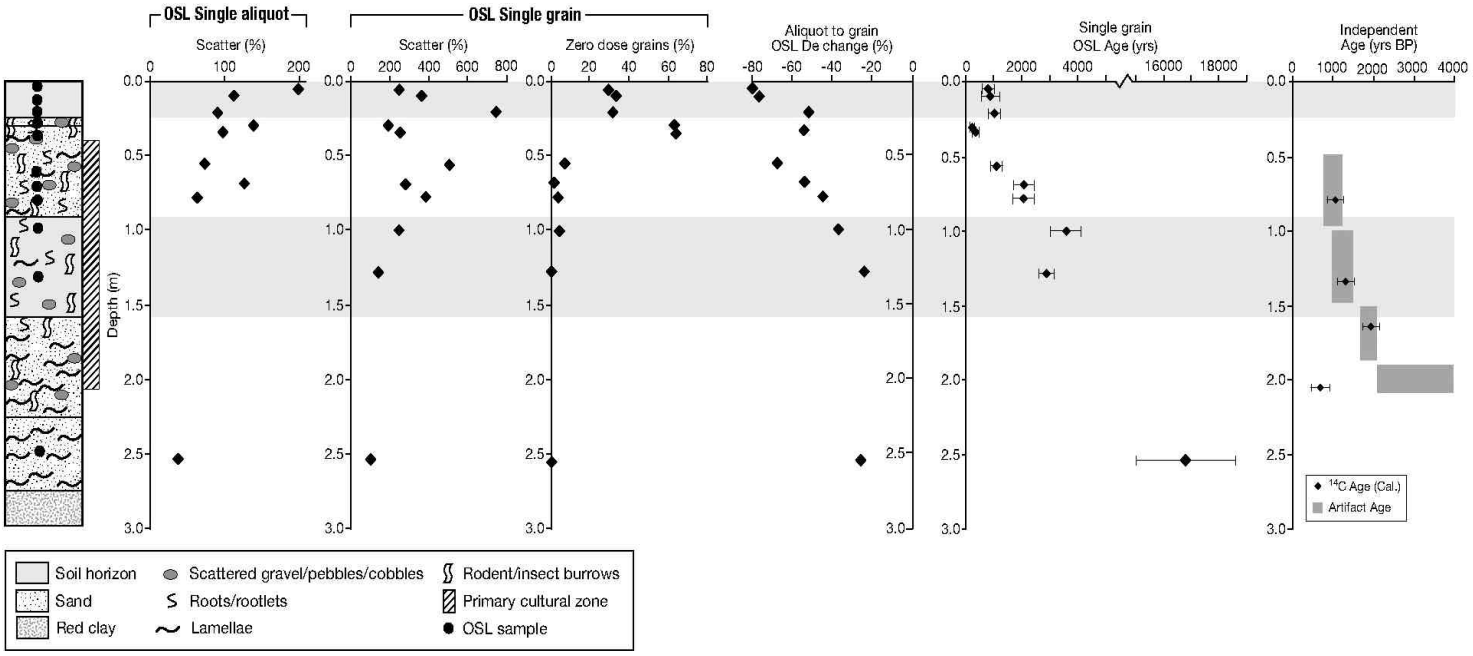

Figure 3. OSL results at the single aliquot and single grain level and independent chronology for the Rena Branch Site, Texas. Notes: scatter shown is plotted as the residual standard error associated with all replicates for a given sample. Zero dose grains were distinguished as those which returned a zero D_e value but which showed good OSL growth characteristics when subjected to laboratory irradiation.

this case the krotovina indicate that fossorial rodents have played a major role in this disturbance.

Summary and Conclusions

In summary, work examining the potential of OSL dating for recognition of bioturbation within sandy sediments has yielded useful new information that permits evaluation of site integrity independent of, but complementary to, archaeological evidence.

The three sites discussed reflect varying points on the continuum of severity of disturbance, and the results suggest that pedoturbation associated with different disturbance vectors (e.g. insects vs. larger mammals) may have significantly different stratigraphic, archaeological and chronological expression. For all sites luminescence provided a reliable means of identifying mixing, and a number of parameters for recognition of bioturbation at future sites are outlined.

The results demonstrate that, in combination with traditional archaeological and geoarchaeological techniques, OSL provides an enhanced ability to understand depositional history and potential integrity of archaeological sites. It is also clear that peaked artefact distributions and the presence of stratigraphic structure cannot necessarily be taken as evidence that sites have remained undisturbed since deposition. The substantial degree of disturbance at Rena Branch is readily detectable at the single aliquot level, but for sites where disturbance is not so marked, or where more detailed information on the level of bioturbation is required, a combination of single aliquot and single grain work is recommended.

Acknowledgements

Ross Fields (Prewitt and Associates), Nellie Frisbee, and Joel Trouart (Northwestern Resources) provided invaluable assistance in the re-excavation of the Rena Branch site. Duane Peter (Geo-Marine, Inc.), the US Army Corps of Engineers, and Air Combat Command are acknowledged for access to the Florida sites. Paul Coles is thanked for cartographic assistance. This work was carried out in part with a NERC studentship grant (NER/S/A/2002/12053) to C. H. Boulter.

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Archaeological Chemistry

Nora Reber, Associate Editor

Hello again! I hope that spring has begun for almost everyone reading this, and that your thoughts have begun to turn to the summer sports of writing and planning abstracts. Below is a quick round-up of some news items that may be of interest. As usual, if anyone has any suggestions, ideas, comments, and/or topics for discussion, please contact me at rebere@uncw.edu.

Conferences

Practically as you read this, the 36th International Symposium on Archaeometry is meeting in Quebec City, Canada. Enjoy! If anyone has any reports you'd like to send me for a later column, please do!

The ACS meetings took place in March, featuring (for archaeological chemists, anyway) a two-day symposium entitled "Archaeological Chemistry: Analytical Techniques and Archaeological Interpretation." It included an attention-getting array of presentations, including "Using archaeological chemistry to identify the geographic origins of trophy heads in the central Andes" by Kelly J. Knudson and Tiffiny A. Tung. Here are a few that may be of particular interest to readers, but I was forced to leave out a lot. For a complete listing, visit the ACS meeting website at http://oasys2.confex.com/acs/231nm/techprogram/D2539.HTM. Textile analysis was represented by (among others) "Toward the classification of colorants in archaeological textiles of eastern North America" by Christel Baldia and Kathryn A. Jakes, and "Extraction of indigo from a model Maya Blue compound" by Kathryn Duffy, Gregory W. L. Hodgins, and Giacomo Chiari. Residue analysis particularly of visible residues, was a popular area, including "Bitumen use in early pottery vessels from southwestern Iran" by Michael William Gregg and Ben Stern and "Pyrolysis- and THM-GC-MS characterization of a black residue in Little Lost River Cave, Idaho" by Ruth Ann Armitage, Jamie A. Brown, and Sarah T. Fezzey.

Good old-fashioned radiocarbon analysis was discussed in "Problems in the calibration of the radiocarbon time scale: Archaeological implications" by R. E. Taylor and John Southon, while electron spin and stable isotope analysis was covered by "Expanding the range of electron spin resonance dating" by Anne R. Skinner, Bonnie A. B. Blackwell and Joel I. B. Blickstein, "Interpreting stable isotopic analyses: Case studies on prehistoric Sardinia" by Luca Lai and Robert H. Tykot, and "Lead isotope analysis of Roman Carthage curse tablets" by Sheldon A Skaggs among many others. Metals were analyzed through a variety of techniques, as described in "LA-ICP-MS analysis of ancient copper alloy artifacts" by Laure Dussubieux, "Chemical composition of the Isfiya and Qumran coin hoards" by Michael Notis, Aaron Shugar, Danny Herman and Donald T. Ariel, "Chemical compositions of Herodian copper coins – the biblical "widow's mites" – via energy dispersive X-ray fluorescence" by Meghann Mouyianis, Mark A. Benvenuto and Irice Ellis, and "The technologies of Mesopotamian ceramic glazes" by David V. Hill, Robert J. Speakman, Michael. D. Glascock, and Hector Neff .

Upcoming

Yet another American Chemical Society Meeting & Exposition will be taking place September 10 - 14, 2006 in San Francisco. Abstracts and titles should be in by early May (the deadline varies by division).

The Archaeological Sciences of the America symposium 2006 will be taking place September 13-16 in Tucson, Arizona, sponsored by the graduate students of the Department of Anthropology at the University of Arizona, and the Integrative Graduate Education and Research Traineeship (IGERT) Program in Archaeological Sciences at the same university. The deadlines for proposals has been extended— proposals and

abstracts for organized sessions are now due May 15, 2006; abstracts for individual submissions on June 1, 2006. The six primary themes of the meeting will be: Geoarchaeology, Conservation Studies and Ephemeral Remains, Spatial Analysis and Remote Sensing, Chronometry, Human-Environmental Interaction, and Material Culture Studies.

The ASMOSIA VIII conference will be taking place June 12-18 in Aix-en-Provence, France. Sessions of interest to archaeological chemists will be on the characterization of marble and other stones, and on sourcing and trade in marble.

The 6th World Archaeological Conference will take place 20-27 May 2007, in Jamaica. The first Call for Papers has already been sent out; session proposals will be accepted through December 31, 2006, and the deadline for individual paper submissions will be February 28, 2007. For more information, visit the website at http://ehlt.flinders.edu.au/wac/site/confer_wac-6.php

Looking even further ahead, the 2nd International Archaeometallurgy in Europe conference will be taking place 10-14 June, 2007 in Grado and Aquileia, Italy. Titles and abstracts of papers are due by November 30, 2006.

Books

Analytical Chemistry in Archaeology by Mark Pollard, Catherine Batt, Ben Stern, Suzanne M. M. Young, and Graeme Barker is being published on October 31, 2006. Part of the Cambridge Manuals in Archaeology Series, it contains chapters on basic chemistry and physics, as well as on Atomic Absorption, Inductively Coupled Plasma Emission Spectroscopy, Neutron Activation Analysis, X-ray Fluorescence, Electron Microscopy, Infra-red Raman Spectroscopy, and Mass Spectrometry. This 300-page guide should be a great resource for archaeometrists!

A 2nd hardcover edition of *Archaeological Chemistry* by Zvi Goffer and James D. Winefordner will be published July 28, 2006.

Charcoal Analysis: New Analytical Tools and Methods for Archaeology edited by Alexa Dufraisse has just recently been published by BAR International. It includes 9 papers on various aspects of charcoal analysis from the Table-Ronde held in Basel in 2004.

In January 2005, BAR International published *LRCW I: Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry* by J. Ma Gurt I. Esparraguera, J Buxeda i Garrigós, and M A Cau Ontiveros. This volume includes 48 papers, all on Late Roman pottery.

An interesting-looking book on non-destructive sampling was released on January 26, 2005: *Non-destructive Micro Analysis of Cultural Heritage Materials,* edited by K. Janssens and R. Van Grieken. It includes chapters on UV, IR, and X-ray imaging; electron microscopy; ion-beam microanalysis; X-ray photoelectron and Auger electron spectroscopy; laser ablation ICP-MS; IR, Raman, and FORS spectroscopy; and secondary ion mass spectrometry, as well as a generous section of case studies.

Also, Vance Holliday writes that M. L. Jackson's classic *Soil Chemical Analysis* is now published in a widely available form that can be obtained from the Soil Science Dept at the U of Wisconsin, Madison. The order form can be found online at http://www.soils.wisc.edu/soils/forms/JacksonOrderForm1.pdf.

Archaeological Ceramics

Charles C. Kolb, Associate Editor

The column in this issue includes six topics**:** 1) Reviews of Books on Archaeological Ceramics; 2) Previous Meetings; 3) Forthcoming Meetings; 4) Internet Resources, 5) Announcements; and 6) Exhibition.

Reviews of Books on Archaeological Ceramics

LRCW I: Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry edited by J. Mª. Gurt i Esparraguera, J. Buxeda i Garrigós, M. A. Cau Ontiveros, BAR S1340 2005, ISBN 1841716863, £55.00/$100.00; v + 736 pp.; figures, maps, plans, drawings and photographs. The 48 papers in this edited work derive from the proceedings of the 1st International Conference on Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry, which was held in Barcelona in March 2002. This international symposium focused on late Roman cooking wares and amphorae fabricated and used during the 4th through 7th centuries CE. The papers in this landmark volume demonstrate how the study of Roman coarse wares, cooking wares and amphorae may contribute to our knowledge and understanding of a wide range of issues and problems. An editorial introduction informs the reader that the papers included in this volume have each been peer reviewed by two independent referees. Michael Fulford (University of Reading) wrote a useful preface that provides an important context for the contributions and anticipates the second conference (LRCW 2) that was held at Aix-en-Provence, Marseille, and Arles, France from 13-16 April 2005 (see http://www.mmsh.univ-aix.fr/lrcw2/index.htm). The main scope of the 2005 meeting was the presentation and discussion of the recent developments in the field of Late Roman Coarse Wares, cooking wares and amphorae studies from 5th century CE to the end of Antiquity as well as related subjects close in time or in space to the central focus (a summary of this conference appears in the Previous Meetings section of this column).

The LRCW 1 volume is organized geographically into seven regions; there are 13 papers in that geographically focus on the Iberian Peninsula, 3 on the Western Mediterranean Islands, 3 on Gaule, 9 on the Italian Mainland and Central Mediterranean Islands, 5 on Africa, 2 on the Eastern Adriatic Sea, and 13 on the Eastern Mediterranean. Each chapter has a standardized organization that includes the title, author name(s), author affiliation(s), a brief abstract, a list of key words, the narrative, and bibliography. Collectively, the 48 papers include 27 in English, 9 in Spanish, 6 in Italian, 4 in French, 1 in Portuguese, and 1 in German. The abstracts are usually in the languages of the individual chapters but 6 non-English narratives have abstracts in English and one chapter abstract in Italian has an English text; a chapter by a Turkish scholar has an English abstract and German text. Several of the chapter groupings include invited papers. The 48 chapters collectively have 98 authors; their affiliations indicate that 33 authors are from Spanish institutions, 26 from Italian, 10 from Portuguese, 9 from French, 5 from Austrian, and 2 each have Slovenian and Turkish affiliations, while 11 authors are from other institutions. The latter are affiliated with organizations in Albania, Belgium, Denmark, England, Finland, Jordan, Lebanon, Morocco, Switzerland, Tunisia, and Wales. Six individuals co-authored more than one paper with colleagues. In this review, I shall give a brief overview of each chapter's contents and then provide an overall assessment of the monograph. There is one significant error in the authors' names, and affiliations. A chapter attributed to V.-P. Verena, Ž. Matej (pp. 521-536) should have designated Verena Vidrih Perko and Matej Žuoancic as the co-authors. There are relatively few typographical errors, mostly in the captions of illustrations.

The Iberian Peninsula group has 13 chapters authored by 38 scholars from Spanish and Portuguese institutions. An invited paper is the initial contribution: Antonio Javier Murcia Muñoz, J. Vizcaíno Sánchez, S. García Lorca, and S. F. Ramallo Asensio co-authored "Conjuntos cerámicos tardíos de las excavaciones en el teatro romano de Cartagena" (pp. 1-36, 12 figures; the abstract and text are in Spanish). Excavations at the Cartagena, Spain theater and commercial area produced a wide variety of ceramics dating to the 4th and 5th centuries, including *terra sigillata* (Africana D and Gris), fine table wares, kitchen wares, and local and imported amphorae (Africanas and Orientales). The authors provide a typology and illustrations of the classified and unidentified ceramics recovered from the foundation levels and destruction phase. Jorge Raposo, C. Soares Fabião, A. Ribeiro Guerra, J. Bugalhão, A. L. Duarte, A. Sabrosa, M. I. Dias, M. I. Prudêncio, and M. Â. Gouveia wrote "Orest Project: late Roman pottery productions from the Lower Tejo" (pp. 37-54, 27 figures; the abstract and text are in English). Amphorae and coarse wares from Porto dos Cacos and Quintana do Rouxinol, Portugal dating to the 5th century are reported; INAA permitted the identification of production sites. Rue Morais prepared "From Oppidum to Dives Bracara: The city trade through the amphorae" (pp. 55-67, 6 tables and a catalog with 21 illustrations; the abstract and text are in English). Trade between Braga, Portugal and North Africa is assessed through the study of late Roman and early Byzantine amphora, African coarse ware, African Red-slipped ware, and oil lamps recovered from excavations in the city. Enrique Ariño Gil, L. Barbero Castro, and M. Suárez Barrios authored "Primeros datos sobre análisis arqueométricos de la cerámica de cocina del periodo romano tardío / visigodo de la provincia de Salamanca" (pp. 69-79, 6 figures [including 6 microphotographs of thin sections]; the abstract and text are in Spanish). Kitchen ceramics from Salamanca dating to Late Antiquity are reported as are the results of XRD, and electron and petrographic microscopy.

Alexander Uscatescu and R. García Jiménez coauthored "Pottery Wares from a Fifth Century Deposit Found at Iesso (Guissona, Lleida): Archaeological and Archaeometrical Analyses" (pp. 81-103, 7 figures [including 9 microphotographs of thin sections], 11 tables; the abstract and text are in English). Studies of 5th century local and imported ceramics from Guissona are reported. The imports are from North Africa and the East (Asia Minor and Syria) and identified through XRD, chemical, and petrographic thin section analyses. Manuel Carrilero Millán, O. Garrido Vílchez, and B. Padial Robles wrote "The Roman villa of Cuevas del Becerro (Málaga) in the historical context of the Late Antiquity in the Baetica" (pp. 105-118, 13 figures; the abstract and text are in English). The authors document olive oil production at the villa of Las Viñas in Spain dating to the second half of the 3rd and beginning of the 4th century. Specimens from large storage vessels (dolia) were examined by infrared spectrometry. María Sonia Milá Otero, R. Arana Castillo, and A. Alías Linares prepared "Preliminary study of Coarse Cooking ceramics from the Roman theatre of Cartagena (Murcia, Spain)" (pp. 119-124, 6 figures [including 5 microphotographs of thin sections]; the abstract is in English and the text is in Spanish). Megascopic and petrographic thin section studies of specimens from the theater are reported; future analyses anticipate the use of XRF and XRD. Joseph Maria Macias Solé and J.-A. Remolà Vallverdú authored "La cultura material de Tarraco - Tarracona (*Hispania Tarraconensis - Regnum Visigothorum*): cerámica común y ánforas" (pp. 125-135, 6 figures, 1 table; the abstract and text are in Spanish). The authors discuss their studies of ceramics dating 375-700 CE in the city of Tarraco, Spain, and discern variations in amphora and domestic wares through typo-chronometric phases.

Julia Beltrán de Heredia Tercero contributed "La cerámica común del yacimiento de la plaça del Rei (siglos VI-VII): aportación al estudio de la cerámica común tardoantigua de Barcelona (España)" (pp. 137-149, 7 figures; the abstract and text are in Spanish). Macroscopic studies of pottery from the 6th and 7th centuries recovered in Barcelona are documented and classified into six primary groups. Ramon Járrega Domínguez wrote "Ánforas tardorromanas halladas en las recientes excavaciones estratigráficas efectuadas en el subsuelo de la Plaza del Rey en Barcelona" (pp.151-163, 5 figures; the abstract and text are in Spanish). Eastern Mediterranean amphorae from Barcelona dating to the 6th and 7th centuries are reported. César Carreras Monfort and P. Berni Millet prepared "Late Roman amphorae in the City of

Barcino (Barcelona)" (pp.165-178, 8 figures, 1 table; the abstract and text are in English). The authors review data on North African and Eastern Mediterranean amphorae recovered from 31 sites in central Barcelona dating to the Late Roman period and suggest eight production regions. New types are also discerned and there is a discussion of contents (wine, olive oil, and fish sauce). A. Bacaria i Martrus, C. Torrent i Riba, M. Madrid Fernández, and J. Buxeda i Garrigós coauthored "Ceràmica de cuina del jaciment tardorromà de La Bastida (Rubí, Barcelona)" (pp. 179-202, 17 figures; the abstract and text are in Portuguese). The authors consider the results of macroscopic and microscopic ceramic analyses of common wares and African Red Slipware; 17 fabrics are defined and ceramic forms illustrated. Xabier Cela Espín and V. Revilla Calvo presented "Contextos cerámicos de los siglos V a VII del Municipium de Ilvro (Mataró, Barcelona). Evidencia material, hábitat y dinámica económica de una ciudad del litoral hispano" (pp. 203-221, 14 figures; the abstract and text are in Spanish). Ceramics (especially amphorae and sigillatas) dating to the 5th to 7th centuries from Barcelona are compared and contexts, exchange, and consumption patterns reviewed.

The section entitled Western Mediterranean Islands contains three contributions, the first of which is an invited paper: J. Buxeda i Garrigós, M. A. Cau Ontiveros, J. M. Gurt i Esparraguera, E. Tsantini, and A. M. Rauret i Dalmau coauthored "Late Roman Coarse and Cooking Wares from the Balearic Islands in Late Antiquity" (pp. 223-254, 19 figures, 1 table; the abstract and text are in English). The authors report studies of coarse and cooking ware trade in the northwest Mediterranean, from the 5th to 7th centuries made by three production techniques (hand, turntable, and wheel-made). An analytical program supported by GEOPRO utilized XRF, XRD, SEM, and OM (optical microscopy by thin section). Silvia Sangiorgi wrote "Le ceramiche da fuoco in Sardegna: osservazioni preliminari a partire dai materiali rinvenuti nello scavo di S. Eulalia a Cagliari" (pp. 255-266, 14 figures; the abstract and text are in Italian). African common pottery, stamped ceramics, and four Fulford types recovered from 4th to 8th century sites in Sardinia are discussed. F. Pinna prepared "Una produzione di ceramica comune nei siti tardo-antichi e altomedievali della Sardegna: note sui manufatti decorati a linee polite dallo scavo di S. Eulalia a Cagliari" (pp. 267-284, 12 figures; the abstract and text are in Italian). Incised and other decorated common ceramics from 17 sites in Sardinia are reviewed. There are three contributions on Gaule. Stéphane Bien wrote "Des niveaux du VIIe siècle sous le Music-Hall de l'Alcazar à Marseille" (pp. 285-298, 9 figures; the abstract and text are in French). Imported ceramics, particularly North African and Eastern Mediterranean amphorae excavated in Marseilles dating to the 7th century, are documented and illustrated. Jean-Christophe Tréglia authored "Importations de céramiques communes égéo-marmaréennes en Gaule méridionale durant l'Antiquité tardive (IVe-VIIe s.)" (pp. 299-310, 6 figures; the abstract is in English and the text is in French). The author reports the conclusion of a study of Mediterranean coarse ware from southern Gaul; casserols, frying pans, and cooking pots are discussed. A southeastern Aegean provenance was determined through chemical and petrographic analyses. S. Yona Waksman, P. Reynolds, S. Bien, and J.-C. Tréglia collaborated on "A major production of Late Roman 'Levantine' and 'Cypriot' Common Wares" (pp. 311-325, 6 figures, and 2 tables; the abstract and text are in English). The authors report the results of a typo-chronology and chemical analysis for 4th to 7th century wares attributed to the Levant and Cyprus found in Beirut and southern Gaul, and focus on the as yet undiscerned "Workshop X."

A section on the Italian Mainland and Central Mediterranean Islands includes nine contributions, the first of which is an invited paper: Sara Santoro Bianchi authored "The informative potential of archaeometric and archaeological cooking ware studies: the case of Pantellerian Ware" (pp. 327-329, 13 figures [including 1 microphotograph of a thin section]; the abstract is in Italian and the text is in English). The author reports the results of field surveys and macroscopic studies of the ware which dates from the 4th to 6th centuries at production sites in the Western Mediterranean. Paolo de Vingo and D. Gandolfi collaborated on "Liguria in Late Antiquity and in the early Middle Ages: its trade relations with the western and eastern Mediterranean Sea through transport amphorae" (pp. 341-352, 3 figures; the abstract and text are in English). Mediterranean trade relations are reviewed with emphasis on African-made transport amphorae from Liurgia during the 5th to 7th centuries. Carla Corti prepared "Anfore e ceramiche d'impasto grezzo dal sito Corte Vanina (Concordia Sulla Secchia/Modena/Italia): importazioni e produzioni locali tra Tardoantico e Altomedioevo" (pp. 355-367, 8 figures; the abstract and text are in Italian). Late Antique amphorae in the Po Valley area are reported and local production versus importation considered. H. Patterson, A. Bousquet, S. Fontana, R. Witcher, S. Zampini (all from the British School in Rome) co-authored "Late Roman common wares and amphorae in the middle Tiber valley, the preliminary results of the Tiber Valley Project" (pp. 369-384, 12 figures; the abstract and text are in English). The authors consider ceramics obtained by survey and excavation from the middle Tiber Valley dating from the 4th to 7th centuries and relate evidence of production and distribution to other surveys and excavations. Archer Martin and E. C. De Sena (both at the American School in Rome) authored "Agricultural and Craft Supplies in Late Roman Ostia: Pottery Evidence from the DAI/AAR Excavations" (pp. 385-393, 5 figures, 5 tables; the abstract and text are in English). The analysis of ceramics from Ostia in the 4th to 5th centurias confirmed the major role placed by North Africa in supplying oil, fish sauce, and domestic pottery to central Italy. Helga Di Giuseppe and C. Capelli presented "Produzioni urbane e rurali di ceramica comune dipinta nella Lucania tardoantica e altomedievale" (pp. 395-411, 11 figures; the abstract is in English and the text is in Italian). The authors document the emergence and development of a painted common ware industry between the 4th and 6th centuries, discuss urban and rural kilns, and particularly the production site of Calle di Tricarico. Carlo de Mitri wrote "Otranto: Anfore da trasporto di etá tardoromana (IV-VI sec. d.C.)" (pp. 413-424, 11 figures; the abstract and text are in Italian). Amphora excavated at Otranto, Italy

produced from various locations in the circum-Mediterranean from the 4th to 7th century are discussed. Giuseppe Montana, I. Iliopoulos, and R. Giarrusso collaborated on "Pantellerian Ware: new data on petrography, chemistry and technological properties" (pp. 425-435, 6 figures, 3 tables [including 4 microphotographs of thin sections]; the abstract and text are in English). Petrographic (OM) and chemical analyses (XRF) were used to examine specimens of this Late Roman cooking ware made in Sicily. Compositional variability in petrography (composition, packing, and size distribution of sand temper) and bulk chemistry (21 major and minor trace elements) are reported. Giuseppe Montana, I. Iliopoulos, and M. Tantillo coauthored "Establishing a 'recipe' for Pantellerian Ware: raw materials field survey, analysis and experimental firing" (pp. 437-450, 7 figures, 3 tables [including 4 microphotographs of thin sections]; the abstract and text are in English). Clay samples (red and white clays) from Pantelleria were studied by petrographic microscopy, XRD, and XRF; replication studies were undertaken creating briquettes for firing experiments.

The section on Africa has five papers, the first of which is an invited contribution: Michel Bonifay prepared "Observations sur la typologie des amphores africaines de l'Antiquité tardive" (pp. 451-472, 19 figures; the abstract is in English and the text is in French). North African amphorae dating to the 5th through 7th centuries are studied; the vessel contents are more varied than originally thought. El Arby En-Nachioui contributed "La cerámica de época tardo romana en Marruecos: estado de la cuestión" (pp. 473-489, no illustrations; the abstract and text are in Spanish). Data on Late Roman amphorae from North Africa is reviewed. Mariette de Vos and S. Polla wrote "Ceramica dai siti rurali intorno a Dougga (Tunisia settentrionale)" (pp. 481-493, 12 figures; the abstract and text are in Italian). Studies of Dougga Ware, a local Tunisian imitation of African sigillata dating to the 5th through 7th centuries, are described. Taher Ghalia, M. Bonifay, and C. Capelli coauthored "L'atelier de Sidi-Zahruni: mise en évidence d'une production d'amphores de l'Antiquité Tardive sur le territoire de la cité de Neapolis (Nabeul, Tunisie)" (pp. 495-507, 8 figures [including 4 microphotographs of thin sections], 1 table; the abstract is in English and the text is in French). Seven amphora types dating to Late Antiquity in Tunisia are studied by petrographic analysis; probable contents are reported. Janne P. Ikäheimo presented "African cookware: a high-quality space filler?" (pp. 509-520, 7 figures [including 3 microphotographs of thin sections], and 5 tables; the abstract and text are in English). The production of African cookware (270-550 CE) profited from an abundance of raw materials, fuels, and a favorable climate, as well as performance characteristics that met the requirements of sea-borne transportation; factors for production decline are also considered.

The section on the Eastern Adriatic Sea includes two papers: Verena Vidrih Perko and Matej Žuoancic contributed "Amphorae in western Slovenia and in northern Istra" (pp. 521-536, 11 figures; the abstract and text are in English). The authors consider the production and distribution of transport amphorae in Roman and Byzantine towns from the 4th to 9th centuries in Slovenia and Istra, and maritime sites. Ylli Cerova, M. Bonifay, and C. Capelli wrote "Amphores épirotes à corps globulaire du VIe s. découvertes à Byllis (Albanie)" (pp. 537-546, 9 figures [including 4 microphotographs of thin sections]; the abstract is in English and the text is in French). The authors document the production of globular amphorae in Albania dating to the second half of the 6th century; interior bitumen coatings facilitated the transport of wine. The Eastern Mediterranean section has three invited papers starting with Louise Joyner's "Searching for the Holy Grail: Late Roman ceramic analysis in the Levant" (pp. 547-562, 3 figures [including 8 microphotographs of thin sections], 3 tables; the abstract and text are in English). The author laments the lack of archaeometric analyses of Late Roman coarse ware from Levantine sites and presents a case study using chemical and mineralogical analyses of specimens from an early Christian monastery at Deir 'Ain 'Abata, Jordan. Paul Reynolds contributed "Levantine amphorae from Cilicia to Gaza: a typology and analysis of regional production trends from the 1st to 6th centuries" (pp. 563-611, 21 plates [160 figures], 1 table, 4 graphs, 4 maps; the abstract and text are in English). The author laments the lack of a coherent typology for Levantine amphorae and presents a highly illustrated and detailed chrono-typology for amphorae from this region dating to 1st to 7th centuries. David F. Williams wrote "An integrated archaeometric approach to ceramic fabric recognition: A study case on Late Roman Amphora 1 from the Eastern Mediterranean" (pp. 613-624, 5 figures, 5 plates; the abstract and text are in English). Fabric characterization employing chemical and petrographic analyses is presented for ceramics from the northeastern Mediterranean littoral. Kristina Winther Jacobsen prepared "Late Roman Coarse wares and Transport Amphorae from Panayia Ematousa, Cyprus" (pp. 625-634, 7 figures; the abstract and text are in English). Late Roman period cooking wares and transport amphorae from Cyprus are assessed to determine vessel function. Petra Turnovsky wrote "The morphological repertory of Late Roman/ Early Byzantine Coarse Wares in Ephesos" (pp. 635-645, 8 figures; the abstract and text are in English). Four ceramic assemblages from Ephesos, Turkey dating 400-650 CE are considered and morphological changes in cooking post are reported. Susane Lochner, R. Sauer, and R. Linke co-authored "Late Roman unguentaria? – a contribution to Early Byzantine wares from the view of Ephesus" (pp. 647-654, 2 figures; the abstract and text are in English). Late Roman unguentaria (oil vessels) from Ephesus, Turkey are reviewed and type description, fabric, decoration, distribution and chronology are reported.

Daniela Cottica authored "Perspectives on pottery production and exchange in Late Roman and Byzantine Anatolia: the Common Wares from Hierapolis, Phrygia" (pp. 655-666, 5 figures [including 16 microphotographs of thin sections]; the abstract and text are in English). Late Antique to Mid-Byzantine (5th to 7th centuries) local pottery production and consumption at Hierapolis is documented by petrographic thin section analyses; eight horizons are suggested. Ergün Laflý wrote "Spätantik-frühbyzantinische Tonunguentarien aus

Seleukeia Sidçra in Pisidien (Südwesttürkei)" (pp. 667-679, 7 figures; the abstract is in English and the text is in German). The local production of unguentaria (oil vessels) at Pisidia, Turkey is reviewed with emphasis on typology, chronology, contexts, function, stamped decoration, regional characteristics, and distribution patterns up to the termination of production in the mid-7th century. Çiðdm Toskay Evrin contributed "The Cooking Wares of the Romans discovered during the excavations at the Republic Square in Tarsus, Cilicia" (pp. 681-689, 4 figures; the abstract and text are in English). The author reports the results of his studies on closed and semi-closed cooking wares from the Late Antique period at Tarsus. The assessment combines archaeological, anthropological, statistical, and culture-historical methods. Hugh Elton reported "The economy of southern Asia Minor and LR 1 Amphorae" (pp. 691-695, no illustrations; the abstract and text are in English). Late Roman 1 amphorae provide the basis for an evaluation of regional economics and suggest a free market with state-driven trade. Agnès Vokaer authored "Typological and technological study of brittle ware in Syria" (pp. 697-709, 6 figures [including 10 microphotographs of thin sections], 1 table, 2 maps; the abstract and text are in English). Byzantine Brittle Ware dating to the 6th century was and excavated from rubbish dumps in Syria and is evaluated by petrographic microscopy and chemical analyses (ICP-AES); the results suggest the presence of two distinct fabrics, one previously identified. Taysir Atiat wrote "Amphora Types in Jordan from the Byzantine period to the Late Islamic period" (pp. 711-723, 4 figures, 3 tables; the abstract and text are in English). The author reports an analysis of amphorae from sites in Jordan and proposes three categories (Byzantine, Egyptian, and Syrian) on the basis of vessel shape. Lastly, Yvonne Gerber contributed "Late Roman Coarse Ware from Petra, Jordan: changes in typology and chemical composition" (pp. 725-736, 11 figures, 1 table; the abstract and text are in English). Chemical (ED-XRF) and mineralogical analyses of Late Roman coarse ware suggests changes in pottery production dated to before and after the 2nd/3rd centuries in southern Jordan; data on Nabatean ceramics and raw clay samples are reported.

This is truly an international effort with contributors coming from Europe, Africa, and Asia. The organizers and editors are to be commended for producing a volume of such magnitude and for overseeing a Herculean effort to maintain excellence among the contributions. Collectively, the papers are compelling and informative and add immensely to our understanding of Late Roman coarse wares, cooking wares and amphorae in the Mediterranean for the general period 4th through 7th centuries CE (some contributions expand this time frame from the 1st to 9th centuries). The editors have made no attempt to summarize the conference or provide an overall synthesis of the results of these contributions. Of particular interest and personal enjoyment were three papers: J. Buxeda i Garrigós, M. A. Cau Ontiveros, J. M. Gurt i Esparraguera, E. Tsantini, and A. M. Rauret i Dalmau who coauthored "Late Roman Coarse and Cooking Wares from the Balearic Islands in Late Antiquity"; Louise Joyner's "Searching for the Holy Grail: Late Roman ceramic analysis in the Levant"; and Paul Reynolds's "Levantine amphorae from Cilicia to Gaza: a typology and analysis of regional production trends from the 1st to 6th centuries."

Handbook of Archaeological Methods, 2 vols., edited by Herbert D. G. Maschner and Christopher Chippindale; Lanham, MD, New York, Toronto, and Oxford: AltaMira Press, A Division of Rowman & Littlefield Publishers, Inc., 2005. viii + 1,469 pp., figures. ISBN 0-7591-0078-0, $149.00 (hardcover). The editors, one American (Maschner, Idaho State University) and one British (Chippendale, Cambridge University Museum of Archaeology and Anthropology), are well-published and familiar to those cognizant of the archaeological literature. An accompanying volume, *Handbook of Archaeological Theory* by Bentley, Maschner, and Chippindale, is mentioned as "forthcoming" (p. 5) but is not yet listed by AltaMira. R. Alexander Bentley and H.D. G. Maschner are the editors of *Complex Systems and Archaeology: Empirical and Theoretical Applications* (Salt Lake City: University of Utah Press; Complex Systems & Archaeology/Foundations of Archaeological Inquiry, 2003). Maschner and Chippendale's two-volume "handbook" (nearly 1,500 pages) is a magnum opus containing original and authoritative articles and is organized into five parts with 34 chapters written by 43 contributors. Seven chapters have two authors, one chapter has four authors, and the remainder has sole authorship – the authors alphabetically range from nearly A to Z (Aldenderfer to Whitley) with about one-quarter of the contributors from British institutions. I shall generally describe the contents of each of the chapters, provide a comparative overview and contrast this work with two others, and focus on the contribution on ceramics. The volumes for comparison are Don R. Brothwell and A. Mark Pollard's edited compendium *Handbook of Archaeological Sciences* (2001) and *Archaeologist's Toolkit*, 7 vols., Larry J. Zimmerman and William Green, series editors (2003). Nearly all of the chapters in the *Handbook of Archaeological Methods* have references at the end of the contributions; I also indicate the presence of illustrations and tabular materials.

Maschner and Chippendale provide two introductory essays: Chapter 1: "An Introduction to the Handbook of Archaeological Methods" by Herbert D. G. Maschner, Idaho State University (pp. 1-39 with references). Chapter 2: "A Short History of Archaeological Methods, 1870 to 1960" by Brian Fagan, University of California at Santa Barbara (pp. 40-72 with references). Fagan does not mention Mesoamerican contributions by Manuel Gamio (stratigraphic analysis) or George C. Vaillant (figurine and ceramic seriation); Mills does mention the latter in Chapter 6. These are followed by Part I: In the Field (6 chapters): Chapter 3: "Logistics of Fieldwork and Collecting Field Data" by John M. Steinberg, Cotsen Institute of Archaeology at UCLA (pp. 75-105, 5 figures, 3 tables, with references). Chapter 4: "Archaeological Survey" by Brian Leigh Molyneaux, University of South Dakota (pp. 106-132, selected readings, with references). Chapter 5: "Excavation" by Michael A. Glassow, University of California at Santa Barbara (pp. 133-175, 1 table, with references). Chapter 6:

"Sequence and Stratigraphy" by Barbara J. Mills, University of Arizona, and Rafael Vega-Centeno, University of San Marcos [Lima, Peru] (pp. 176-215, 12 figures, with references). Chapter 7: "Ethnoarchaeology" by John W. Arthur and Kathryn J. Weedman, both at University of South Florida (pp. 216-269 with references; ceramics are briefly mentioned p. 240, 242, 250). Chapter 8: "Maritime Archaeology" by J. Barto Arnold, Institute of Nautical Archaeology, and Mark A. Feulner, Florida State University (pp. 270-305, 15 figures, with references). Next is Part II: Analytical Methods (9 chapters): Chapter 9: "Radiocarbon Dating" by Paul B. Pettitt, University of Sheffield (pp. 309-336, 2 figures, 1 table, with references). Chapter 10: "Dating Techniques" by Alistair W. G. Pike, University of Bristol, and Paul B. Pettitt, University of Sheffield (pp. 337-372, 8 figures, with references). Chapter 11: "Geographic Information Systems" by Mark Gillings, University of Leicester, and David Wheatley, University of Southampton (pp. 373-422, 6 figures, with references). Chapter 12: "Terrestrial Remote Sensing in Archaeology" by Kenneth L. Kvamme, University of Arkansas (pp. 423-477, 4 figures, 1 table, with references). Chapter 13: "Archaeological Chemistry" by Joseph B. Lambert, Northwestern University (pp. 478-500, 4 figures, with references; ceramics are mentioned pp. 488-489). Chapter 14: "Statistics for Archaeology" by Mark Aldenderfer, University of Arizona (pp. 501-553, 3 figures, 3 tables, with references). Chapter 15: "Systems and Simulacra: Modelling, Simulation and Archaeological Interpretation" by James McGlade, University of Cambridge (pp. 554-602 with references). Chapter 16: "Experimental Archaeology" by Izumi Shimada, Southern Illinois University (pp. 603-642, 1 figure, with references; ceramics are considered pp. 625-626). Chapter 17: "Reflexive Methods" by Ian Hodder, Stanford University (pp. 643-669, 5 figures, with references).

The second volume includes Part III: Applying Analytical Methods (6 chapters): Chapter 18: "Pottery" by Carl Knappett, University of Exeter (pp. 673-714, 10 figures, and references). Chapter 19: "Lithic Studies" by William Andrefsky, Washington State University (pp. 715-772, 2 figures, with references). Chapter 20: "Paleoethnobotanical Methods and Applications" by Gayle J. Fritz, Washington University at St. Louis (pp. 773-834, 5 figures, references). Chapter 21: "Zooarchaeology" by R. Lee Lyman, University of Missouri at Columbia (pp. 835-870, 3 figures, 3 tables, with references). Chapter 22: "Bioarchaeological Methods" by Michele R. Buzon (University of Alberta), Jacqueline T. Eng (University of California at Santa Barbara), Patricia M. Lambert (Utah State University), and Phillip L. Walker (University of California at Santa Barbara) (pp. 871-918, 1 figure, with references). Chapter 23: "Rock Art Analysis" by David S. Whitley, consultant in California, and Lawrence L. Loendorf, New Mexico State University (pp. 919-973, 6 figures, with references). In Chapter 19, the focus is on chert and flint and does not, unfortunately, consider obsidian or other raw materials; nonetheless there is a useful lengthy bibliography. Fritz's Chapter 20 provides excellent coverage of paleoethnobotany with case studies and examples from both the Old and New Worlds, and Lyman's Chapter 21 contains a superb discussion of zooarchaeology. In Chapter 22 there is minimal consideration of human paleopathology (this could have been easily supplemented by materials from the *Paleopathology Newsletter*) and there is no consideration of Rebecca Storey's research at Teotihuacán and Copán. Whitley and Lawrence Loendorf's Chapter 23 has a provocative yet compelling discussion of neuropsychological analyses of rock art.

These articles are followed by Part IV: Frameworks for Methods (6 chapters): Chapter 24: "Demography" by Richard R. Paine, University of Utah (pp. 977-1001 with references). Chapter 25: "Geoarchaeology" by Christopher L. Hill (pp. 1002-1033, 3 figures, 2 tables, references). Chapter 26: "Craft Production" by Cathy Lynne Costin, California State University at Northridge (pp. 1034-1107 with references). Chapter 27: "Historical Archaeology" by Kenneth G. Kelly, University of South Carolina (pp. 1108-1137 with references). Chapter 28: "Trade and Exchange" by Marilyn A. Masson, University of Albany, SUNY (pp.1138-1178 with references). Chapter 29: "Regional Analysis in Archaeology" by John Kantner, Georgia State University (1179-1224, 12 figures, with references). In Paine's Chapter 24, there is only one paragraph on roofed-over space and there is no consideration of research beyond Narroll and Casselberry. Costin's Chapter 26 contains her latest refinement and expansion of elements of her earlier publications on craft production (1991, 1996, 2001); there is an excellent bibliography but a few citation errors.

Next is Part V: Managing Archaeology (5 chapters): Chapter 30: "Managing Archaeological Resources" by Francis P. McManamon, National Park Service (pp. 1227-1269, 3 figures, with references). Chapter 31: "Curation of Data" by W. Fredrick Limp, University of Arkansas (pp. 1270-1305, 1 figure, 5 tables, with references). Chapter 32: "Funding Archaeological Research" by Michael Love, University of California at Northridge (pp. 1306-1338 with references). Chapter 33: "Colleagues, Talking, Writing, Publishing" by Christopher Chippendale, Cambridge University Museum of Archaeology and Anthropology (pp. 1339-1371). Chapter 34: "Working with and Working for Indigenous Communities" by Joe Watkins, University of New Mexico, and T. J. Ferguson, private research company and University of Arizona (pp. 1372-1454 with references). The second volume concludes with a comprehensive "Index" (pp. 1407-1454), with coverage from "Aboriginal Torres Strait Islander Heritage Protections Act" to "Ezra Zubrow"; and ends with biographical information about the authors - "About the Contributors" (pp. 1455-1469). Limp's unique Chapter 31 provides a coherent discussion of data curation and splendid dialogue about metadata, Dublin Core, XML, OAIS, etc. Unfortunately, Love's Chapter 32 on funding archaeological research is current only to 2001 and, therefore, has dated information and a few incorrect URLs. Papers from an important 1995 Wenner-Gren conference might have been cited (*Funding and Funding Needs in Anthropology: Current Patterns, Future Prospects*, February 22-25, 1995, Tarrytown House, Tarrytown, New York); the NEH's "Onebook" hasn't been around for more than five years and is currently useless. In Chapter 34, the elaboration of 20 good habits for the researcher and 10 suggestions for indigenous communities and research subjects are based on

the authors' own experiences and are valuable for all anthropologists and communities and persons being studied.

The Handbook of Archaeological Methods is a useful reference on contemporary archaeological methods. The coverage and examples emphasize research and methods from an American perspective; even Chippendale's (Ch. 33) discussion of publication emphasizes U.S. examples, although there are some from Australia. However, a chain is as strong as its weakest link – and there are some weak links in the coverage. Especially troublesome is the unevenness of topical coverage, completeness and comprehensive scope. Some authors begin by defining the holistic nature of their topic and then delineate what they intend to cover and exclude in their chapters (such as Costin, who states that in her essay she will "limit my discussion to …" (p. 1036). Others provide a mini-history of the subdiscipline or topic and cite methods and techniques, analytical approaches, and relevance to archaeology and/or ethnographic studies. Some authors, alas, employ examples only from their own areas of research (for example, the Great Plains, United States and Western Europe, New World) rather than provide a more comprehensive overview of the particular topic and relevant, more global examples. The positive aspects of some chapters include compelling mini-case studies, the citation of professional societies or organizations and journals in the field or specific discipline (see Lyman, Chapter 21) and the inclusion of Internet URLs (McManamon, Chapter 30). Notably absent in this magnum opus are contributions on archaeometallurgy, archaeometry, mollusk analysis, obsidian and obsidian hydration dating, dendrochronology, and elaborations of physicochemical analyses.

Chapter 18: "Pottery" by Carl Knappett provides the reader with a good but not comprehensive overview of the topic. His goal is to "document some of the key methodologies in archaeological pottery analysis" (emphasis by the reviewer) and "offer explanations as to how and why different methodologies are chosen" (p. 673). He talks about three levels of choice: selection of certain analytical parameters (pointing out that exhaustive studies are rare), the selection of the most appropriate methods of analysis, and considerations of the questions being asked about the pottery. Knappett differentiates process, form, and substance and moves to a discussion of the life history of an artifact, the research design, chronology, and the focus of analysis (production, distribution, and consumption). There is a major section on Production as a Process (clay selection and paste preparation, shaping processes, surface treatments, and firing, a subsequent section on Distribution as a Process (export/import and case studies); and Consumption as a Process (case studies). Lastly, there is a section entitled Integration and a Conclusion. His ceramic examples focus heavily on the Eastern Mediterranean and Bronze Age; one example is from France. As a result, his discussions focus on wheel-made and kiln-fired products. There are no examples from East Asia or the New World and the ceramic petrographic thin sections are poorly printed and lack clarity. Physicochemical methods are, unfortunately, slighted and, as a result, the presentation is not comprehensive; Rice's 1987 volume, *Pottery Analysis: A Sourcebook*, helps fill-in these gaps.

The contributors employ in-notes and, generally, the *American Antiquity* citation format. However, there are variations in the uses of capitalizations in monograph citations in the references (all caps vs. only first word and proper noun caps). There is a wide range in the numbers of references (9 in Love's Chapter 32 to Costin's 323 in Chapter 26). The references to the literature are almost all in English to the exclusion of major publications in Spanish, French, and German. Accents, diacritics and other linguistic symbols are generally not used. Likewise, there are missing page numbers in citations of chapters in edited works. Some chapters would benefit by the inclusion of additional (or at least some) illustrations.

Editor Chris Chippendale exhorts archaeologists to "check the references" (p. 1364) in their writings – good advice for the editors and authors of this work; some of the errors are very embarrassing, for example: Carol Cramer (1979) instead of Kramer (in the narrative, references, and in the index p. 8, 1416); Fteah = Fateh (p. 35); Pachamachac and Pachamacac = Pachacamac (p. 46, 71); Radiocarben (p. 70); Dungun Dani = Dugum Dani (p. 228); orkney = Orkney (p. 414, 419); planter temper = plant temper (p. 679); Joffere Coe = Joffre Coe (p. 760); pp. 6788 = 67-88 (p. 767); William A. Havilland = William A. Haviland (p. 978, 995); Sante Fe = Santa Fe (p. 1103, 1104) Harrappa = Harappa (p. 1163); and Anne Burg = Anne Berg (p. 1337). There are also inconsistencies in basic usage, for example, Ph.D. and PhD even in the same chapter (p. 76, 78, 86). Apparently the creators of the very useful index did not realize that Arnold, D. and Arnold, Dean (p. 1410) are the same person or that Orton, C. and Orton, Clive (p. 1438) are one in the same. As a reference work designed for intensive use, I was especially disturbed that the boards of the second volume were not well attached and have separated from the cover.

Handbook of Archaeological Sciences edited by Don R. Brothwell and A. Mark Pollard; (Chichester and New York: John Wiley and Sons, 2001; xx + 762 pp., figures, list of contributors, general index, site index, and species names and taxonomic groups index, illustrations; ISBN 0-471-98484-1, hardcover) is unfortunately no longer in print. [Reviewed in *Old Potter's Almanack: Joint Newsletter of the Prehistoric Ceramics Research Group and The Ceramic Petrology Group (British Museum, London)* 10(3):6-7 (November 2002)]. This single volume has 59 chapters and 9 overviews organized into nine sections. The papers reflect the range of scientific studies currently being undertaken in archaeology. Five sections compare well with the Maschner and Chippindale volume: Section 1: "Dating," is comprised of eight chapters in the Brothwell and Pollard volume and provides nearly 100 pages on chronometric topics: Overview: "Dating in Archaeology: Past, Present and Future" by R. E. M. Hedges (pp. 3-8). Chapter 1: "Quaternary Geochronological Frameworks" by J. J. Lowe (pp. 9-21). Chapter 2: "R. E. Taylor (pp. 23-34). Chapter 3: "Dendrochronology and Other Applications of Tree-ring Studies in Archaeology" by P. I. Kuniholm (pp. 35-46). Chapter 4: "Trapped Charge Dating" by R. Grün (pp. 47-62). Chapter 5: "Uranium-series Dating" by A. H. G. Latham (pp. 63-72). Chapter 6: Magnetic Properties and Archaeomagnetism" by R. S. Sternberg (pp. 73-79). Chapter 7: "Obsidian Hydration Dating" by W. R. Ambrose (pp. 81-92).

Chapter 8: "*In situ* Cosmogenic Isotopes: Principles and Potential for Archaeology" by F. M. Stuart (pp. 93-100). These chapters are preferable to those in *Handbook of Archaeological Methods*.

Section 2: "Quaternary Paleoenvironments" has an overview and 8 chapters; Section 3: Human Paleobiology" contains an overview and 8 chapters; Section 4: "Biomolecular Archaeology" has an overview plus 5 chapters; Section 5: "Biological Resource Exploitation" contains an overview and 7 chapters; and Section 8: "Burial, Decay, and Archaeological Conservation" has an overview plus 6 chapters. There are no parallels to the chapters in Maschner and Chippindale. Section 6: "Inorganic Resource Exploitation" contains six chapters on materials studies: Overview: "Materials Studies in Archaeology" by M. S. Tite (pp. 443-448). Chapter 36: "Ceramic Petrology: Clay Geochemistry and Ceramic Production – From Technology to the Mind of the Potter" by I. K. Whitbread (pp. 449-459). Chapter 37: "Lithic Exploitation and Use" by M. Edwards (pp. 461-470). Chapter 38: "Glass and Glazes" by J. Henderson (pp. 483-492). Chapter 39: "Science, Speculation, and the Origins of Extractive Metallurgy" (pp. 483-492). Chapter 40: "Pyrotechnology" by J. G. McDonnell (pp. 493-505). Chapter 41: "The Provenance Hypothesis" by L. Wilson and A. M. Pollard (pp. 505-517). These essays are preferable although they are six years out-of-date. Section 7: "Archaeological Prospection" has five chapters: Overview: "The Role and Practice of Archaeological Prospection" by A. David (pp. 521-527). Chapter 42: "Surface Collection Techniques in Field Archaeology: Theory and Practice" by T. J. Wilkinson (pp. 529-541). Chapter 43: "Geophysical Prospection in Archaeology" by Y, Nishamura (pp. 543-553). Chapter 44: "Remote Sensing" by D. N. M. Donoghue (pp. 555-563). Chapter 45: "Geochemical Prospecting" by C. Heron (pp. 565-573). Chapter 46: "Archaeological Data Integration" by M. Van Leusen (pp. 575-583). Maschner and Chippindale's volume covers much of the same material but the two edited works supplement one another. Section 9: "Statistical and Computational Methods" is comprised of an overview and seven chapters: Overview: "Numbers, Models, Maps: Computers and Archaeology" by R. D. Drennan (pp. 663-370). Chapter 53: "Spatial Information and Archaeology" by M. Gillings (pp. 671-683). Chapter 54: "Multivariate Analysis in Archaeology" by M. J. Baxter (pp. 685-694). Chapter 55: "Applications of the Bayesian Statistical Paradigm" by C. E. Buck (pp. 695-702). Chapter 56: "Animal Bone Quantification" by T. P. O'Connor (pp. 703-710). Chapter 57: "Quantification of Broken Objects" by M. J. Shott (pp. 711-721). Chapter 58: "Numerical Modeling n archaeology" by M. W. Lake (pp. 723-732). Chapter 59: "Synthesizing Analytical Data – Spatial Results from Pottery Provenance" by H. Neff (pp. 733-347). Aldenderfer's excellent well-written chapter in Maschner and Chippindale covers some of this but also has additional new material.

Larry J. Zimmerman and William Green are the series editors of the seven-volume *Archaeologist's Toolkit*, Walnut Creek, Lanham, New York, and Oxford: AltaMira Press, a Division of Rowman & Littlefield Publishers, Inc., 2003; 1,200 pp., ISBN 0-7591-0017-9, $124.95 (hardbound). Zimmerman is head of the archaeology department at the Minnesota Historical Society, Green is director of the Logan Museum of Anthropology at Beloit College. *The Archaeologist's Toolkit* is an integrated set of seven volumes designed to teach novice archaeologists and students (emphasis by the reviewer) the basics of doing archaeology. The orientation is to archaeology as practiced in the United States and the reader is led through the process of designing a study, doing survey work, excavating, properly working with artifacts and biological remains, curating their materials, and presenting findings to various audiences. The volumes are written by experienced field archaeologists and contain practical advice, case studies, and illustrations to assist the reader. Briefly, the volumes are: *Volume 1: Archaeology by Design* by Stephen L. Black and Kevin Jolly (both at University of Texas), ix + 157 pp., 8 chapters, 4 appendices, 38 references, index 5 pp. *Volume 2: Archaeological Survey* by James L. Collins (Office of the State Archaeologist, University of Iowa) and Brian Leigh Molyneaux (University of South Dakota), xii + 148 pp., 27 illustrations, 9 chapters, 60 references, index 6 pp. *Volume 3: Excavations* by David L. Carmichael (University of Texas, El Paso) and Robert Lafferty (Mid-Continental Research Associates), xii + 126 pp., 10 illustrations, 6 chapters, 2 appendices, 104 references, index 6 pp. *Volume 4: Artifacts* by Charles R. Ewen (East Carolina University), xii + 149 pp., 14 illustrations, 13 chapters, 109 references, index 6 pp. *Volume 5: Archaeobiology* by Kristin D. Sobolik (University of Maine), ix + 139 pp., 33 illustrations, 5 chapters, 117 references, index 5 pp. *Volume 6: Curating Archaeological Collections: From the Field to the Repository* by Lynne P. Sullivan (McClung Museum, University of Tennessee) and S. Terry Childs (National Park Service), xii + 150 pp., 3 illustrations – tables, 8 chapters, 1 appendix, 143 references, index 6 pp. *Volume 7: Presenting the Past* by Larry J. Zimmerman (Minnesota Historical Society), xi + 162 pp., 12 chapters, 1 appendix, 66 references, index 7 pp. Frank McManamon's "Managing Archaeological Resources" and Fred Limp's "Curation of Data" in Maschner and Chippendale's compendium are superb contributions, but *Volume 6: Curating Archaeological Collections: From the Field to the Repository* by Lynne Sullivan and S. Terry Childs is highly recommended. Molyneaux's one-volume presentation of survey techniques is, of course, more detailed than his chapter in Maschner and Chippendale.

Ceramics in America 2005, edited by Robert Hunter; Hanover, NH: Published by the Chipstone Foundation (Milwaukee, WI) and distributed by the University Press of New England, 2005, xiii + 320 pp., ISBN 0-9724353-5-2, ISSN 1533-7154, $60.00, (paper). Robert Hunter is a specialist in American and English ceramics with twenty years of professional experience in historical archaeology excavating Colonial British sites in Virginia and North Carolina. The 2005 issue of *Ceramics in America* features a diverse lineup of articles and new discoveries. Of particular interest are articles covering early American stoneware from Baltimore and Richmond, Virginia, and there is an article of interest to social historians and collectors that concerns ceramics related to the publication of Uncle Tom's Cabin. There are 8 articles and 11 research reports in the current issue. The articles are: "A Pot

of Butter for the Victims" by George H. Lukacs (pp. 1-7); "Maine's Early-Nineteenth-Century Barrell-Wood Family Jugs and the Remarkable Woman Who Made Them Great" by S. Robert Teitelman (pp. 8-19); "John Bacon: Prince of Stoneware Potters?" by Ivor Noël Hume (pp. 20-36); "The Destruction of the Benjamin DuVal Stoneware Manufactory, Richmond, Virginia" by Robert Hunter and Marshall Goodman (pp. 37-60); "Rockett's Red Glare: J. P. Schermerhorn and the Early Richmond Stoneware Industry" by Kurt Russ and Sterling Schermerhorn (pp. 61-92); "Distinguishing Marks and Flowering Designs: Baltimore's Utilitarian Stoneware Industry" by John E. Kille (pp. 93-132); "Rediscovering the New Brunswick Stoneware Pottery, ca. 1862-1901" by Richard Veit and Judson M. Kratzer (pp.133-140); "The Mansion Pottery" by Barbara J. Gundy and Deborah Casselberry (pp. 141-159); and "J. Palin Thorely, Potter and designer: Part I" by John Austin (pp. 160-201).

There are 11 reports in "New Discoveries" (pp. 203-251) beginning with an "Introduction" by Mary Abbitt Outlaw (pp. 203-204): "The Great Wall of Terra Cotta: A Surprising Ceramic Discovery in South Amboy, New Jersey" by Mark Nonestied and Richard Veit (pp. 205-208); "Playful Potting: A Miniature Tin-Glazed Earthenware Chair" by Sarah Neale Fayen (pp. 209-212); "Trifles from a Boston Collection" by Donna Corbin (pp. 213-216); "This Little Piggy Went to Virginia" by Beverly A. Straube (pp. 217-219); "What is 'What' in St. Mary's City?" by Silas Hurry (pp. 220-223); "Sugar Refining Pottery from Alexandria and Baltimore" by Barbara H. Magid (pp. 223-229); "Otto Karle: A Previously Unknown Shenandoah Valley Potter" by Scott Hamilton Suter (pp. 229-232); "The Stoneware Kiln of Charles F. Decker in Washington County, Virginia" by William Hoffman (pp. 232-234); "Bell Family Presentation Jar" by John E. Kille; "Hare Pottery Research" by Charles Fithian, Claudia Leister, James Stewart, and Chris Espenshade (pp. 239-241); "The Diorama Transport Views" by Roger Pomfret (pp. 242-247); "1930s Wares from a New Orleans Importer" by Amy C. Earls and George L. Miller (pp. 247-252); and "Crock Series 2003" by Lindsay Allington (pp. 252-255). The latter report is *not* listed in the volume's Table of Contents, while the listing "The John Dortch Site: Anglo Excellence on the Spanish Louisiana Frontier" appears in the contents list but is not printed in the book. The arrangement of these reports also differs dramatically from the posting on the press's Internet site. The 2005 annual also has 11 book reviews (pp. 256-291), a "Checklist of Recent Articles, Books, and Electronic Resources: Ceramics in America" by Amy C. Earls (pp. 293-305), and the Index (pp. 306-320) complete the volume. The quality of the articles and reports remains excellent and the color illustrations are superb. This is another splendid addition to a new, ongoing annual that is a significant resource for historical archaeology.

For Hearth and Altar: African Ceramics from the Keith Achepohl Collection, Kathleen Bickford Berzock; New Haven: Yale University Press and The Art Institute of Chicago, 2005, 203 pp., 8 maps, 164 color and 12 black-and-white illustrations. ISBN 0-300-11149-5, $45.00 (hardcover); 0-86559-221-7, no price listed (paper). The author, curator of African Art at The Art Institute of Chicago, has prepared a lavishly illustrated catalog and 15 essays that document and elaborate the descriptions and contexts of ceramic vessels that are displayed during the exhibition, "For Hearth and Altar: African Ceramics from the Keith Achepohl Collection," held at The Art Institute of Chicago (3 December 2005 – 26 February 2006). Achepohl has assembled a collection that ranges in date from the 3rd to the mid-20th century from North and Sub-Saharan Africa. The catalog of this exhibition has a forward and acknowledgments plus two introductory contextualizing essays, "A Conversation with Keith Achephol" (between Berzock and Achepohl, pp. 11-15) and "Ceramics in Africa" (pp. 17-30) in which Berzock discusses the various techniques of ceramic manufacture (formation and firing) practiced in (in the main) Sub-Saharan Africa. The conversation focuses on Achepol's acquisitions, begun in 1977, and his philosophy of collecting, while the later concerns the "primacy of pottery in human society," the functions of pottery, pottery as art, and the secular and sacred uses of ceramics. There are seven major geographically-oriented chapters (each with a small map) and six two-page "Interleaf" topical photo-essays that are mostly images and captions. Beginning with a small group of archeological pieces that demonstrate the historical roots of ceramic traditions in Africa, the book offers a larger selection that highlights the continuing connection between pottery and village life, secular and sacred, in Africa.

"Ancient Civilizations of the Niger Bend" (pp. 32-43, 13 figures) focuses on Mali from the 8th through 14th centuries CE, ancient Bura and ceramics as ritual objects. "Interleaf: Pottery and the Home" (pp. 44-45, 5 figures) emphasizes contemporary domestic ceramics, including home-brewed beer vessels. "Berber North Africa" (pp. 46-51, 5 figures) covers the region from Mauritania to Egypt, although the ceramics depicted are mostly from Morocco and Algeria and date from the early to mid-20th century. "Interleaf: Granaries and Grain Containers" (pp. 52-53, 4 figures) focuses on Nigerian maize, millet, sorghum, and Guinea corn storage. "West Africa: Sahel and Savanna" (pp. 54-89, 33 figures) is a substantive set of materials on early to mid-20th century storage vessels from Niger, Senegal, Ghana, Mali, Ivory Coast, and the Gambia. Among the cultures represented are Hausa, Somono, Senufo, Turka, Lobi, Gur peoples, Karumba, Kasena, Mossi, Nuna, and contemporary Bura. The relationships between the human body and vessel parts and decoration, such an incision/scarification, are illustrated in "Interleaf: Pottery and the Body" (pp. 90-91, 5 figures). "West Africa: Forest and Coast" (pp. 92-125, 32 figures) considers jars and other vessels from Benin, Asante, Dahomey, Ghana, Liberia, and Nigeria, with emphasis on Baule, We, Sapa, Ewa, Fon, Baatonu, Yoruba, Nupe, and Gwari cultures. Pottery fabrication, burnishing techniques, and firing are illustrated in "Interleaf: The Potter's Art" (pp. 126-127, 4 figures). "Eastern Nigeria and Cameroon" (pp. 128-153, 22 figures) emphasizes the Calabar region and the Mwona, Mafa, Mambila, Nsei, and Babesu peoples. "Interleaf: Engaging the World Beyond" (pp. 154-155, 5 figures) provides a glimpse at herbal medicines and ritual and spiritual uses of vessels. "Central

Africa" (pp. 156-171, 15 figures) focuses on the Congo Basin and the Buma, Teke, Songye, Yacoma, Zande, Zela, and Nyoro. Beer-brewing and wine-making vessels and emphasized in "Interleaf: Beer and Palm-Wine" (pp. 172-173, 5 figures). "Eastern and Southern Africa" (pp. 174-191, 16 figures) geographically includes the Great Lakes region south to South Africa. Examples from Kenya, Uganda, and Mozambique are features and include vessels made by the Makonde, Shona, Gwembe, Logi, and Zulu. There are also a number of culturally unidentified specimens.

These essays are accompanied by eight pages of endnotes and a basic 204-item "Bibliography" (pp. 200-203). The author emphasizes that the manufacturing techniques are "centuries old" and have been passed through generations. African potters craft their wares by hand from terra cotta clay, firing them in the open to create durable vessels that embody an immediacy of form and a deceptive simplicity that reflect their makers' keen understanding of materials, processes, and embellishment. Achepohl has assembled a collection that ranges in date from the 3rd to the mid-20th century, spans the African continent, and displays what the author states is a "the full range and artistry of African ceramics." Archaeologists and ceramic ethnoarchaeologists will find the discussions compelling and the illustrations superb. The specimens depicted include large, dramatic storage and water containers; mid-sized vessels designed to hold personal belongings, serve food, and brew beer and palm wine; and small bottles and embellished containers made as luxury items and for religious and ritual use. The discussions of vessel uses and distinctions of sacred and secular are valuable and art historical rather than anthropological. The narratives and visuals augment the anthropological works by Nigel Barley, *Smashing Pots: Works of Clay from Africa* (Smithsonian Institution Press, Washington, DC, 1994); W. Fagg and J. and Picton's, *The Potter's Art in Africa* (British Museum, London, 1978); B. E. Frank, *Mande Potters and Leatherworkers: Art and Heritage in West Africa* (Smithsonian Institution Press, Washington, DC, 1998); C. M. Kusimba and S. B. Kusimba, eds., *East African Archaeology: Foragers, Potters, Smiths, and Traders* (University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, 2004); A. LaViolette, *Ethno-Archaeology in Jenné, Mali: Craft and Status among Smiths, Potters and Masons* (*Cambridge Monographs in African Archaeology 49*, British Archaeological Reports International Series S838, Archaeopress, Oxford, UK, 2004); and J. Picton, ed., *Earthenware in Asia and Africa* (Colloquies on Art and Archaeology in Asia 12, University of London, London, 1984). The majority of these are not cited in the references. The author seems unaware of Olivier Gosselian's seminal works beginning even earlier than his 1995 dissertation *Identités techniques: Le travail de la poterie au Cameroun méridional description des chaînes opératoires*, 2 vols., Thèse de Doctorat en Phiosophie et Lettres, Université Libre de Bruxelles, Bruxelles, Belgium. The Gosselain and Livingston Smith chapter "The Ceramics and Society Project: An ethnographic and experimental approach to technological choices," in A. Lindhal and O. Stileborg (eds.), *The Aim of Laboratory Analyses of Ceramics in Archaeology*, Konferenser 34, Kungl. Vitterhets Historie och Antikvitets Akademien, Stockholm, pp. 147-160 (1995), is also a valuable assessment of an ongoing project.

A Corpus of Anglo-Saxon and Medieval Pottery from Lincoln by Jane Young and Alan Vince, with Victoria Naylor; Lincoln Archaeology Studies 7, Oxford and Oakville, CT: Oxbow Books, 2006; 300 pp., black-and-white illustrations, Top of FormISBN 184217083X, £35.00 (hardback). Lincoln was the centre for a large Medieval pottery industry which was in operation from the 9th to the 15th century. Pottery manufactured in Lincoln was traded over a large part of the East Midlands and as far as Birka in Sweden. Despite the presence of this local industry, pottery produced in the surrounding areas (including Torksey, Stamford, Potterhanworth, Toynton, and Bolingbroke) accounted for a significant share of the pottery used within the City of Lincoln. The authors report their analyses of the Anglo-Saxon and Medieval pottery found during archaeological excavations in the city that were undertaken from 1970 until 1987. They present a city-wide pottery classification system and analyze the sequence of pottery types diachronically and at numerous sites, making extensive use of petrological analysis, including the study of over 600 thin-sections. The results have been used to characterize the local clay and temper sources exploited by Lincoln potters and to identify wares made in the vicinity of the city; those made elsewhere in the county of Lincolnshire, and discern regional and foreign imports. The report is arranged by pottery types, illustrated by typical and unusual examples and accompanied by descriptions of their visual physical appearance, petrological characteristics, source, forms, decoration and chronological evidence.

Pottery Analysis: *A Sourcebook*, by Prudence M. Rice (Chicago: University of Chicago Press, 1987; 584 pp., 45 halftones, 100 line drawings), ISBN 0-226-71118-8, $85.00 (cloth) has been reprinted in a paperback edition in December of 2005, ISBN 0-226-71116-1, $35.00 (paper). It is unclear if corrections have been made to the original text, but it appears that this is a direct reprint of the 1987 hardbound edition which sold for $35.00. A lengthy review of the 1987 volume appears in: Charles C. Kolb, "The Current Status of Ceramic Studies," *Ceramic Ecology, 1988: Current Research on Ceramic Materials*, edited by Charles C. Kolb; Oxford, England: British Archaeological Reports, BAR International Series S-513, pp. 377-420.

Previous Meetings

Figurines of Ancient Mesoamerica: Power and Guidance was the title of the first annual Braunstein Symposium on Pre-Columbian Studies held 14-15 January 2006 at the Marjorie Barrick Museum, University of Nevada at Las Vegas. Ten papers were given on the subject of Mesoamerican ceramic and paper figurines; the authors' names, paper titles, and abstracts follow. Peter Furst presented, "What Figurines Can Tell Us." Abstract: I will illustrate and discuss a half dozen or so figurines, including Colima, Olmec, Maya, etc that I have

found over the years to convey far more than just aesthetics and style but actually tell us something of the religion, shamanism, and ritual of their creators, if one knows what to look for and its relationship to historical and ethnographic reality. The second paper by Rosemary A. Joyce (University of California, Berkeley) was "Figurines, Meaning, and Meaning-making in Early Mesoamerica." Abstract: Small, hand-modeled fired clay figurines are the earliest widespread medium of human representation recognized in Mesoamerica. An early, and possibly geographically restricted, period of production of highly schematic figures is followed by production of effigies with a much higher degree of iconic specificity. The basic formats, features, themes, and even technologies of production are fairly consistent across the region. Lesure (2002) proposed that a fully satisfactory understanding of such early figurines would require a combination of four approaches he discerned in play in archaeology, emphasizing what he described as four kinds of meaning (iconography, social analysis, symbolic studies, and uses). Each of these perspectives bears on ways to answer the question, "what do figurines mean?" But Lesure (2002) also raised the interesting possibility that an analyst might chose instead to ask the question, not of meaning, but of meaning-making: how do figurines mean? In my own analyses of early Mesoamerican figurines, I have chosen to pursue this perspective as a necessary first step in approaching meaning across what is clearly a vast gulf of change and cultural difference. In the present paper I re-examine my own analyses of figurines from Formative Honduras, making explicit how we might look at meaning-making in analyses of early figurines.

Richard Lesure (University of California, Los Angeles) presented a paper entitled "Traditional Typologies and the Social Interpretation of Style among Formative Figurines from Central Tlaxcala, Mexico. " Abstract: Predominant styles of Formative figurines from central Tlaxcala, Mexico, fit comfortably into the Hay-Vaillant typology elaborated for the Basin of Mexico in the 1920s and 30s. The continued utility of this classificatory scheme is a common story across central Mexico, but there has been little attempt to explore the deeper importance of that analytical success story. I argue that the Hay-Vaillant typology can provide important insights for the social interpretation of figurine style. I propose a further set of analytical constructs for identifying variability within stylistic sequences and apply this scheme to a recently excavated assemblage of figurines from Tlaxcala. The fourth presentation was by Jeffrey P. Blomster (George Washington University) "Identity, Gender and Power: Representational Juxtapositions in Early Formative Figurines from Oaxaca, Mexico." Abstract: The corpus of Early Formative figurines from the site of Etlatongo, in the Mixteca Alta of Oaxaca, Mexico, contains primarily images that correspond with prevailing conceptions of the human body and identity throughout contemporaneous Oaxaca. Due to the frequent lack of primary sexual characteristics, the figurines challenge our assumptions of direct link between biological sex and gender, or at least our abilities to make this connection based on extant material culture. The range of variation and representation in what appear to be local depictions of social identity will be explored. A small group of figurines – in both solid and hollow formats – exhibit radically different physiognomies. In addition, a small sub-group of figurines exhibit iconography, usually on the back of the head. The relation of these representations to the larger figurine corpus, and possible meanings and identities embedded in juxtaposition of styles, relate to larger patterns of emerging social complexity and power relations in this region.

Douglas Bradley (Snite Museum of Art, University of Notre Dame) gave "Painted Souls of Ancient Mesoamerica." Abstract: reflective light photography of hundreds of Olmec and other Mesoamerican earthenware and stone figurines made from 1500 B.C.-A.D. 250 has revealed a structurally identical set of painted designs that has faded to invisibility but is present on all. It instantly becomes the most common feature of Mesoamerican art, demonstrates over 1750 years of previously unimaginable cultural continuity, and independently illustrates Mesoamerican anthropological research literature published within the last 25 years on the natural history of the human soul and body. The design set evolves somewhat in the Early Classic period, but remains consistent in structure and placement until the conquest. No design set elements have been found on fake figurines because forgers have not known about their existence. The subsequent paper by Jeanne Lopiparo (University of California, Berkeley) was "Figurines in Social Context: Materializing Identity in the Ulúa Valley, Honduras." Abstract: Excavations at Classic period household sites in the Ulúa Valley, Honduras, in the southern Maya Lowlands have produced one of the largest scientifically excavated assemblages of figural ceramic artifacts and molds from domestic production sites in Mesoamerica. Documentation of the contextual associations of these artifacts across space and through time has allowed the detailed reconstruction of their production and use, as well as their integral role in the social reproduction of houses and their inhabitants. Craft producers created figurines with both unique and shared representations that were incorporated in the household and community-wide interactions through which social relations and identities were reproduced and negotiated.

Rhonda Taube and Karl Taube (University of California, Davis and University of California, Riverside) coauthored "The Beautiful, the Bad, and the Ugly: Aesthetics and Morality in Maya Figurines." Abstract: Unlike Classic period Maya public monuments, the contemporaneous figurines were intimate objects meant to be personally viewed and handled. For this reason the themes and messages conveyed are frequently distinct from those appearing in monumental art. Along with figurines depicting comely women and the beautiful Maize God, there are others which portray aged, hideous, and bestial beings. At times in a single figurine, young women dance with and are fondled by these grotesque creatures. Rather than depicting obscure mythological events, these figurines are most likely lampooning inappropriate and amoral behavior. In this regard, Maya figurines not only underscore correct social comportment, but also highlight, through contrast, aspects of idealized beauty and proper human conduct. This study will address these major themes in the Maya figurine tradition, and also the possible

ways in which figurines were used in ceremonial contexts, including mementos of public performances and material reminders of social lessons. David Cheetham (Brigham Young University) presented "The Early Horizon Mesoamerican Figurine: Style as Cultural Imperative...and More." Abstract: Olmec style figurines are a hallmark of Early Horizon (1150-1000 BC) Mesoamerica, in some regions constituting the majority of specimens, in others only a small minority alongside local styles. What does this particular manner of human portrayal signify? How did it spread? Rather than rehash a myriad of possible ancient meanings, I seek to determine what was meaningful to the makers of these objects by exploring stylistic similarities and differences between entire collections from separate regions. My focus is a large collection of figurines recently excavated at Cantón Corralito, a potential Olmec colony located on the Pacific coast of Chiapas, and figurines from the "Olmec heartland" capital of San Lorenzo, and technical style—indicate production by a single culture and a shared set of meanings and practices integral to its identity. Noting shared thematic elements, I consider what these meanings and practices may have been. The results are contrasted with other regions of Mesoamerica, where overt colonization is not evident and Olmec style figurines occur with local styles.

Co-authors Alan R. Sandstrom and Pamela Effrein Sandstrom (Indiana University-Purdue University Fort Wayne, Fort Wayne, Indiana) furnished "Sacred Paper Figures of the Contemporary Nahua of Northern Veracruz, Mexico: The Art and Iconography of Native American Ritual Paper Cutting." Abstract: Ritual specialists among the Nahua of northern Veracruz, Mexico cut paper images of spirits for use in ritual offerings. Sacred paper cutting is a pre-Hispanic practice that survives in only a few remote corners of Mesoamerica. Examination of the iconography of the images reveals the pantheistic character of Nahua religion. In pantheism, the universe itself is the deity and all apparent diversity trances to a single seamless universal and sacred principle. The paper images are temporary manifestations of aspects of the deity cut to achieve a specific purpose. At the end of the ritual, the images are usually destroyed, returning the portrayed spirits to the single unity from which they sprang. Contemporary paper images offer insight into the common Mesoamerican practice of producing three-dimensional figurines out of stone or clay. Lastly, Kristi Martens presented "Imagery of Ritual Feasting: Socio-Political Implications of West Mexican Figurines." Abstract: West Mexican ceramic models and figurines contain a wealth of information on early societies in Colima, Jalisco and Nayarit. The figurines suggest the critical role that ritual feasting played in the development of social and political complexities in West Mexico from 200 BC to AD 300. Detailed ceramic models depict groups of people gathered around food and containers oftentimes in conjunction with prone figures who represent the honored dead.

Stylistic Development of Kraak Ware as Evidenced in Three Dated Shipwreck Cargoes: San Diego 1600, Witte Leeuw 1613, and Hatcher Junk c. 1643-46 was the title of a lecture presented by ceramics specialist Rita C. Tan for the Oriental Ceramics Society of the Philippines on 31 January 2006. Abstract: During the past decades, various dated shipwrecks with kraak ware have been excavated, and comparison of their cargoes provides excellent material for the study of chronological development. The kraak ware recovered from the San Diego is important for shedding light on late 16th century styles. With a couple of exceptions, many of the early styles of kraak found in the San Diego are absent in the Witte Leeuw. Although there are no dramatic changes in classic kraak ware from the two cargoes, the Witte Leeuw dishes show that there is a slight tendency for the 17th C. kraak ware decoration to be more intricate. Finds from the Hatcher junk are hard evidence that kraak was produced to the end of the Ming period. There are some new designs such as tulip flowers and "floating flowers and insects." The painting in general appears stiff and even sloppy, indicating that the quality of kraak ware production in its twilight years had evidently deteriorated. This talk was originally prepared for a symposium on 17th century Jingdezhen blue and white ware held at the Shanghai Museum in November 2005.

For Hearth and Altar: Artistry and Action in African Ceramics was a symposium held on 4 February 2006 at the Art Institute of Chicago in conjunction with the exhibition For Hearth and Altar: African Ceramics from the Keith Achepohl Collection at the Art Institute of Chicago, six art historians presented their research on ceramic traditions in Africa. The revised final program included a welcome by Jeffrey Nigro, (Director of Adult Programs, the Art Institute of Chicago), and an introduction by Kathleen Bickford Berzock (Curator of African Art and Exhibition Curator, the Art Institute of Chicago). The Morning Session: "Exceptional Artistry in African Ceramics" was chaired was by Barbara E. Frank (Stony Brook University and National Museum of African Art) and included three presentations: "Fatumata Kouyaté, the Potters of Sissingue, Mali, and their 'Mothers'" by Frank; "Namisfueli Nyeki: A Potter Extraordinaire (Tanzania)" by Barbara Thompson (Hood Museum of Art, Dartmouth College), and "Improving Tradition Through Innovation: Martin Fombah and the Contemporary Potters of Nsei, Cameroon" by Silvia Forni (University of Turin). The Afternoon Session: "Ritual and Sacred Vessels of Meaning and Memory" was chaired by Marla C. Berns (UCLA Fowler Museum of Cultural History), and included three papers: "Spirits in Clay: Ceramics and Ritual Life in Northeastern Nigeria" by Berns; "Ewe Ceramics as the Visualization of Vodun (Ghana)" by Lisa Aronson (Skidmore College); and "Ritual and Meaning in Zulu Pottery (South Africa" by Gary Van Wyk (Axis Gallery, New York).

The California Mission Studies Association 23rd Annual Conference was held 17-18 February 2006. The *Proceedings* will be published shortly. Among the 22 papers presented was: "From Science to Humanism: Finding the Pots in the Sherds" by Russell K. Skowronek (Santa Clara University), Ruben Reyes (Santa Clara University Smithsonian Project), Ronald L. Bishop, (Smithsonian Institution), M. James Blackman (Smithsonian Institution), Sarah Ginn (University of California at Santa Cruz), and Kelly Greenwalt (Santa Clara University).

Additional information is available on the CMSA Internet site at http://www.ca-missions.org/.

Danish Institute at Athens: The Institute was the site of a Minoan Seminar lecture on 27 February 2006 by Marika Zeimbekis entitled "The Clay Animal Figurines and Figures from the Juktas Sanctuary." Clay animal figures were prominent votives in the Cretan sanctuary of Juktas during the palatial period and the LM IIIC period while a smaller number of figures were dedicated at the site during the Iron Age. This particular aspect of the ritual at Juktas is the object of a forthcoming monograph which focuses on the systematic study of the 4,294 animal figures and fragments thereof, and the analysis of the archaeological data derived from the excavation of this material. Her findings relating to the following research aims of this work were: 1) The assessment of the dating, manufacturing techniques, decoration and stylistics of this diverse assemblage of figures; 2) the identification of the spatial distribution and find contexts of the animal figures during the site's successive periods of use; and 3) the attempt to resolve problems which, while specific to this material, have a wider bearing on matters relating to the development of Aegean animal figuration and the history of Aegean ritual.

Infrastructure: Making Pots in Trenton, 1750-1950 was the title of the third annual day-long symposium hosted by Potteries of Trenton Society (POTS) and the New Jersey Historical Society (NJHS) that focused on New Jersey's ceramic industry. The symposium was held on 8 April 2006 at the New Jersey Historical Society in Newark. It brought together historians, archaeologists and collectors to discuss the basics of making pottery as an industrial product from the early days of James Rhodes' stoneware and John McCully's redware potteries to John Maddock's hotelware and Walter Lenox's fine china dinnerware in the twentieth century. Potter Mark Shapiro demonstrated how the early potters produced vessels on the potter's wheel without benefit of the modern machinery in use today. Jean-Pierre Dion, professor at the Université du Québec à Montréal and author of several publications on Canadian potteries, presented "The Potter's Craft in a Changing Environment, 1800-1920," an overview of the potter's work in preparing and manipulating the clay using the wide variety of machines that were invented in the nineteenth and early twentieth centuries. In his talk, entitled "Movers and Shapers: Trenton's Pottery People, ca. 1750-1950," archaeologist Richard W. Hunter examined the broad range of people involved in making Trenton's pottery industry successful, from owners and investors to clay diggers and salesmen, and reviewed how the shops were organized to design and produce ware. Archaeologist William Liebeknecht described and compared some of the many kilns used in Trenton from the eighteenth century through the twentieth in his talk entitled "All Fired Up: Kilns for All Occasions." Archaeologist Rebecca White reported on kiln furniture in her talk "Cones & Rings & Props, Oh My!: Interpreting Trenton's Kiln Furniture." Historian Ellen Denker presented "In the Clay and Over the Glaze: Decorating Trenton's Pots, 1750-1950," an exploration of the many ways that Trenton's pots were decorated from the incised and impressed designs used by the early stoneware potters to the careful painting and decal decorating that characterize modern dinnerware. Other information is available on the Internet at www.potteriesoftrentonsociety.org.

Forthcoming Meetings

The Colors of Clay: Special Techniques in Athenian Vases is the title of a conference scheduled 15-17 June 2006 at The J Paul Getty Museum at The Getty Villa Malibu, California, USA. An associated loan exhibition, "The Colors of Clay," brings together approximately one hundred vases produced in Athens during the Archaic and Classical periods. The exhibition explores the use of the special decorative techniques, a subject never before examined as a whole. The symposium brings together an international group of scholars, curators, conservators, and scientists to explore and address issues raised by this exhibition including: Social Contexts for Athenian Vases in Special Techniques; Conservation, Analysis, Experimentation; Artists, Workshops, and Production; and Ancient Markets and Exchange. To receive additional information, when it becomes available, please send an email to villaprograms@getty.edu.

Study Group for Roman Pottery 2006 Conference: The Provincial-Roman Archaeology research unit of the Ghent University will host the 2006 Conference of the Study Group for Roman Pottery (SGRP) in Ghent, Belgium from 30 June through 2 July 2006. The major themes of the conference are: 1) regional productions in northern Belgium, northern France, southern Britain and the Netherlands; and 2) the cross-Channel trade and exchange of pottery. This conference offers an opportunity to meet international colleagues, to explore common and contrasting ground, as well as the chance to view a variety of pottery types from both sides of the Channel. The conference itself will be held in Het Pand, a former 13th century monastery situated in the heart of the historical city of Ghent. A virtual tour can be followed at http://www.ugent.be/en/visitstaff/services/tour . The organizing committee includes: A. Bosman, W. De Clercq, X. Deru, W. Dhaeze, and S. Willis; and can be reached via e-mail at: SGRP2006@UGent.be.

The 3rd International Prehistoric Ceramics Conference, Breaking the Mould: Challenging the Past through Pottery organized by the Prehistoric Ceramics Research Group (PCRG), and co-sponsored by The Prehistoric Research Society, was previously held in Bradford, but the conference is moving to Manchester and will be held 6-8 October 2006. Papers are being solicited and the organizers invite contributions on all aspects of pottery studies in Britain and beyond, but particularly encourage contributions that present/incorporate interdisciplinary approaches to pottery studies: "Due to the quantities recovered and the potential for diverse analyses, ceramic artefacts frequently provide the most convenient access to the social, ceremonial, economic and political life of past societies. In an attempt to further our understanding of prehistoric pottery and its place and meaning within past societies, we frequently draw on the help from ethnographic or ethnoarchaeological studies, experimental archaeology and

the sciences; in the process creating work that is truly interdisciplinary, straddling as it were the boundary between archaeology and other (related) disciplines/subject areas." Further information can be found at: http://www.pcrg.org.uk/. Offers of papers and registration forms to may be sent to Ina Berg (School of Arts, Histories and Cultures, University of Manchester, Humanities Bridgeford Building, Oxford Road, Manchester M13 9PL, UK); telephone: 0161/2757753, fax: 0161/2753331, e-mail: potteryconference@manchester.ac.uk. The guest speakers are: Valentine Roux (CNRS. Maison de l'Archéologie et de l'Ethnologie, Nanterre Cedex, France) and Olivier Gosselain (Sect. d'Histoire de l'Art et Archéologie, Université de Libre de Bruxelles, Belgium).

Material Culture in Motion: Archaeological Approaches to Object Biographies. The Student Affairs Interest Group (SAIG) of the Archaeological Institute of America has organized a colloquium intended to provide opportunities for student presentations at the annual meeting, and to direct attention toward questions and topics that students feel are relevant to their discipline. Under the title "Material Culture in Motion: Archaeological Approaches to Object Biographies," the organizers submitted elected papers as a colloquium session to the 2007 annual meeting of the AIA (4-7 January 2007) to be held in San Diego, California). The colloquium aims to reconsider the complexity of human dialogues with material culture and the consequences of these processes on the archaeological record. The application of postmodern approaches to art history and anthropology has begun to restructure the way that the social sciences and the humanities study human agency and its material expressions. Just as the interactions and motivations of individuals and institutions may be seen as complex and difficult to discuss in terms of absolutes, material culture from antiquity through the present day has been imbued with multivalent agencies that have become lost in simplified discussions of public versus private, elite versus lower class, and even culturally conditioned notions of how one might define such terms as "object" and "usage." Ancient artifacts may also be imbued with modern meanings and agencies through their treatments in museums and in scholarly works. By reexamining biographies of objects from the perspectives of their multiple uses and users, the participants hope to overcome limitations that often accompany discussions of the complex stories that artifacts may both accumulate and tell. The session organizers are Sarah Lima (limasw@email.uc.edu) and Catherine Lyon Crawford (clyon@umich.edu).

Terracotta Figurines in the Greek and Roman Eastern Mediterranean: Production and Diffusion, Iconography and Function is the title of an international conference on the terracotta figurines of the Eastern Mediterranean in Antiquity (7th c. B.C.-A.D. 4th c.). The conference is scheduled to take place 2-6 June 2007 at Dokuz Eylul University (DEU) in Izmir, Turkey. The organizers invite contributions by scholars and graduate students from a variety of disciplines related to this subject. Intended to bring together Turkish, European, Mediterranean, and North American scholars to discuss a range of issues concerning terracotta figurines, this conference should be an excellent opportunity to increase our knowledge of this material. It also aims to encourage dialogue among Turkish and European scholars in Classical Archaeology. The aim of this meeting is to report on the state of research concerning the terracotta figurines of Antiquity in a broad sense, between ca. 7th century B.C. and 4th century A.D. in the Greek and Roman Eastern Mediterranean. The geographical areas concerned are Turkey, Greece, Cyprus, Egypt, Syria, Israel, Lebanon, Jordan, the rest of the Near East and the Black Sea countries. The focus is, however, Asia Minor. Papers and oral presentations can be given in English, French, German, Italian, Greek or Turkish, but English will be the preferred language for oral presentations. Abstracts of up to 300 words are due together with the registration form before 1 July 2006 by e-mail (if possible) to: terracottas@deu.edu.tr or by fax to: +90.232.453 41 88. Issue number 24 (December 2006) of the journal *Instrumentum* is planned as a special issue containing the Conference abstracts. Abstracts of accepted papers will also be made available on the conference web site web.deu.edu.tr/terracottas/. The chief organizers are Ergun Lafli and Arthur Muller: Yard. Doc. Dr. Ergun Lafli, M.A.; Dokuz Eylul Universitesi Fen-Edebiyat Fakultesi; Arkeoloji Bolumu; Oda No: A 461/1; Tinaztepe/Kaynaklar Yerleskesi, Buca; TR-35160, Izmir, Turkey, fax: 90.232.453 41 88, e-mail elafli@yahoo.ca. Prof. Arthur Muller; Universite Charles-de-Gaulle - Lille 3; Halma-Ipel; UMR 8164 (CNRS, Lille 3, MCC) Histoire, Archeologie, Litterature des Mondes Anciens BP 60149; F-59653 Villeneuve d'Ascq Cedex, France; fax: 33.3.204 163 65, e-mail arthur.muller@univ-lille3.fr.

Internet Resources

FAMSI (*Foundation for Advancement of Mesoamerican Studies*) *Reports*: Several recent FAMSI reports concern ceramics. "Catalogue of Zapotec Effigy Vessels" by Adam T. Sellen appears on the FAMSI Internet site at http://www.famsi.org/research/zapotec/index.html. The Zapotec, whose ancient culture flourished for over a millennium in southwest Mesoamerica, have been the topic of a diversity of studies primarily because their unique history provides clues about the origins of civilization and how urban societies evolve. One aspect of their material culture has received special attention, the so-called Zapotec urn, a type of ceramic vessel with anthropomorphic or zoomorphic effigies attached. Because these artifacts are rich in iconographic information, their study has offered an unparalleled source of information on ancient Zapotec society. Sellen's catalogue is a versatile tool designed to present the most up-to-date information on the urns in a way that is inter-relational and easy to access. This on-line catalogue of artifacts is a dynamic entity, one that may be constantly updated and corrected as new information comes forth.

Dorie Reents-Budet's seminal publication, *Painting the Maya Universe: Royal Ceramics of the Classic Period (1994), traducido del inglés por Alex Lomónaco, Pintando el Universo Maya: Cerámicas Reales del Periodo Clásico*,

appears in Spanish at http://www.famsi.org/reports/93000es/index.html as well as English http://www.famsi.org/reports/93000/index.html. There are forewords by Michael P. Mezzatesta and Linda Schele. The contents include essays by *Dorie Reents-Budet, w*ith contributions by Joseph W. Ball, Ronald L. Bishop, Virginia M. Fields, and Barbara MacLeod; photographs by Justin Kerr. Of special interest is Chapter 5, "Painting Styles, Workshop Locations and Pottery Production" by Dorie Reents-Budet, Ronald L. Bishop and Barbara MacLeod; and Appendix 1, "Type-Variety Analysis and Masterworks of Classic Maya Polychrome Pottery" by Joseph W. Ball.

Sikyatki Polychrome: "Mysterious pots: 'Beautiful and incredibly well-made': Researcher seeks secret of primitive firing method" by Larry Copenhaver, © 2006 Tucson Citizen, Monday, February 20, 2006, www.tucsoncitizen.com. A University of Arizona doctoral student is using polarized-light microscopes and other 21st-century technology to determine which primitive method was used to create the unique yellow-ware pottery between 1350 and 1630. The pottery is recognized for its fine, pale ivory paste, said Caitlin O'Grady, 29, during an interview in her lab at the UA materials science and engineering department. "These ceramics are beautiful and incredibly well-made," she said while sorting sherds collected about 25 years ago. O'Grady, who has a bachelor's degree in art history and a master's in conservation and art history, estimated the pottery was fired at temperatures close to 2,000 degrees. While no evidence of a kiln system has been found, there is plenty of evidence the high temperatures were generated by burning coal, harvested from ample open deposits in the area of northeastern Arizona, she said. "They made elegant-looking vessels because they had the ability to control the firing even though they didn't have a kiln to control the temperatures," O'Grady said, pointing out the pottery's porcelain characteristics. "You can see the glass elements through the microscope." But just what was the technology? wonders O'Grady, who has worked on the project for nearly 18 months. Is the yellow from chemicals or from sulfur, iron or vanadium in the clay? Could it have been something in the air back in those days? She expects it will take another year of research to unravel enough of the mystery to publish her findings. Others have tried to find the secrets, she said. Modern Hopi potters have revived several ancient traditions, including Sikyatki polychrome. "But reproduction has been inconsistent, and further analysis is needed to replicate the manufacturing technology," O'Grady said. One clue might be in the chemical reaction of extraordinarily hot environments produced by burning coal with the clay or adding to the clay some finely ground pieces of pottery made with lower-temperature firings, usually by burning wood or dung as fuel, she said. Those fuels produce temperatures of only 1,300 to 1,500 degrees. Sikyatki, a subset of Jeddito pottery, is significant for several reasons, said Mike Jacobs of the Arizona State Museum, where several intact samples of the pottery are on display. "Because it was fired with coal, it's more durable, so it lasts longer," he said. "It's a kind of pottery that is so distinctive in texture and composition and decoration that it's readily recognizable. Sikyatki polychrome also is a good marker for trade." The pottery is protected by several federal laws, including the 1906 Antiquities Act, he said. It also is tightly controlled by the Hopi Nation because artifacts, including Sikyatki polychrome, are extremely important historically and culturally. O'Grady will need permission from Hopi tribal members when it comes time to do field-testing, including replication of her theories. The research is part of UA's Heritage Conservation Science Program, through which students learn to stabilize, preserve and better understand ancient artifacts.

Announcements

ACerS and Wiley & Sons Announce a New Ceramic Publishing Partnership: The American Ceramic Society and global publisher John Wiley & Sons, Inc. have entered into a partnership to co-publish ceramic and glass books and proceedings. Wiley now handles all marketing and distribution, so visitors to the ACerS Technical Publications Site will be directed to Wiley's user-friendly system for current ACerS publications, as well as all Wiley titles and the future co-published titles. The most immediate, direct benefit to ACerS Members is that they will receive a 15 % discount on all Wiley titles. ACerS Members will continue to receive 20 % minimum member discount on all ACerS publications, as well as future co-published titles. The society has appointed a special Book Publishing Committee to work with a dedicated Wiley editor to select and produce new glass and ceramic books. Affiliating with the extensive, global reach of Wiley will expand ACerS's reputation globally, as well as expanding ceramic knowledge.

Exhibition

Glorious Pots, A Millennium of Southeast Asian Trade Ceramics from Maryland, Virginia and Washington Collections is the title for an exhibition of about 80 vessels from private collections in the area. It opened on 8 April 2006 with a lecture by Louise Cort (Smithsonian Institution, Freer and Sackler Galleries) and a reception. David Rehfuss is guest curator for this exhibition runs through May 20 at the newly opened Asian Arts and Culture Center at Towson University, Towson, Maryland, USA.

Book Reviews

Stacey N. Lengyel, Associate Editor

Society and Death in Ancient Egypt: Mortuary Landscapes of the Middle Kingdom. Janet Richards, Cambridge University Press: Cambridge, UK, 2005. xv + 245pp., 112 figures (24 b&w photographs), 2 tables, references, index . Price: $75.00 (cloth with dust-jacket). ISBN: 0 521 84033 3.

Reviewed by Maria Mersinia, Technological Educational Institution of Athens, Library Section, Agiou Spiridonos st., 12210, Aegaleo, Athens, Greece

In ancient Egypt, the main source of information concerning life and afterlife emanates, without any doubt, from death, and thus its related beliefs and their expression. It is no secret that a large percentage of death-related archaeological information makes it possible to reconstruct social, economical, historical and even everyday details of Ancient Egyptians. It is that point which gives the book the basis for its arguments.

At the beginning of the book the very existence of a Middle Class in Ancient Egypt during the Middle Kingdom period (2040 – 1650 BCE) is under research. In order to answer this question, Richards examines not only the evidence known from previous studies and archaeological excavations but also the political, social and votive circumstances that could have given birth to it.

All evidence presented in the book is examined thoroughly from a point of view renewed by the different angle new evidence offers. Nothing is taken as fact, and work of previous researchers is re-examined. Even though this, sometimes, forms a prohibited area, the writer succeeds in presenting the facts and results in such a way that reexamination is obligatory. The various results of previous expeditions are mentioned in a multipurpose way. Beginning with nineteenth century researchers, she pinpoints what can be used as reference to what has today proven to be wrong or insufficiently established, or even omitted or misinterpreted. Rejection of past evidence is not the purpose, and her writing remains objective throughout the book. All factors are presented as the basis of what has previously been done and what should be avoided after proven to be wrong, but they are not derived from their role as the basis for future scientific investigation.

The research she presents is detailed in every part of the book without becoming tiring. A line has been drawn between what is necessary for her research and what is aimed to have a supportive role even though she deals with a lot of subjects. For instance, her belief that political and social circumstances should be taken into account is shown in the first chapter, where she approaches the social systems present at the time examined and emphasizes the *inequality* that was generally present in Ancient Egypt's everyday life. The political system of each era generates a different mental approach to all aspects of life, and votive beliefs are not an exception. The various ways of pressure and strictness of the authority give people various liberties concerning their ways of approaching religion. This is a state clear in all textual and iconographic elements discovered in excavations, in temples and tombs. The latter is presented in Chapter 2. Through these elements, she transfers the inequality status to afterlife, thus discerning the votive and social behaviors through lifetime and life after death. In this chapter she explains with detail how the various findings, by their place, value, carrying text, representations and even good or bad maintenance, offer much information to the researcher. A fragment can sometimes give more important information than an empty tomb or a destroyed temple. Additionally, the fact that mortuary landscapes were supposed to serve the need of Ancient Egyptians to honor their dead assures the authenticity of the findings.

It becomes further understood and empowered in Chapter 3 by the presentation of archaeological evidence from "nonmortuary landscapes." The examination of temples, stelae and ancient towns becomes the means to make her point clear. Many examples are given and photos are available for the reader to see. All evidence is presented in a very clear and detailed scientific manner that adds the validity needed to inspire the reader – archaeologist or student – to consider starting his or her own research.

The following chapter deals with the "tomb problem". By this she refers to the problem of focusing almost exclusively on elite graves. This focus excludes the graves of simple people and of middle rank officers, which have been characterized as less important. The fact that the majority of elements primarily have been ignored leads to false assumptions and evidently false and unsafe conclusions. This creates major problems in finding evidence for any matter based on them to be answered, among them the existence of Middle Class. The problems, misunderstandings and omissions of previous research are shown in a catalogue way to pinpoint what should or should not have been done.

In Chapter 5, Richards discusses the votive practice of ancient Egyptians. Details are given on what was used in their ceremonies and the place they buried their dead in different historical times, and from whom or what these were dictated. Their way of thinking and the privileges they appeared to have had is also discussed. A sufficient number of examples are given to help the reader fully understand the situation. Mortuary landscapes are mentioned and described with detail to support what had been discussed theoretically above and a separation of royal and non-royal burial places is made.

In Chapters 6 and 7 Richards moves to the study of specific burial places in Haraga and Riqqa cemeteries, which are both suitable for providing information and even proof, if studied carefully, of the existence of the Middle Class. The author gives a detailed description of both places. The number of graves and each grave's description are presented in the appendix together with the number, quality, and locations of artifacts and human remains. The size and location of each grave are presented together with conclusions and observations, as well as special mention of what has been done previously. The same continues with the description of the cemetery of Abydos in Chapter 7. Previously documented discoveries, and even whole expeditions, are mentioned and discussed in a positive but thorough manner.

By the time the reader finishes the book he/she will find it difficult to continue questioning the existence of the Middle Class in Ancient Egypt. Although scientific proof of a Middle

Class is not clear-cut, the evidence suggests that it could have existed. However, much remains to be done in order to establish concretely its existence. To this end, Richards proposes that all sciences related to archaeology and Egyptology form an "alliance" to address this matter. The existence of the Middle Class is an important factor that could change our understanding of everyday life in Ancient Egypt and broaden our horizons in relation to what the mortuary evidence can offer to science. The book presents very well organized research, although it is sometimes tiring for non-specialists due to the large amount of information presented in each sentence. The writer presents a summary of what will follow at the end of each chapter, and this element allows someone interested in only general Egyptology to understand this book. This book will be of interest to Egyptologists, but the solid writing and the book's lesson-like style allow beginners to access this research as well.

Chaco Canyon: Archaeologists Explore the Lives of an Ancient Society. Brian Fagan, Oxford University Press: Oxford, UK, 2005. xv + 256 pp., 44 halftone images, 22 line illustrations, 16 color plates, endnotes, index. Price: $30.00 (Hardback). ISBN: 0-195-17043-1.

Reviewed by Gordon F.M. Rakita, Department of Sociology & Anthropology, University of North Florida, 4567 St. Johns Bluff Road South, Jacksonville, FL 32224, USA

Those in the field of archaeology will surely recognize Brian Fagan as, among other things, one of the most prolific textbook authors in the discipline. I suspect that many of us were either academically raised reading his texts in our own coursework or as professors having assigned them for our students to read. I myself have a copy of the seventh edition of his *In The Beginning* sitting on my shelf; a souvenir of the first archaeology course I ever took. His skills at absorbing a tremendous volume of scholarly work on the prehistory of a region and distilling it down to a very readable and comprehensible essence is well documented. The volume reviewed here is Fagan's attempt to do just that with the enigmatic prehistory of Chaco Canyon.

My own research interest is centered in the desert Southwest, though I am not a Chaco scholar. My focus is far to the south of Chaco in the Casas Grandes region of northern Mexico. So while I am aware of the broad brushstrokes of Chacoan prehistory, I am by no means an expert. I was therefore thrilled to have an opportunity to read this new work of Fagan's detailing the prehistory of Chaco Canyon and the surrounding San Juan Basin. *Chaco Canyon* is not volume for Chaco scholars but rather a book for the interested layperson. Thus I did not expect Fagan to overwhelm me with every detail and nuance. My hope was that the book would refresh my memories of and update my knowledge of the culture-history of the canyon while providing me with a general outline of the recent arguments and debates of Chaco scholars proper. In large measure, Fagan succeeds.

The book is divided into four parts each with several chapters. Each chapter is opened with a relevant quote (or quotes) and many are also begun with a short, fictional vignette of prehistoric life in the canyon. The quotes are intellectually stimulating, but the vignettes (and Fagan's speculative interpretations of the archaeological record) are what really bring this text to life. Fagan's explicitly stated goal is to tell a story about "...people going about their daily business, individuals and groups, living and dying, loving, raising children, living in plenty and in hunger, negotiating and quarreling with one another, pondering the cosmos, and facing the unpredictable challenges of drought." (p. ix). He is fleshing out the skeleton of the specialists' literature on Chaco, and indeed was encouraged to do so by members of the National Park Service's Chaco Synthesis Project and others.

Part one, the first three chapters of the volume, introduces the reader to Chaco Canyon. In chapter 1, Fagan uses a wonderful rhetorical device by describing what a hiker would see as they walked through the canyon from Pueblo Pintado far to the east to Peñasco Blanco in the northwest. This chapter also provides a brief description of Chaco culture-history and the introduction of maize into the region. Chapter 2 narrates some of the early research in the canyon and chapter 3 describes its geophysical and climatological environment. While chapter 2 is not as thorough as I would have wished, and there is a curious reference to "Casa Grandes" (p. 24) which left me wondering if this was a reference to Casa Grande in southern Arizona or Casas Grandes in Chihuahua, the three chapters do work as an introduction. Indeed, Fagan's description of a summer thunderstorm (p. 44) is an uncanny portrayal of the experience and vividly reminded me of my own drenching in that canyon. This is but one example of the narrative power that Fagan brings to this work.

Part two, chapters 4-6, introduces the cultural background to the so-called Chaco phenomena. These three chapters lead us through the culture-history of the Paleo-Indian, Archaic, Basketmaker II and III, and Pueblo I periods. Despite an odd backtracking from Basketmaker II to the Archaic and Paleo-Indian in chapter 4 and then to Basketmaker III in chapter 5 and the use of the outdated Oshara and En Medio cultural period designations, these chapters provide a firm framework for understanding the transition from mobile, hunting-and-gathering to settled, agricultural life ways and the development of villages in the San Juan basin. There are excellent discussions of pre-pueblo sites, such as Shabik'eshchee village and 29SJ423, and this highlights the fact that Chaco Canyon is more than simply "Great Houses." Moreover, Fagan does a fine job of describing the challenges facing those employing an agricultural subsistence strategy in the Southwest and the various adaptive responses prehistoric groups utilized including water-control systems, cultivation of multiple plots in various micro-niches, and population aggregation and dispersal.

Fagan's plot thickens in Part three, chapters 7-11, as this portion of the book describes the development of the classic Chaco system. Fagan does this mostly through the lens of Pueblo

Bonito, the best known of the so-called "Great Houses." He is careful to point out that the reconstruction of past societies is a difficult jigsaw puzzle, one which has many of its pieces missing or destroyed. Despite this, he paints a picture of Chacoan life through examinations of masonry and construction sequences, evidence for trade and exchange in ceramic, turquoise, shells, copper bells, and exotic birds. In doing so he expands the focus of his examination to include those sites linked to Chaco via intentionally built, yet enigmatic roadways. Chapters 10 and 11 end Part three with a discussion of exchange networks, peer-polity interaction, evidence of ritual, the human burials from the canyon, and the nature of social complexity of the entire system.

Fagan takes no hard interpretive positions in either Part three or in the last two chapters (12 and 13) that make up Part four, but provides a balanced perspective in his reconstruction of Chaco. This is particularly true in his handling of Stephen Lekson's controversial Meridian model. Fagan makes use of his summary of Lekson's model to provide a framework for discussing the apex and subsequent decline of the Chaco phenomena and the population movements that characterize the Pueblo III period of the San Juan basin.

A number of features make Fagan's volume appealing. He provides a series of boxes that detail important methodologies or categories of evidence in Southwestern prehistoric archaeology including dendrochronology and Chacoan masonry and ceramic styles. I would have appreciated more of these. Additionally, Fagan provides cogent, clear explanations of the work of various Chaco scholars such as (though by no means limited to) Wendy Bustard's space-syntax analysis of architectural plans, Dabney Ford's and Tom Windes' work dating wooden beams, John Kantner's GIS analysis of Chacoan road segments, and Mary Metcalf's modifications of Lekson's original construction estimates. These and other such discussions provide the uninitiated with a glimpse into the latest and greatest of Chaco research. Finally, the volume is superbly illustrated; but particularly well-so by the inclusion of many overhead photographic plates by Adriel Heisey. The latter are an excellent visual counterpart to Fagan's narrative prose.

Chaco Canyon is not for the Chaco specialist, or perhaps even the professional archaeologists. The text is somewhat disjointed and confusing at points. Particularly daunting for the knowledgeable reader is Fagan's use of endnotes and the lack of an alphabetical listing of cited references. Certainly the use of endnote, rather than in-text citations, is reasonable as a measure to avoid breaks in the flow of his narrative; however, the lack of a comprehensive bibliography (separate from the notes) is a hindrance to anyone wishing to delve deeper into the specialist literature. Typographical do present themselves, as with the missing or added "s" on page 24 noted above or the reference to "El Medio" rather than "En Medio" groups on page 70.

The book is perhaps best suited to those for whom it was intended, interested laypersons. Fagan clearly has not lost his narrative voice. They will find the volume eminently readable and a source of both answers to their questions and a source of new questions regarding the enduring mystery of Chaco Canyon.

Modeling Archaeological Site Burial in Southern Michigan. G. William Monaghan and William A. Lovis, with Michael J. Hambacher, Michigan State University Press, East Lansing, USA, 2005, xii + 268 pp., 29 figures, 11 tables, index. Price: $35.95 (paper). ISBN: 0-87013-738-7.

Reviewed by David F. Overstreet, Marquette University, Milwaukee, WI, 53201, USA

The overall goal of this book, referenced in several places within the text and noted again by the authors in their concluding chapter, is to provide a set of guidelines and standards for geoarchaeological investigations in southern Michigan. Ostensibly these guidelines will aid agency staff at the Michigan Department of Transportation, the Michigan State Historic Preservation Officer, and others with cultural resource preservation responsibilities to improve the status of deep testing to identify archaeological sites. This is certainly a commendable goal, but this volume transcends its stated goal by a considerable magnitude. The collective results are an exemplar of sound multidisciplinary research and highly innovative geoarchaeology. The integration of comprehensive geomorphological and archaeological research on such a grand scale in the Midwest is unparalleled and truly impressive. It is in this realm that the publication makes significant contributions to aid in understanding the evolution of Late Quaternary and Holocene landscapes and the adaptive strategies applied to the dynamic ecological settings by southern Michigan's prehistoric occupants.

Serving as Volume I in the Michigan State University Press Environmental Research Series, this monograph is organized into two sections. Part I, comprised of Chapters 1-5, sets forth the research background in geology and archaeology. Chapter 1 provides an overview of the current status of "deep testing" in Michigan, while Chapters 2-3 summarize the pre-Holocene and Holocene geological history with emphases placed on Michigan and the Upper Great Lakes. Chapter 4 is a brief but thorough discussion of archaeological periods defined in the state, while Chapter 5 provides the locations and descriptions of buried and stratified sites known to occur in Michigan. Part II of the book, Chapters 6-9, implements the integration of archaeological and geomorphological data and offers a summary statement and recommendations for future geoarchaeological applications. Chapter 6 is given over to the model generated to predict buried archaeological sites in southern Michigan as well as throughout much of the Great Lakes region. The GIS framework employed for application of the site burial model is presented in Chapter 7, and an appended CD includes the complete GIS coverage of buried archaeological site potential in the approximate southern two-thirds of Michigan with

intensive systematic study having been carried out in 24 counties. Based on this framework and the variables incorporated in the model for site burial in floodplain or flood-prone localities, Chapter 8 lists the authors' recommended procedures, methods, and techniques to undertake discovery of buried archaeological sites in southern Michigan. Concluding remarks presented in the last chapter (Ch. 9) serve to summarize the project, review the geological background, and address the processes resulting in sedimentary contexts in which mid- to late-Holocene archaeological sites are buried. The conclusion that preservation of the archaeological record in floodplain environments in Michigan is a complex interplay of climate, lake-level dynamics, and fluvial system evolution is well founded and the data presented are compelling.

It is particularly refreshing that the authors are so candid in reviewing the complexities and limitations of their predictive model and the results generated. Few would argue with the conclusion that the time periods covered in the site burial model have a representative and recoverable population of sites, site locations, site functions, or seasonal components of the settlement system. Here it is made explicit that this assumption is rejected. Also among the knotty problems cited is the difficulty in identifying sites older than the mid-Holocene. Monaghan and Lovis surmise that those floodplain sites older than approximately 6,500 (uncalibrated) radiocarbon years before present would have suffered the affects of the three flooding and depositional cycles identified for southern Michigan. They conclude that this series of events would result either in deeply buried sites or in their having been eroded away. This generalization requires further testing. Based on a complex set of variables including but not restricted to landscape position, sediment load, local hydrology, vegetation cover and countless other factors, it is possible that some archaeological sites may have survived multiple lake transgressions or floods without having been deeply buried or eroded away.

Late Pleistocene sites and those of the earliest Holocene are beyond the scope of the post-Nipissing I model of potential site burial, and this is clearly stated by those responsible for its formulation. Discovery of Pleistocene fauna and any possibly associated Paleoindian artifacts will not be enhanced by this effort, although archaeologists working in the Great Lakes region have long been cognizant of the shared distribution of mammoth, mastodon, and fluted points in southern Michigan (the so-called Mason-Quimby line) largely coincident with the geographic expanse encompassed by the model. In their discussion of processes controlling the location and burial of archaeological sites ca. 11,500 B.P. the authors state: "The morphological and environmental evidence along the present ground surface, which may indicate potential for human habitation, would have been obliterated during either lacustrine inundation or ice advance. Furthermore, given the potential for either reworking or destroying sites in ice-marginal or subglacial environments, the probability of preserving any valuable archaeological information during glacial readvances (or even by ice-marginal processes) is very low. Designing a sampling strategy to test for sites buried by such processes is probably futile" (p. 101). While it may be futile, or at best very difficult, to design and implement a sampling strategy for ice-marginal or subglacial environments, it is simply wrong to assume, without any empirical basis, that all evidence for human habitation would have necessarily been obliterated by lacustrine inundation or ice advance.

There is no intent to criticize, and the authors have done a masterful job of integrating geological and archaeological processes throughout most of the Holocene and across a very large tract of southern Lower Michigan. My only criticism of this book is that I found the many references to CRM limitations distracting. The discussions of guidelines, qualifications, costs, competitive bidding, university or practical training, sometimes seemed out of place or diminished the flow of a particular discussion. Undoubtedly these are important issues and represent one of the major objectives of research sponsored in part by Federal Highway Administration funds explicitly for that purpose. In spite of this, I would have preferred to have such issues incorporated in a more concise and coherent set of recommended guidelines and standards placed in a single chapter or in an appendix. They add little to an important geoarchaeological synthesis that will be a welcome addition to personal and institutional geological and archaeological libraries throughout the U.S. mid-continent.

Upcoming Conferences

Rachel S. Popelka-Filcoff, Associate Editor

2006

May 24-27, 39th Annual Meeting of the Canadian Archaeological Association, Toronto, Ontario, Canada. Website: caa2006.canadianarchaeology.com/index.html.

June 6-23, NCPTT Summer Institute: Archaeology and Collections Training, Natchitoches, Louisiana, USA. Website: www.ncptt.nps.gov/summerinstitute.

June 12-16, 19th Annual Forensic Anthropology, Ashburn, Virginia, USA. Website: www.afip.org/Departments/edu/upcoming.htm.

June 12-18, ASMOSIA VIII Conference, Maison Méditerranéenne des Sciences de l'Homme, Aix-en-Provence, France. Website: www.eeescience.utoledo.edu/ASMOSIA/Conferences/asmosia_vii_conference.htm.

July 9-15, 18th World Congress of Soil Science, Philadelphia, Pennsylvania, USA. Website: www.colostate.edu/programs/IUSS/18wcss/index.html.

August 23-28, International Council of Archaeozoology Conference, México City, México. Website: www.flmnh.ufl.edu/envarch/icas2006.htm.

September 7-9, 2nd International Symposium on Biomolecular Archaeology, Stockholm, Sweden. Website: www.archaeology.su.se/isba2/registration.html.

December 7-9, Preserving Archaeological Remains in situ 3, Vrije Universiteit, Amsterdam, Netherlands. Website: www.falw.vu.nl/paris.

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Newsletter of the Society for Archaeological Sciences

Published quarterly by the Society for Archaeological Sciences

Distributed to subscribers: $20/yr regular membership; $15.00 student & retired; $30.00 institutional; $300 lifetime. Individuals add $105.00/yr for *Journal of Archaeological Science*; $35/year for *Archaeometry*. ISSN 0899-8922.