

SAS BULLETIN

NEWSLETTER OF THE SOCIETY FOR ARCHAEOLOGICAL SCIENCES

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FROM THE EDITOR

CARMEN TING

Hello everyone, I am the new editor of the bulletin. I would like to highlight the great work that the associate editors and contributors have been doing for the past issues. I hope I will be able to keep up with the high standards they set, while bringing in new ideas and formats for the discussion of more timely topics in archaeological science. I also hope to transform the bulletin into a platform, where students can showcase their ongoing work or get involved with the editorial side of the bulletin, in line with the launching of our new student ambassador programme. I will also work closely with Andrew Zipkin and Destiny Crider to facilitate the gradual transition of the bulletin to be integrated with other social media outlets of the SAS. As a first, major step of moving into the digital presence, the interview and Rob's piece on the history of SAS will be made available on our blog. Also, starting from the next issue, I will start posting bulletin pieces on the blog as the materials come in, and I will put together a digest and send to the members quarterly.

When I was putting together this issue, I did not exactly decide on a particular theme, but somehow most pieces I selected seem to be related to the topic of 'milestones in archaeological science'. As of late, one of milestones is the publication of the Encyclopedia for Archaeological Sciences, which comes in four (yes, four!) volumes. I had the pleasure to interview Professor Sandra López Varela, who is the editor-in-chief of the Encyclopedia for the

stories and powerful messages behind this phenomenal volume. Another milestone of the field of archaeological science is the establishment of the SAS more or less 40 years ago, with an article written by our very own Rob Sternberg to reflect on the history of the Society. I have also included two extended abstracts from our members for the student awards they received from the Society, as recognition of the innovation and excellence of their research – definitely a milestone to their research!

I hope you will enjoy this issue. As this is the first issue I put together as the editor, I want to know your thoughts on the bulletin. Please do not hesitate to get in touch with me and let me know what you would like to read more in the bulletin.

INTERVIEW WITH PROFESSOR SANDRA LÓPEZ VARELA, EDITOR OF THE ENCYCLOPEDIA FOR ARCHAEOLOGICAL SCIENCES

I had the opportunity to interview Professor Sandra López Varela, the editor-in-chief of the Encyclopedia for Archaeological Science, on Skype. I have never met Sandra before, but I have read a lot of her work on the Maya ceramics when I was working on the Terminal Classic ceramics from Belize for my doctoral project. I must admit I didn't know what to expect: Was she going to be very formal? Was I allowed to joke a bit in the interview? When we finally met on Skype, she greeted me with the warmest smile and thanked me for inviting her for the interview, and I knew I was just worrying too much before. However, before I could fire away my questions, she gave me a warning, 'Sometimes, I am too honest. I am very straight-forwarded.' Here are the very honest answers to the hard work, tears, friendship, and stories behind the Encyclopedia for Archaeological Sciences (EAS).

C: Carmen, S: Sandra

C: Before we start talking about the Encyclopaedia, I am sure a lot of our readers know you in person because you were the president of the SAS, or know of your work just like myself because I used to work on

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Maya ceramics, but can you tell us a little bit about yourself, specifically how did you get into archaeological science?

S: I have never wanted to be an archaeologist. I wanted to

Sandra still plays the piano (photo credit: Sandra López Varela)

be a pianist. I was actually quite good at playing the piano to a point where I thought of applying to the conservatory in Vienna when I was 10 or 11. But, my father was not very supportive of the idea. I grew up surrounded by science and maths. My father was a civil engineer, my brother is an architect, my eldest sister was an accountant, and my next sister is an industrial textile engineer. My father was actually paving the way for me to be an architect, so I went into studying architecture for my BA. However, I quit

not long into the programme as I realised that my heart was not in it. I also had a lot of pressure from the university, especially from my professors, who would constantly compare me with my father as he was very well-known in the field. After that, I didn't know what to do with my study, or with my life in general, until I had this horrible car accident and a friend of mine from high school came visit. She is now the director of the School of Archaeology and Anthropology in Mexico City. She said to me, 'Sandra, when you were in high school, you liked science, you liked maths, you liked literature, you liked everything. You should study archaeology because they study everything.' Archaeology, what is that? But before I had the time to think things through, she had already taken all my papers and enrolled me in the School of Archaeology and Anthropology. This is how I became an archaeologist, and it has become my passion since.

C: So, you started specialising in archaeological science very early on in your studies?

S: Not really, actually it was not until I went to the University of London to do my master. I studied Western Asian studies at UCL.

C: What? Western Asian? I thought your research has been largely based in Mesoamerica.

S: Haha. I was interested in the origin of the states. Because of my background in architecture, what I wanted to do was to combine all the architectural layers to look at urban growth and how complex societies developed, but there was no GIS at that time, and I don't think archaeology back then was as interdisciplinary as it is now. It was my postdoctoral fellowship in Germany, sponsored by the Alexander von Humboldt Foundation that introduced me to archaeological science and interdisciplinary studies in archaeology.

C: Do you think archaeological science is more interdisciplinary nowadays?

S: No, not at all. The division between science and humanities and social sciences is still there, and I think it is getting worse. We are archaeologists. I don't think we are not asking the right questions to learn about humans in the past. Knowing the elemental composition of an artifact is a tiny answer of a larger question. If we only report the elemental composition, we might excel at chemistry, but we have failed to provide explanations about past societies. At least in Mexico, archaeology students are jazzed by the use of science and technology. I read numerous project proposals stating the use of Raman spectrometry or X-Ray diffraction to learn about the composition of archaeological materials, as simple as that. I am afraid that

if this is the main goal, the chemistry department is more suited to help you answer that question. Archaeologists working in science should always have in mind that we use science to learn about past societies. Please, don't take me wrong. Archaeologists are too capable of contributing to chemistry of physics.

C: Is this what inspired you to take the initiative to compile this massive volume of Encyclopaedia?

S: Yes! During my tenure as the president of the SAS (2009-2011). I felt I had to do more than just running the association. I wanted to advance the position of archaeological science in the broad field of archaeology.

When I attended the Society of American Archaeology meeting in 2011, Rosalie Robertson from Wiley Blackwell asked me if I was interested in putting together an Encyclopaedia for Archaeological Sciences. At that time, I thought it was going to be just one of those projects that you agreed to look into the possibility of collaborating when you meet interesting people at meetings but would never put into action. Wiley Blackwell was invested in this project and Rosalie made sure it was going to happen.

C: So how did you decide the scope of the Encyclopedia?

S: When I accepted the challenge, I told Rosalie, 'I don't want this Encyclopedia to be just another volume lying in the shelves of a library. I need this Encyclopedia to be used beyond archaeology. It needs to convey a different message. Yes, it is about science, but I want to emphasise we are archaeologists doing science, not scientists doing archaeology.' The only way for archaeologists to do science is to bring in those working in the social sciences and the humanities. Why, you may ask? Sadly, by separating science from the social sciences, we have dehumanised science.

C: What about the topics to be included in the Encyclopedia? How did you decide?

S: I started thinking what do we do in the field and the lab and what kind of instrumentation are we using. Most importantly to me was asking why do we do it and the outcomes of what we do. One of the first things I did was to put together a team of scholars – who shared my thoughts and goals – as associate editors for the Encyclopedia. First, I talked to Gilberto Artioli and agreed to include contributions on the most common techniques we used in archaeology and concentrate on their description and to learn how these methods work. We even included techniques that may be of use in the future, still not fully adopted in archaeology. Christian Wells and I listed the fundamental techniques used for excavation and

survey. Josep Pares – he is not an archaeologist by the way – and he came up with the most cutting-edge techniques of time recording, which he was able to take it to a different level because he is a geologist. Having him aboard was key to connect with “scientists” in other fields of studies. Bringing in Christopher Dore who has specialized in spatial analysis and visualization techniques completed the picture of what we do in archaeology. A key paper in the maths and statistics section is how to write a hypothesis, as this is the connection to approach people in the past. I gave Luis Barba, who is trained in chemical engineering, the toughest task to ask find contributors that would demonstrate how to reason with science and achieve explanations. Lori Wright and Kristin Hoffmeister had a similar challenge. Both helped me bring in biological anthropology and to start looking at people behind bones. I said to Gill Campbell, please bring in all your expertise and to reconstruct the environment people lived in. Remember I wanted the EAS to convey a different message, not only that we have a responsibility towards the future, also that archaeology has long stopped being a discipline exclusively concentrating on the study of the past. I asked Ioanna Kakoulli to help me build a section on conservation and to ask questions about how to preserve heritage. I couldn't be luckier when Graham Fairclough and Julian Thomas accepted my invitation to collaborate as associate editors. Their sections rounded up the main goal of the EAS, as both merged science and anthropology together.

C: I must say, I am very impressed the number of contributors involved. Do you happen to know all of the contributors of the Encyclopaedia? Or, was it like a snowball that kept rolling, one contributor led you to another and then to another? Or, you just contacted the established scholars in the field?

S: It is really interesting that I have never met some of the associate editors in person and still haven't. But, we built an unparalleled collaborating relationship mostly by e-mail. I am very proud that we had almost 700 scholars from 47 countries contributing to the EAS. Of course, we needed to bring in well-known established scholars, even if I knew that most of them wouldn't contribute precisely because of their busy research schedules. Science wasn't born with a nationality -at least this is what I believe in. Not everybody has the opportunity to be part of major universities and research institutions in the US, UK and Europe. I relentlessly searched in published journals and books, for those scholars, for those young archaeologists starting their career everywhere. This wasn't a snowball technique. One of the most moving messages I received was from a contributor in Africa, who felt so happy we had paid attention to his work. I invited people working in the

applied sector to contribute and to highlight the incredible job they are doing. They are doing the same thing we do in universities but with the amount of pressure developers put on them. In fact, our colleagues in the applied sector are the ones transcending our field of studies for the benefit of society, a goal we are not entirely achieving in the academia. I want to build bridges, not borders, with this Encyclopedia.

C: Furthering on the contributors of the Encyclopedia, I am actually even more impressed with their diversity – different regions where their research is based, gender, stages in career. Is that something you did on purpose?

S: Yes! I wanted to give opportunities to postdocs, PhDs, and graduate students, as I was once a graduate student myself. Kristin Hoffmeister, was finishing her PhD directed by Lori Wright. She had her first opportunity to be part of an editorial project that I hope this has helped her build a career. I struggled a lot to build my professional career. I didn't get a job in academia until I was 33 or 34. What changed the course of my life and my career was my receiving a Humboldt Fellowship. The Humboldt Foundation selected me not because I came from a particular university, but because they valued my research, the effort I put into my work, who I was. The Fellowship supports young scholars committed to science for the benefit of society. I am in touch with a Mexican student, whom I have never met in person, who contacted me for career advice out of the blue. At that time, he was about to finish his PhD in the US and coming back to Mexico where jobs were not exactly something you could find around the corner, so he was feeling a bit lost and worried. I said to him, 'If you work hard, you will eventually build a career because it will be rewarded at the end.' Our work does not finish in the classroom. These young scholars need to be heard and to be given that first opportunity to publish – this is why I am giving them this channel. These young scholars are the future of archaeological sciences. Let's give them a chance!

C: You must get a lot of emails every day during that period. How many, exactly? Did you have a slight panic attack every time you checked your email in the morning? I have this really bad habit myself. I reach for my phone first thing in the morning while still in bed and check my email.

S: At the beginning, I was receiving at least 40 something emails. Every morning, I checked the email, and I replied them right way, every single of them. I am actually missing those emails now, even if I now have the time to enjoy that extra cup of coffee you need sometimes.

C: In addition to the Encyclopedia-related emails, you still got emails from the students, colleagues, collaborators, and university?

S: Oh yeah...e-mails would built up in a few hours. I am so grateful to have a wonderful publishing team from Wiley. They were so supportive throughout the process and still are. You cannot imagine the amount of work behind the EAS Wiley was there to provide all the resources we need to make this happen. We are at a different stage now that the EAS has been fully published but we are still working on it.

C: Exactly how long did it take you to compile this?

S: We started talking about the idea in 2011. I signed up a contract with Wiley by mid-2012. By 2013, our team of associate editors was complete. A long-term project requires commitment and for various reasons, not everybody could meet the challenges we faced while putting together the EAS. This is why I had to ask my old friend and colleague Christopher Dore to take over the spatial and visualization section and why had to take care of the maths and stats section. It took three years to find the right people to write. I didn't realise what I was getting myself into when I accepted. I am used to editing or compiling books, except this time I had to collaborate with 700 people from 47 different countries and cultures.

C: During this long journey of compiling and editing the Encyclopaedia, what were the challenges you encountered?

S: At one point, I thought we were not going pull this project together. Rosalie Robertson retired. Right after, Wiley went through a restructuring process making us work with new staff members constantly. None of the associate editors envisioned being involved in such a long-term project, while we all had personal commitments and we re-adjust our focus and priorities. I joined UNAM in 2013 and the move wasn't easy, as it happened at the same time I lost my father. The sense of responsibility he left with me, did not allow me to fall apart. I owed myself to 700 people and the associate editors. Most never knew what I was going through.

I am sure a lot of contributors would agree with me that their contribution to the EAS has been one of the hardest pieces they have written, as it summarizes their experience in four or five pages, including references. We all worked very hard on the structure of each submission, even if all contributors had the same set of objectives they needed to address in their piece. One of the hardest things for me was to tell my colleagues that what they wrote was not exactly what we needed. How do you tell an English native speaker

that they need to improve their writing, when English is not your native language? Some responses were unkind. In other cases, I had to push the contributors to bring their English up to Wiley standards. Unfortunately, we didn't have the resources to provide translating services for them. They made the effort, as they understood the relevance of what we were all doing here. In the end, we found a way to make things work, and I am very grateful for all the time and effort they put in to make this work.

I want to share with you the hardest challenge I faced. During a meeting in Mexico, I was sexually harassed by a contributor. I bring this up because I want to turn around my unfortunate experience into a strong message. We are vulnerable at all levels. Specially, I want students and young scholars to know, you should never, NEVER, allow anyone to take away your security and make you doubt your integrity. I reported the incident to the legal department at the university that attends sexual harassment, facing with it, a still unjust social and legal system to defend us women in similar cases.

C: I am so sorry to hear about it. What kept you going through such hard time?

S: I survived this unfortunate experience thanks to Wiley's awareness of what we women in science go through. My father was a role model for me. I saw him overcome so many professional and personal obstacles during his life that his resilience stayed with me. During this difficult time, I had to set up an example for my daughter and my female students. This incident has marked me forever. It too has made me stronger.

C: How did you balance between being a professor, a mom, and having family, while compiling the Encyclopedia?

S: I am still catching up with my sleep (laugh). But, if you are passionate about what you do, you will find the time. When my daughter came back from school, I would shut down my computer. But, when she went to bed, I read and edited-proof every single piece in the Encyclopedia. I could see how each submission was shaping the EAS and I was very excited to see the project coming together as we have planned.

C: Is there a plan to translate the Encyclopedia into different languages?

S: Remember I didn't want the EAS to be another book at a library? Well, the original idea was to accompany its publication with a textbook that could be translated into different languages. It was an interactive learning and research project for the classroom. As exciting as this idea



might seem, it would require a much longer commitment and budget.

C: What could we do more to promote archaeological science in the future?

Sandra and some of her students (photo credit: Sandra López Varela)

SAS could do much more in the future to promote archaeological sciences, such as organise webinars, promote certifications, working hand in hand with university departments to ensure that archaeological scientists are getting the right kind of training and to give back to our communities. Demonstrate archaeological sciences are far much more than using equipment and how much their studies can contribute to our shared world future.

C: One last question before I let you go, will you do it again if you have a chance, knowing all the challenges you will face in the way?

S: Absolutely!

Sandra has also been recently interviewed by Springer, here's the link to the interview:

<https://itunes.apple.com/us/podcast/before-the-abstract/id983699862?mt=2>

SAS HISTORY 40 YEARS

ROBERT STERNBERG, GENERAL SECRETARY EMERITUS

About Rob Sternberg: He has been a member of the SAS for over 35 years. He served as Treasurer (1990), associate Bulletin Editor (1990-1995), President (1997-1999), and General Secretary (2002- 2017). He currently remains on the Executive Board as General Secretary Emeritus. He is Professor Emeritus of Geosciences, Franklin and Marshall College.

The SAS recently celebrated the 40th anniversary of its founding. Here I give some historical background for this Society. Some of this material was used in my introduction for *The Encyclopedia of Archaeological Sciences* (Sandra L. López Varela, ed., Wiley-Blackwell, 2018, 1992 p.)

According to SAS co-founder R.E. (Erv) Taylor (personal communication), "The original idea for the SAS came about as the result of a consideration of the contrast between the support for archaeological science/archaeometry in England and Europe as opposed to the United States... The actual idea was developed in conversations between Rainer Berger and myself and we coined the name Society for Archaeological Sciences (plural, "sciences"). I then contacted various individuals around the country to sound them out. There was support by a number and they became the first Acting Executive Board." The founding SAS Acting Executive Board consisted of Rainer Berger, Karl Butzer, James B. Griffin, P. Edgar Hare, Richard L. Hay, Vance Haynes, Robert Maddin, George Rapp, Jr., Max Saltzman, and R.E. Taylor. During the International Symposium on Archaeometry and Archaeological Prospection in 1977 at the University of Pennsylvania, members of the board met to lay the groundwork for the formal organization and development of the SAS. By-laws for the Society were adopted in June, 1977. Revisions of the by-laws were approved in May, 1991, and again in March, 2005. We are indeed considering another round of by-laws revisions, in accordance with an apparent 14-year cycle. The Articles of Incorporation for the Society for Archaeological Sciences were filed with the Secretary of State for California on 29 March 1979.

The founding of the SAS came at a time when there was increasing openness to the idea of interdisciplinary work

(Heidi Ledford, Team Science, *Nature*, 525, 2015, p. 308-311), and the formation of profession societies and the corresponding development of infrastructure to support such research (The National Academies of Science, Engineering, and Medicine, *Facilitating Interdisciplinary Research*, National Academies Press, Washington, D.C., 2005, 332 p.). The Geological Society of America's Geoarchaeology Division was also formed in 1977, the same year as the founding of SAS. As Rip Rapp (personal communication) related, "Both SAS and the Geological Society of America Division were founded as part of a broad effort to get archaeological science and archaeological geology able to function better – you need professional societies, university grad programs to train the next generation, journals, newsletters, meetings, etc. Both have been successful in 'leading the way'."

SAS had 100 charter members, costing \$5 per year, and has hovered around 300 members in recent years, now costing \$25 for a regular membership. Other categories of membership have been student/retired, lifetime, and institutional. SAS has often been perceived as an "American" organization; although the table below shows that a majority of the members are from the U.S., the membership is international, the officers have increasingly come from other countries, and every other business meeting is held at the International Symposium on Archaeometry.

	Year		Remark
	1977	2017	
Members, total	100	285	
U.S.		167	(59% of total)
Canada		17	
UK		25	
Europe		48	
Oceania		8	
Mexico/ S. America		9	
Asia		9	
Africa		2	
Regular		152	
Student/ retired		58	
Lifetime		63	
Institutional		13	
Cost (regular)	USD \$5	USA \$25	(90% pay via PayPal)

The first SAS business meeting was held on April 25, 1979, at the Society for American Archaeology (SAA) meeting in Vancouver. A questionnaire in Fall, 1979, showed SAA to be the most popular potential venue for SAS meetings, so annual business meetings continued to be held during the SAAs. SAS business meetings were later held at the International Symposium on Archaeometry (ISA) when that meeting was in North America. Since the 2008 ISA in Siena, the SAS business

meeting has alternated between the ISA and the SAA, whether the ISA was in North America or elsewhere in the world, in accordance with the increasing internationalization of SAS.

For a number of years, the offices of President and Secretary-Treasurer were the two elected positions on the Executive Board, as designated in the by-laws. Subsequent elections brought those listed below into the offices of President and Secretary-Treasurer. Elections switched from annual to biannual in 1991. The office of Secretary-Treasurer was absorbed into the duties of the General Secretary (appointed by the Board) for several years. The office of Treasurer was re-instituted in 2017 as an appointed office by the Board. The Editor of the *Newsletter/Bulletin* has been selected by the Board.

The office of the General Secretary was established in 1981, with R.E. Taylor assuming the post. This office was intended to provide administrative continuity to the organization. All business affairs including the maintenance of the membership files and legal records are to be maintained by the General Secretary. Records were computerized in 1981. Erv Taylor held this position for more than 20 years, helped by as Associate Secretaries-general Chris Prior, Elizabeth Stilwell, and Donna Kirner. Rob Sternberg succeeded Taylor at General Secretary in the summer of 2002. Kyle Freund became the third General Secretary in 2017.

1995	Pat Martin	Chris Prior	Chris Nagle
1997	Rob Sternberg	Felicia Beardsley	Rob Tykot
1999	Chris Prior	Felicia Beardsley	Rob Tykot
2001	Arleyn Simon	Felicia Beardsley	Rob Tykot
2003	Greg Hodgins	Colleen Stapleton	Rob Tykot
2005	Aaron Shugar	Colleen Stapleton	Christian Wells
2007	Thilo Rehren	(office discontinued)	Christian Wells
2009	Sandra López Varela		Christian Wells
2011	Patrick DeGryse		James VanderVeen
2013	Rob Tykot		Vanessa Muros
2015	Marc Walton		Vanessa Muros
2016	Rachel Popelka-Filcoff		Thomas Fenn
2017		Destiny Crider	
2018			Carmen Ting

Interdisciplinarity and the successful creation of a successful subdiscipline are inherently challenging in an academic world largely organized around traditional disciplines. As the field of archaeological science (here used interchangeably with archaeometry) has developed over the past 60 years (using the benchmark of the journal *Archaeometry*, volume 1, published in 1958), many requirements for interdisciplinary success have been satisfied, such as: the formation of professional societies; holding conferences where developments in archaeological science are presented; publishing research in journals; funding opportunities for research and education; recognizing professional accomplishments with awards; development of academic curricula and research laboratories; making information available via newsletters, social media; and publication of reference works and textbooks. David Killick (The awkward adolescence of archaeological science, *Journal of Archaeological Science*, 56, 2015, 242-247) discusses some issues related to these requirements, including a comparison of funding in the U.S. and Britain, and the access to archaeological science in less wealthy nations. Since SAS organized as a professional society, it has been active in all these areas necessary for the development of professional infrastructure, as will be discussed further below.

The official organ of the SAS since 1977 has been the *Newsletter*, changing its name to the *Bulletin* with volume 12. It is currently in its 42nd annual volume. Newsletters were quarterly from the start. The length was 4-6 pages through volume 5. The first 10-page issue was 10:1, with

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

subsequent page length records increasing to 16 pages in 10:3, 24 pages in 15:1, 28 pages in 20:1/2, and 32 pages in 21:1/2. Some other milestones: the first stapled issue was 7:1. Bitnet email addresses first appeared in 10:1, with more than half of the officers and editorial staff showing email addresses by 12:1. The cover went glossy with 24:1. A CD-ROM of pdf files for the first 25 volumes of the *Newsletter/Bulletin* was prepared by General-Secretary Rob Sternberg and student assistant Isaac Weaver in 2004 and added to every couple of years. All back issues are now available as pdf files at the Society's web site.

An Editorial Staff for the *Newsletter* was first listed in 11:1, with associate editors at that time in archaeological chemistry, archaeometallurgy, environmental archaeology, geoarchaeology, geology, remote sensing. Among the many associate editors, the *Newsletter* benefited from the especially stalwart 20+ years of service from Martha Goodway with her archaeometallurgy column from vol. 8 through 27, and Charlie Kolb's archaeological ceramics contributions from vol. 19 through the present vol. 41.

The *Journal of Archaeological Science* (Elsevier) was floated as a potential journal for SAS in Newsletter 3:1 in a message from President Butzer. Special subscription rates to JAS for SAS members became available in 1979. The cover of JAS has stated since 2000 that it is "published in association with the Society of Archaeological Sciences." One of the JAS editors sits on the Executive Board of SAS. SAS also selects one of the managing editors of *Archaeometry* (Wiley), who also sits on the SAS Board. The third discounted journal now available to SAS members is the *Archaeological and Anthropological Sciences* (Springer).

The SAS has sponsored archaeological science sessions at the SAA meeting since 1982 (*SAS Newsletter*, 5:2), most recently two sessions at the SAA in Washington, D.C., in 2018 -- "Advances and Prospects in the Archaeological Sciences on the 40th Anniversary of the Founding of the Society for Archaeological Sciences, I and II" -- organized by the three general secretaries in SAS history, Erv Taylor, Rob Sternberg, and Kyle Freund. The first international conference session sponsored by SAS was at the Pacific Science Congress, Dunedin, New Zealand, 1983 (4:2), where Foss Leach and R.E. Taylor served as co-conveners of the symposium "Archaeological Science in the Pacific Region." Informal relations with the International Symposium on Archaeometry have been strengthened, with several SAS members and former officers serving on the standing committee of ISA as former organizers of International Archaeometry Symposia.

Student poster awards have been presented for presentations at the SAA annual meeting since 1998. These were re-named as the R.E. Taylor Student Poster Awards in 2002 when awards were also added for the International Symposium on Archaeometry. The SAS Student Research International Travel Award has been available since 2012. Up to \$1000 is available to help with costs of international travel for laboratory or field research to student SAS members. Starting with ISA 2018 in Mérida, three travel bursaries were awarded to SAS student members participating in the meeting. Student travel funds and some general conference support have been provided for a few other international meetings on an ad hoc basis.

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

In May of 2010, Wiley-Blackwell proposed that the SAS sponsor a 4-volume encyclopedia of archaeological sciences. A year later, Wiley-Blackwell formally asked for SAS to sponsor the *Encyclopedia of Archaeological Sciences*. The volumes are finally out in 2018, with Sandra L. López Varela as editor-in-chief, with 483 entries, written by contributors from 43 countries.

Promotion of the SAS has changed over the years as new methods of reaching out have evolved. Gar Harbottle developed the first SAS poster, based on Albrecht Dürer's engraving *Melencolia I*, in 1980 (4:2). A later poster was produced under the guidance of Erv Taylor. The first SAS logo was developed by Betsy Lawlor in 1994 (17:3), and revised by Michael Gregg in 2010 (33:2) with tweaks by Andrew Zipkin in 2017. An improved membership brochure came out in 1994 (17:4). For several years in the late 1990s and beyond we displayed a portable membership display at meetings around the globe.

Foss Leach first got SAS online, starting with the electronic bulletin board ArchSci in 1991 (14:1). This morphed into the listserv SAS-Net and the ftp site SAS-Depot later in 1991 (14:4). Jim Burton took over responsibility for the listserv, and also got our web site up

in 1997, which can now be found at the domain name www.socarchsci.org. Destiny Crider began managing the web page in 2005, and she also took the reins of SAS-Net, which is still operative. Back issues of the *Bulletin* are currently available as pdf files on the web site. Rachel Popelka-Filcoff and Destiny Crider proposed an SAS blog, which was started in 2009 and still continues. We experimented with Twitter in 2014. The SAS Facebook group started in 2010, and now has nearly 900 members (much larger than the size of our Society membership), with enthusiastic stewardship provided by Vice President for Social Media and Outreach Andrew Zipkin. Our Facebook page, which is the official SAS social media organ for society announcements, and the venue for a daily feed of new archaeometry research) has over 1700 followers. We also have a LinkedIn group now too (<https://www.linkedin.com/groups/13661355/>). With a new editor for the Bulletin, Carmen Ting, in 2018, the SAS is considering a new format for the Bulletin online which will be integrated with our other social media.

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

EXTENDED ABSTRACTS FROM THE RECIPIENTS
OF STUDENT PRIZES BY SAS

Synchrotron-based μ XANES and μ XRF study of unsuccessfully produced Egyptian blue from the late Hellenistic production site of Kos (Greece)

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Egyptian blue (EB) is characterised as the first artificially produced pigment (Jaksch, et al., 1983, Tite, et al., 1984, Ullrich, 1987, Pagès-Camagna, et al., 1999, Wiedemann and Berke, 1999, Pradell, et al., 2006, Hatton, et al., 2008). It is a multicomponent material, produced by firing a mixture that essentially contains copper, silicon, calcium and an alkali flux, at temperatures ranging from 840 to 1000 °C approximately (Jaksch, et al., 1983, Tite, et al., 1984, Pradell, et al., 2006, Pagès-Camagna and Colinart, 2003). The blue colour of this material is attributed to a crystalline copper calcium tetrasilicate ($\text{CuCaSi}_4\text{O}_{10}$),

equivalent to the naturally occurring mineral cuprorivaite (Pabst, 1959) and to an amorphous Cu-containing phase (Tite, et al., 1984). The pigment first occurred in Egypt during the pre-dynastic era (Berke and Wiedemann, 2000). Its use quickly expanded outside the borders of Egypt and it remained the main blue pigment for the artist's palette until the 4th century CE, when its use gradually decreased until it was finally forgotten.

The material of our study derives from the late Hellenistic pigment production site of the ancient agora of Kos (Dodecanese, Greece). Excavations on the site brought to light numerous pigments, materials related to metallurgical processes, tools and the remains of fire-structures (Kantzia and Kouzeli, 1987). The production of EB is highlighted as one of the workshop's core activities, with 134 EB finds revealed on the site, out of which 99 in the context of a fire-structure. The EB finds vary in terms of size, shape, texture and colour and can therefore be categorised as successful and unsuccessful products.

The aim of our research, presented at the International Symposium on Archaeometry (2018), is the examination of samples obtained from an unsuccessful product by microanalytical techniques. The unsuccessful products feature high heterogeneity in the micro-level, with different areas of green, brown and blue colour. Four samples were retrieved from microscopically diverse areas of a previously studied unsuccessful sphere (Kantzia and Kouzeli, 1987) and were prepared in cross-sections.

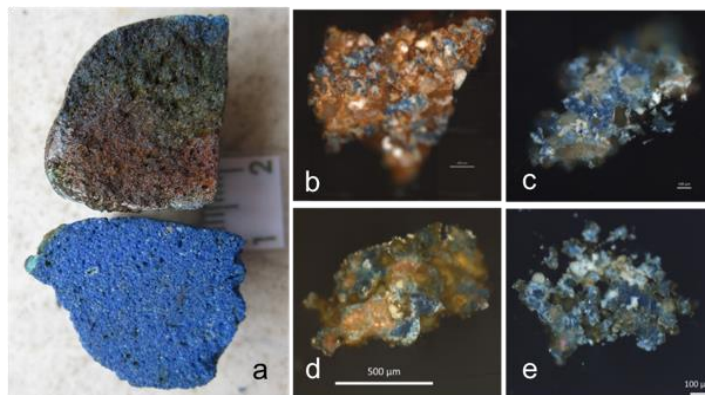


Figure 1. (a) Sectioned successful and unsuccessful Egyptian blue spheres, (b) cross section of sample 1 from the unsuccessful sphere, (c) cross section of sample 2 from the unsuccessful sphere, (d) cross section of sample 3 from the unsuccessful sphere, and (e) cross section of sample 4 from the unsuccessful sphere.

The samples were examined by Scanning Electron Microscopy-Energy Dispersive Spectroscopy (SEM-EDS) and μ -Raman spectroscopy. Spatially-resolved information on the chemical composition and crystal chemistry of the Cu-containing compounds were collected by Cu K-edge micro X-ray Absorption Near Edge Spectroscopy (μ XANES) and micro X-ray Fluorescence

(μ XRF) at the ID21 beamline of the European Synchrotron Radiation Facility. Elemental distribution maps can be obtained from scanning μ XRF, while XANES reveals elemental speciation at specific locations, even in amorphous glassy phases (Cotte, et al., 2017), such as those present in EB. Recording μ XRF maps of the same area at several energies (Selectively Induced X-ray Emission Spectroscopy, SIXES) provides chemical distribution maps, distinguishing species with different features in their XANES spectra. By combining these techniques, we aimed to localize Cu species in a sub-micrometric resolution and a millimetric field of view (Cotte, et al., 2017). The obtained data were analyzed by the PyMca software together with the Spectrocrunch library to facilitate quantification and image alignment for SIXES.

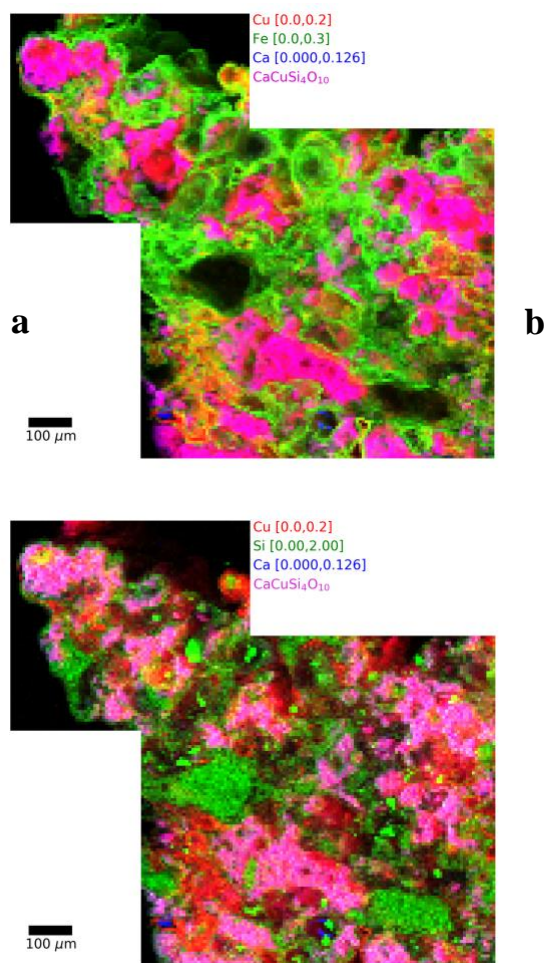


Figure 2. (a) Distribution of Cu, Fe, and Ca (colour scale based on mass fractions) which shows cuprorivaite crystals (magenta) surrounded by a Fe-containing phase (green), and (b) distribution of Cu, Si and Ca which shows unreacted Si-grains in green.

The EDS spectra highlighted the excess of iron in the unsuccessful samples, while the copper and calcium content were significantly lower compared to the successful sample. The electron micrographs as well as the

μ XRF maps reveal the heterogeneity of the material, with unreacted materials, cuprorivaite crystals and a copper bearing glassy phase. The iron and copper distributions predominantly show a negative correlation, meaning that they generally appear as separate compounds. The blue copper containing particles of the samples were successfully identified as cuprorivaite by μ -Raman, in accordance with the results published by Pagès-Camagna, et al. (1999).

XANES spectra of standard copper compounds (atacamite, diopside, malachite and tenorite) and commercially available EB were retrieved. The recorded spectra were normalised and Principal Component Analysis (PCA) was carried out, confirming the absence of Cu^+ species, supporting an oxidising atmosphere for the production (Pagès-Camagna, et al., 1999, Pagès-Camagna, et al., 2006).

The high iron content present in the material might be responsible for the unsuccessful final product. Iron has been commonly documented in low contents for EB samples (Hatton, et al., 2008) and its presence has been attributed to contamination from the type of silica sand used for the production. However, the iron content for the studied sample exceeds the Fe content of the successful sphere (Kantzia and Kouzeli, 1987) and the contents from EB finds from other sites (Hatton, et al., 2008). A possible source for this iron excess could be a copper alloy of unknown composition with high iron content (Craddock and Meeks, 1987). The importance of the copper source is underlined by the outcome of this study, since the possible recycling of copper-alloy scrap of unknown composition might have led to unexpected results, such as the finds revealed in the Koan workshop.

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Nitrogen isotope values of amino acids in lemur bone help disentangle the history of recent extinction in southwestern Madagascar

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Introduction

Controversy exists regarding the drivers of past and ongoing extinctions on Madagascar. While some scenarios attribute species loss to human activities like predation, landscape burning, and the introduction of invasive species, climate change in the form of aridification may have also played a role (Burney et al., 2004; Mahé and Sourdat 1972; Virah-Sawmy et al., 2010). We use nitrogen isotope ($\square^{15}\text{N}$) values of individual amino acids in subfossil lemur bone collagen to look for evidence of aridification. While a variety of environmental factors influence the baseline $\square^{15}\text{N}$ values of soil and terrestrial plants, moisture availability is perhaps the most important (Amundson et al., 2003; Austin and Vitousek 1998; Craine et al., 2009; Crowley et al., 2011; Handley et al., 1999; Schulze et al., 1998). Spatial or temporal patterns in the $\square^{15}\text{N}$ values of primary producers cascade up food chains, with some offset between diet and consumer bulk tissue ($\delta^{15}\text{N}_{\text{consumer}} - \delta^{15}\text{N}_{\text{diet}} = \Delta_{\text{consumer-diet}} = \sim 2\text{--}5\text{‰}$) due to physiological processes (Casey and Post 2011; DeNiro and Epstein 1981). Thus, animals that live in relatively arid habitats tend to have relatively high $\delta^{15}\text{N}_{\text{consumer}}$ values compared to those that live in mesic habitats (Cormie and Schwarcz 1996; Crowley et al., 2011; Heaton et al., 1986; Murphy and Bowman 2006; Sealy et al., 1987).

Previously, Crowley et al. (2017) found no directional change in $\delta^{15}\text{N}$ values of bulk bone collagen ($\delta^{15}\text{N}_{\text{bulk}}$) from terrestrial vertebrates over the past several thousand years. However, interpretation of $\delta^{15}\text{N}_{\text{bulk}}$ values is complicated by the fact that these values are influenced by numerous factors including baseline isotope composition, as well as consumer trophic level and diet quality (Herrera et al.,

2006; Ramírez and Hobson 2006; Vanderklift and Ponsard 2003). Thus, there remains the possibility that dietary change masked climate-related changes in bulk collagen $\delta^{15}\text{N}$ values. Isolating a climate-related signal can be accomplished by measuring $\delta^{15}\text{N}$ values of individual amino acids (AAs). There are significant differences in $\Delta_{\text{consumer-diet}}$ values among individual AAs in terrestrial organisms (Chikaraishi et al., 2011; Hare et al., 1991). For example, glutamic acid in a consumer's tissues has consistently elevated $\delta^{15}\text{N}$ relative to the consumer's diet and is consequently considered to be a “trophic” AA (Chikaraishi et al., 2011; McMahon et al., 2015). Conversely, the $\delta^{15}\text{N}$ value of phenylalanine ($\delta^{15}\text{N}_{\text{Phe}}$) in consumers is isotopically similar to diet, and is therefore considered to be the quintessential “source” AA (Chikaraishi et al., 2011; McMahon et al., 2015). Thus, the $\delta^{15}\text{N}_{\text{Phe}}$ in any consumer will resemble the $\delta^{15}\text{N}_{\text{Phe}}$ at the base of the food web in its habitat ($\delta^{15}\text{N}_{\text{baseline}}$) regardless of diet. We used $\delta^{15}\text{N}_{\text{Phe}}$ to test the hypothesis that lemurs from southwestern Madagascar lived in increasingly arid habitat during the past several thousand years (Hixon et al., 2018).

Methods

We analyzed bones from 13 extinct *Pachylemur insignis* and 10 extant *Propithecus verreauxi* that came from three localities in southwestern Madagascar: Tsirave (located in the Mangoky River drainage), Taolambiby (located in the Onilahy River drainage about 220 km distant), and Beza Mahafaly (a modern reserve located <10 km east of Taolambiby, Fig. 1). All of the *P. insignis* and three of the *P. verreauxi* came from Tsirave. All specimens have been previously analyzed for $\delta^{15}\text{N}_{\text{bulk}}$ and radiocarbon dated. Their ages range from the late Holocene (3700-3960 calibrated years before present [cal BP]) to present (Crowley 2010; Crowley et al., 2017; Godfrey et al. unpub.).

Bone collagen previously extracted and purified for bulk isotopic and ^{14}C analyses was used for AA specific $\delta^{15}\text{N}$ analysis through gas chromatograph combustion isotope ratio mass spectrometry. Measurement of AA-specific $\delta^{15}\text{N}$ values followed hydrolysis of collagen and derivatization of its constituent amino acids (McMahon et al., 2015; O'Brien et al., 2002). We measured $\delta^{15}\text{N}$ values for phenylalanine and several other AAs (listed in Hixon et al., 2018).

Results

Figure 2 provides a comparison of $\delta^{15}\text{N}_{\text{bulk}}$ and $\delta^{15}\text{N}_{\text{Phe}}$ values for each lemur species. *Propithecus verreauxi* $\delta^{15}\text{N}_{\text{Phe}}$ values ($\bar{x} = 13.3\text{‰}$, $\text{SD} = 1.9\text{‰}$) are significantly higher than *P. insignis* $\delta^{15}\text{N}_{\text{Phe}}$ values ($\bar{x} = 11.5\text{‰}$, $\text{SD} = 1.2\text{‰}$, $p = 0.009$). There is a very slight decrease in $\delta^{15}\text{N}_{\text{Phe}}$

values through time for both *P. insignis* and *P. verreauxi* at Tsirave, but this trend is not significant (Fig. 3, $n = 16$, Spearman's rank correlation coefficient [r_s] = 0.318, $p = 0.224$). A similar lack of change in $\delta^{15}\text{N}_{\text{Phe}}$ values through time is observed if only *P. insignis* from Tsirave is included ($n=13$, $r_s = 0.258$, $p = 0.382$). However, there is a significant monotonic decrease in $\delta^{15}\text{N}_{\text{Phe}}$ values through time in the combined sample from Taolambiby and Beza Mahafaly ($n = 7$, $r_s = 0.741$, $p = 0.038$). This trend is also observed when the entire *P. verreauxi* sample is considered ($n = 10$, $r_s = 0.632$, $p = 0.043$).

Discussion

Comparing Genera. A comparison of $\delta^{15}\text{N}_{\text{Phe}}$ and $\delta^{15}\text{N}_{\text{bulk}}$ values for *P. insignis* and *P. verreauxi* highlights the advantage of AA specific $\delta^{15}\text{N}$ analysis in tracking $\delta^{15}\text{N}_{\text{baseline}}$. The relatively high $\delta^{15}\text{N}_{\text{bulk}}$ values for *P. insignis* could be explained via several possible scenarios: 1) *P. insignis* lived in relatively arid habitats with higher $\delta^{15}\text{N}_{\text{baseline}}$ values; 2) *P. insignis* was omnivorous while *P. verreauxi* was herbivorous; or 3) A combination of scenarios 1 and 2. $\delta^{15}\text{N}_{\text{Phe}}$ values allow us to disentangle these possible scenarios. Our data are inconsistent with *P. insignis* living in a more arid habitat, because $\delta^{15}\text{N}_{\text{Phe}}$ values are higher in *P. verreauxi* than in *P. insignis*. This leaves the possibility that *P. insignis* was more omnivorous.

In general, we did not find a significant relationship between $\delta^{15}\text{N}_{\text{Phe}}$ and $\delta^{15}\text{N}_{\text{bulk}}$ values ($n = 23$, $r_s = -0.270$, $p = 0.210$). This relationship is expected, because $\delta^{15}\text{N}_{\text{bulk}}$ integrates more variables than $\delta^{15}\text{N}_{\text{Phe}}$, and this confirms the usefulness of $\delta^{15}\text{N}_{\text{Phe}}$ for isolating $\delta^{15}\text{N}_{\text{baseline}}$. See Hixon et al. (2018) for a discussion of $\delta^{15}\text{N}$ values of other AAs and for an explanation of trophic level estimation based on these data.

Trends in $\delta^{15}\text{N}_{\text{Phe}}$ Values Through Time. The absence of a temporal trend in $\delta^{15}\text{N}_{\text{Phe}}$ at Tsirave suggests that this site experienced little climate change between 3730-3980 cal BP and 740-900 cal BP. It is possible that aridity at Tsirave dramatically increased after 740-900 cal BP and that extirpation of *P. insignis* occurred so rapidly that it left little trace in the material record. However, we think that this scenario is unlikely. Modern *P. verreauxi* $\delta^{15}\text{N}_{\text{Phe}}$ values from Taolambiby ($n = 3$, $\bar{x} = 11.4\text{‰}$, $\text{SD} = 1.0\text{‰}$) are indistinguishable from the values for Tsirave *P. insignis* ($n = 13$, $\bar{x} = 11.5\text{‰}$, $\text{SD} = 1.2\text{‰}$, $p = 0.941$), which suggests either that there has not been a dramatic change in aridity in the region over time, or that patches of habitat resembling that inhabited by *P. insignis* at Tsirave have persisted to the present.

The significant decreases in $\delta^{15}\text{N}_{\text{Phe}}$ values through time observed for *P. verreauxi* at Taolambiby and Beza Mahafaly suggest this species has actually lived in increasingly mesic habitat from 2000-2140 cal BP to the present. The decline in $\delta^{15}\text{N}_{\text{Phe}}$ values matches a previously documented decrease in $\delta^{15}\text{N}_{\text{bulk}}$ values over time for *Propithecus*, *Microcebus*, and *Lepilemur* in southwestern Madagascar over the past 900 years (Crowley et al., 2012). The authors interpreted this decrease as evidence of ecological retreat into more mesic forested habitats in response to human activities and/or human-introduced species, which excluded lemurs from their preferred relatively arid habitat.

Conclusion

The present study does not rule out the possibility that currently-unknown synergistic effects of aridification and human behavior contributed to the Late Holocene extinction of *P. insignis* and other megafauna in Madagascar. However, the absence of any increase in $\delta^{15}\text{N}_{\text{Phe}}$ values for *P. insignis* and *P. verreauxi*, combined with data indicating that *P. verreauxi* lived in increasingly mesic habitat, make aridification an unlikely primary driver of past lemur extinctions. This conclusion, which supports that of Crowley et al. (2017), is quite plausible given that endemic megafauna such as *P. insignis* survived desiccation during the Last Glacial Maximum and extreme changes in moisture availability during transitions between previous glacial and interglacial periods (Burney 1996; Burney et al., 2004). The comparison of $\delta^{15}\text{N}_{\text{Phe}}$ and $\delta^{15}\text{N}_{\text{bulk}}$ values demonstrates the utility of AA specific $\delta^{15}\text{N}$ analysis in expanding inferences regarding changes in $\delta^{15}\text{N}_{\text{baseline}}$. Future research should consider changes in $\delta^{15}\text{N}_{\text{baseline}}$ in geomorphologically distinct regions of Madagascar (e.g. coastal areas), where aridification may have been more substantial (Mahé and Sourdats 1972).

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ARCHAEOLOGICAL CERAMICS
Charles C. Kolb, Associate Editor

This issue contains four topics: 1) Previous Professional Meetings; 2) Forthcoming Professional Meeting; 3) Encyclopedia Note; and 4) Book Reviews on Ceramics.

Previous Professional Meetings:

The 24th EAA Annual Meeting, Barcelona. 5-8 September 2016, "Reflecting Futures" Programme Book (555 pp). <https://files.acrobat.com/a/preview/68e15046-89ef-406a-a7b6-bbb03c143808> 32 MB.

The 18th International Symposium on Ancient Ceramics (ISAC'18) was held 6-9 November 2018 in Shanghai, China. The symposium topics included: 1) Science and technology of ancient ceramics; 2) Archaeology of ceramics; 3) Trading of ancient ceramics; 4) Techniques and artistry of ancient ceramics; 5) Analytical methods; and 6) Preservation and Restoration. Earlier, potential presenters were required to submit detailed abstracts (1500-2000 words) by 31 May 2017. A six-member Editorial Committee acted as abstract reviewers and symposium organizers, inviting ancient ceramics experts and academic researchers, as well as young scientists and related preservers and restorers of historical relics as presenters. The selected presentations focused on recent research achievements in scientific aspects of technology, techniques, raw materials, testing methods, kilns, archaeology, imitations, preservation and restoration. Some of the contributions printed in the 2018 Program and Abstracts (Song Lixin and Chen Lidong as Chief Editors, and Chen Shipping as Responsible Editor) are short abstracts while others are lengthy, full articles, but all appear both in Chinese and English. The symposium presentations were organized into three sections: "A: Scientific and Technological Insights (22 contributions); "B: Archaeological Discovery" (15 presentations); and "C: Syntheses" (24 papers). Not all presentations will be recommended for full-text publication in a Chinese core journal, *Sciences of Conservation and Archaeology: Proceedings of 2018 International Symposium on Ancient Ceramics*.

Western presenters in the 2018 sessions included: Americans Pamela Vandiver and Chandra Reedy, Julian Henderson and Michela Spataro from the UK, and Irina Zhushchikhovskaya from Russia. Chandra suggests that more Americans should consider submitting abstracts for the next ISAC which will be held in 2021 (abstracts would be due in May of 2020). The co-organizer of the symposia, the Shanghai Research Society of Science and Technology of Ancient Ceramics, does have a website, which provides information on current and past conferences; it's in Chinese, <http://www.ssac.org.cn/>. Some browsers can "translate" with good results: Click on ISAC 2018 for the first and second brochures. Unfortunately, the program and abstracts (273 pp.) are not available on the Internet.

The Annual Meeting of the American Schools of Oriental Research (ASOR) was held in Denver, CO, USA, 14-18 November 2018. There were two dozen oral presentations and two posters on ceramic materials. Session designations and names are in **bold**: **1D Twenty Years of Excavation at Omrit in Northern Israel**: Adi Erlich (University of Haifa), "The Cult at Omrit in Light of the Terracotta Figurines"; and Jennifer Gates-Foster (University of North

Carolina at Chapel Hill) and Caitlin Clerkin (University of Michigan), "Local Ceramic Industries and the Pottery Assemblage from Omrit in the First and Second Centuries C.E." **1F Maritime Archaeology**: Nicole Constantine (University of Haifa), "An Expansive Coastscape: The Inland Distribution of Tablewares from Akko's Hellenistic Harbor"; Alexandra Ratzlaff (Brandeis University), "The Akko Hellenistic Harbor Ceramic Assemblage: Harbor Context and Content"; and Michelle Creisher (University of Haifa), Michal Artzy (University of Haifa), Maayan Cohen (University of Haifa), and Deborah Cvikel (University of Haifa), "The Amphorae of the Ma'agan Mikhael B Shipwreck, Israel"; with Michal Artzy (University of Haifa) serving as Discussant.

2A Ancient Inscriptions II: Quinn Daniels (New York University), "A Fresh Look at the Meşad Hashavyahu Ostrakon within Its Economic Context." **2F Yerushalayim, Al Quds, Jerusalem I**: David Ben-Shlomo (Ariel University), "Ceramic and Archaeometric Evidence for Jerusalem's Exterior Contacts during the Iron Age"; and Yael Hochma (Tel Aviv University), Oded Lipschits (Tel Aviv University), Lisa Tauxe (University of California, San Diego), and Erez Ben-Yosef (Tel Aviv University), "Archaeomagnetism of Rhodian Stamped Jar Handles from the City of David." **3B Archaeology of Lebanon I**: Hanan Charaf (Lebanese University), "Bronze Age Pottery beneath the Medieval Castle of Byblos." **3C Archaeology of the Near East: Bronze and Iron Ages III**: Kathryn Morgan (University of Pennsylvania), "The Employee from Sam'al: Pots, People, and Trade Networks at Middle Bronze Age Zincirli"; and Celia Bergoffen (Fashion Institute of Technology), "Late Cypriot Bichrome Ware as an Expression of Commercial Mobility."

3G Thinking, Speaking, and Representing Animals in the Ancient Near East: New Perspectives from Text and Images I: Anastasia Amrhein (University of Pennsylvania), "Harnessing Liminality: Terracotta Animal Figurines in First Millennium B.C.E. Assyria and Babylonia." **3I Archaeology of Anatolia I**: Ashley Cercone (University at Buffalo), "Mold Made: An Application of the Chaîne Opératoire Framework to the Production of Early Bronze Age Ceramics at Seyitömer Höyük, Turkey"; and Oya Topçuoğlu (Northwestern University), "Putting the Bullae Back in Context: A Repositioning of Acemhöyük in the Old Assyrian Period Based on Glyptic and Archaeological Evidence." **4B Archaeology of Lebanon II**: Marta D'Andrea (Sapienza University of Rome), "A Fresh Look at Northern Lebanon in the Late Third Millennium B.C.: The Early Bronze Age IV Pottery from Tell Fadous-Kfarabida." **5A Archaeology of Jordan II**: Abelardo Rivas (Andrews

University), “Colors of Jalul: A Study on the Painted Pottery Found in Field G”; Michael Orellana (Andrews University), “Iron Age IIA Assemblage at Tall Jalul”; and Josie Newbold (Brigham Young University), “New Lamps and Lamp Fragments from the Ad-Deir Plateau, Petra, Jordan.”

5H Archaeology of Mesopotamia: Daniel Calderbank (The University of Manchester), “InterRegional Connections in the Sealand Period: Pottery from Tell Khaiber, Southern Iraq.” **6I The Huqoq Excavation Project:** Daniel Schindler (Elon University), “The Pottery from the Huqoq Excavations and the Dating of Galilean Synagogues.” **7B Archaeology of Cyprus:** Zuzana Chovanec (Institute of Archaeology, Slovak Academy of Sciences), “The Symbolic Landscape of Prehistoric Bronze Age Cyprus as Represented in Figural Representation in Ritual Vessels: A New Interpretation.” **8B Archaeology of Cyprus III:** Nancy Serwint (Arizona State University), “The Terracotta Corpus from Marion/Arsinoe: How a Coroplast Thinks.” **8C The Megiddo Excavations: New Studies Reflecting on the Archaeology and History of Ancient Israel and Beyond:** Eythan Levy (Tel Aviv University) and Israel Finkelstein (Tel Aviv University), “Computational Chronology: The First Appearance of Philistine Bichrome at Megiddo.” **11B Archaeology of Islamic Society I:** Bethany Walker (University of Bonn), “Pottery for the General Staff: What Was the Function of Mamluk ‘Barracks Wares’?” **11C Technology in Archaeology: Recent Work in the Archaeological Sciences:** Rebecca M. Bartusiewicz (University of Massachusetts Amherst), “Alternative Politics at Idalion, Cyprus: Investigations of Governance, Economics, and Society through Petrographic Analysis of First Millennium B.C.E. Pottery.” **11D Archaeology of Iran I:** Golnaz Hossein Mardi (University of Toronto), “Pottery Production during the Middle Chalcolithic Period at the Site of Seh Gabi.” **12D Archaeology of Iran II:** Mohammad Esmaeil Esmaeili Jelodar (University of Tehran) and Mohammad Mortezaei (Iranian Center for Archaeological Research), “Certain Evidence of Glazed Ceramic Manufacturing in Jorjan: An Overview of the Results from the Seventh Season.” The *Posters* were: #16. “Nabataean Course Ware Pottery Dating System” by Jake Hubbert (Brigham Young University) and #9. “3D Methods in Ceramic Analysis: Technology and Production of Predynastic Egyptian and Nubian Ceramics” by Katherine Rose (Harvard University) and Sara Zaia (Harvard University).

Annual Meeting of the American Anthropological Association was held in San José, California, USA, 14-18 November 2018. Total papers and posters: 1,058; only six papers on ceramics in “Ceramic Ecology XXXII:

Imagination, Resistance, Resilience and Adaptation,” Organizers: Sandra L. Lopez Varela – Universidad Nacional Autónoma de México; and Kostalena Michelaki – Arizona State University; Chair: Kostalena Michelaki – Arizona State University. Participants: Divergent ceramic resource provisioning and production strategies in the Classic period Tuxtla Mountains of Veracruz, Mexico: implications for political-economic transformation after environmental and demographic upheaval. Marcie L. Venter – Murray State University; Ancient Regime Change and Political Economy: Perspectives from Ceramic Archaeometry at Angamuco, Michoacán. Anna S. Cohen – Utah State University; Reframing Skill and Mastery in Pottery Making: Considerations from the American Southwest. Caitlin A. Wichlacz – Arizona State University; Ceramics and Social Change in the Southern U.S. Southwest: Roosevelt Red Ware Production in the Tonto Basin. Katherine A. Dungan – School of Human Evolution and Social Change, Arizona State University; Social and political transformation in Early Iron Age central Anatolia: Gordion ceramics. Lisa Kealhofer – Santa Clara University; Using Pottery to Study Past Economic Organizations of Northeast India; and Sukanya Sharma – Indian Institute of Technology Guwahati. Discussant: Rahul C. Oka – University of Notre Dame. There are plans to publish the papers from this symposium.

The Joint Annual Meeting of the Archaeological Institute of America (AIA) and the Society for Classical Studies (SCS) (formerly known as the American Philological Association) was held in San Diego, CA, USA, 3-6 January 2019. Ceramics were well-represented in sessions as follows; session designations and names are in **bold**: **1G: Figure Decorated Pottery from Ancient Greek Domestic Contexts (Colloquium):** “Iconography in the Session designations and names are italicized Athenian Andron” Kathleen M. Lynch, University of Cincinnati; “Here’s Looking at You, Kid: Considering the Audience of Athenian Vases that Include Children in their Scenes” Hollister N. Pritchett, Ball State University; “The Sotades Rhyton from Susa” Jasper Gaunt, Emory University, Michael J. Carlos Museum; “Figured Fine Wares at Olynthus: North Aegean Workshops and Attic Imports” Nikos Akamatis, International Hellenic University, and Bradley A. Ault, University at Buffalo; and “South Italian Red-Figure Pottery in Domestic Contexts of Southern Italy” Francesca Silvestrelli, University of Salento, Lecce (Italy).

7C: Prehistoric Crete: “Firing Diversity? A later Neolithic Pottery Production Area at Knossos and the Development of Pottery Production on Crete” Peter Tomkins, University of Catania; “Time for Plain Speaking: Thinking through Plain Handleless Cups in Minoan Crete”

Ilaria Caloi, Ca' Foscari University of Venice, and Simona Todaro, University of Catania, Italy; and “Mochlos, Uninterrupted: Material Evidence from the Settlement during Middle Minoan IIB-III A” Georgios Doudalis, Ruprecht-Karls-Universität Heidelberg. **7D: The Potters' Quarter of Corinth: New Approaches to Old Data (Colloquium):** “Middle Corinthian Workshops in the Potters' Quarter at Corinth” Ann Blair Brownlee, University of Pennsylvania Museum of Archaeology and Anthropology; “Experiment, Innovation, and Standardization: Archaic Pottery Production at Corinth” Bice Peruzzi, Rutgers University, and Amanda Reiterman, College of the Holy Cross; “Potters at Work and Potters in Distress on the Penteskouphia Pinakes from Archaic Corinth” Eleni Hasaki, University of Arizona; “Making It Work: Life and Labor at the Terracotta Factory” Katherine B. Harrington, Florida State University; “...And Some Figurines: Recovering Terracotta Assemblages from the Potters' Quarter” Theodora Kopestonsky, University of Tennessee; and “The Stelai Shrines of the Potters' Quarter, Reappraisals of Ritual Furniture in Context” Andrew F. Ward, New York University.

8G: Mobility, Acculturation and Hybridity: Pottery and Diversity in the Late Bronze Age (Colloquium):

“Pottery Traditions at Ayios Vasileios, Laconia” Eleftheria Kardamaki, OREA Institut für Orientalische und Europäische Archäologie; “Making Cretan Transport Stirrup Jars in the Argolid” Peter Day, University of Sheffield; “The Mycenaean and Local Pottery Traditions at Koukonissi, Lemnos” Che-Hsien Tsai, University of Sheffield; “Material and Human Mobility: the Diverse Ceramic Worlds of Teichos Dymaion, Achaia, Greece” Michalis Gazis, Hellenic Ministry of Culture and Sport; and “Aegean, Aegean-style, and Local Pottery Traditions in Nuragic Sardinia: New Evidence from Selargius on the Bay of Cagliari” Benoit Proulx, University of Sheffield. *Posters:* “Drinking in Akko: Athenian Pottery at the Akko Railway Station Excavation” Jennifer S. Tafe, Boston University; and “Makers' Marks: An Examination of Anepigraphic Stamps at Cosa” Sophie Crawford-Brown, University of Pennsylvania.

Society for Historical Archaeology 2019 Conference on Historical and Underwater Archaeology St. Charles, Missouri, USA 9-12 January 2019. <https://www.conftool.com/sha2019/sessions.php> *Poster on ceramics:* “The Salvage of the Manila Galleon *Nuestra Señora de la Concepción*: Archaeology Or Treasure Hunting?” Aleck Tan (East Carolina University, USA). Salvage companies may use the guise of archaeology to excavate shipwrecks for their own profits but may not abide by archaeological methods or ethical principles. One shipwreck that was salvaged by companies was the Manila

galleon *Nuestra Señora de la Concepción*, which wrecked in 1638 off the coast of Saipan in the Commonwealth of the Northern Mariana Islands (CNMI). *Concepción* was destined for Acapulco, Mexico, carrying valuable trade goods such as porcelain, storage jars, and gold jewelry from Manila, Philippines. Starting in the late 1980s, the CNMI issued contracts for two salvage companies, Pacific Sea Resources Inc. and Proa Inc., to recover artifacts archaeologically. However, there is missing archaeological information on the shipwreck from the salvage companies. An examination and comparison of the salvage companies' projects to archaeological methods and ethical principles set by professional associations reveals issues in the salvage.

Forthcoming Professional Meetings:

The 84th Annual Meeting of the Society for American Archaeology will be held in Albuquerque, New Mexico, USA, 10-14 April 2019. The *Preliminary Program* lists only session titles, type (oral, poster, etc.), and the names of the Moderators and Discussants. The *Final Program* and separate *Abstracts* (online) should be available by mid-March (normally there are 125-150 papers or posters on pottery).

<http://www.saa.org/AbouttheSociety/AnnualMeeting/PreliminaryProgram/tabid/187/Default.aspx>

The four sessions are entirely or partly devoted to ceramic materials: **Symposium: I Love Sherds and Parasites: A Festschrift in Honor of Pat Urban and Ed Schortman.** Chairs: John Douglass, Samuel Connell, and Ellen Bell. Participants: John Douglass, Ellen Bell and Samuel Connell; Ellen Bell; Louis Neff and Samuel Connell; Marne Ausec; Helen Henderson; Claire Novotny, Anna Novotny and Leigh Anne Ellison; Erlend Johnson; Christopher Attarian; Garrett Silliman and Daniel Contreras; Alejandro Figueroa and Whitney Goodwin. Discussants: E. Christian Wells; Stacie King; Benjamin Carter; Patricia Urban; Edward Schortman. **Symposium: Cross-Cultural Petrographic Studies of Ceramic Traditions.** Chair: Mary Ownby. Participants: David Hill, Jan Petřík, Karel Nováček and Ali Ismail Al-Juboury; David Killick and Edwin Wilmsen; Lorelei Platz and Carrie Dennett; M. Elizabeth Grávalos and Isabelle Druc; Andrew Womack; Wesley Stoner; Suzanne Eckert and Deborah Huntley; Andrew Lack and Mary Ownby; Guillermo De La Fuente; Ester Echenique, Florencia Avila and William Gilstrap; John Lawrence, Scott Fitzpatrick and Christina Gives; C. Trevor Duke, Neill J. Wallis and Ann S. Cordell. **Symposium: Mesoamerican Figurines in Context: New Insights on Tridimensional Representations from Archaeology.** Chairs: Juliette Testard and Brigitte Faugere. Participants: Patricia Ochoa Castillo; Catharina Santasilia; Brigitte Faugere; Maria

Reyes Parroquin; Miriam Judith Gallegos Gomora and Ricardo Armijo Torres; Erin Sears; Michelle Rich, Erin Sears, Ronald Bishop and Dorie Reents-Budet; Martha Lorenza Lopez Mestas Camberos and Marisol Montejano Esquivias; Emilie LeBrell, Geoffrey G. McCafferty and Sharisse D. McCafferty; Juliette Testard, Marion Forest and Elsa Jadot. Discussant: Lisa Overholtzer.

Symposium: Alfareros deste Inga: Pottery Production, Distribution and Exchange in the Tawantinsuyu.

Chairs: Alejandro Chu and Sonia Alconini. Participants: Tamara Bray and Leah Minc; R. Alan Covey, Robert Selden, Astrid Runggaldier and Nicole Payntar; James Davenport and Marie-Claude Boileau; Alejandro Chu; Diana Carhuanina; Kylie Quave; Sonia Alconini; Mauricio Uribe; Francisco Garrido; Veronica Williams and Calogero Santoro; Matthew Warren.

Five others having some contributions on ceramics include: **Symposium: The Legacies of the Basin of Mexico: The Ecological Processes in the Evolution of a Civilization, Part 1.** Chair: Carlos Cordova. Participants: Deborah Nichols; Silvia Gonzalez, Samuel Rennie and David Huddart; Elizabeth Solleiro-Rebolledo, Georgina Ibarra and Sergey Sedov; Carlos Cordova; Isabel Rodríguez López and Aleksander Borejsza; Mari Carmen Serra Puche; Dan Healan; Charles Kolb; Sarah Clayton and Michelle Elliott; Guillermo Acosta-Ochoa, Emily McClung de Tapia, Laura Beramendi-Orosco, Diana Martinez-Yrizar and Galia Gonzalez Hernandez; Kristin De Lucia; John K. Millhauser; Larry Gorenflo; Patricia Fournier and Cynthia Otis Charlton. Discussants: Jeffrey Parsons and Emily McClung de Tapia. **Symposium: The Legacies of the Basin of Mexico: The Ecological Processes in the Evolution of a Civilization, Part 2.** Chairs: Christopher Morehart and Charles Frederick. Participants: Destiny Crider; Joaquín Arroyo-Cabral, Eduardo Corona-M. and Felisa J. Aguilar-Arellano; Abigail Meza Peñaloza and Federico Zertuche; Philip Arnold and Wesley Stoner; Christopher Morehart, Angela Huster, Dean Blumenfeld, Rudolf Cesaretti and Megan Parker; Charles Frederick. Discussant: Deborah Nichols.

General Session: Crafting and Manufacturing in the Ancient Maya World. Chair: Evan Parker. Participants: Timothy Dennehy, Chris Merriman and Keith M. Prufer; Evan Parker, George J. Bey III and Tomás Gallareta Negrón; Norbert Stanchly and Helen Haines; Alejandra Roche Recinos, Charles Golden and Andrew Scherer; Virginia Ochoa-Winemiller, Terance L. Winemiller, William J. Folan and Lynda Florey Folan; Mary Clarke, Henry Perez, Boris Beltran and Heather Hurst. **Symposium: 2019 Fryxell Award Symposium: Papers in Honor of M. Steven Shackley.** Chair: Christopher Stevenson. Participants: Kyle Freund; Jeffery Clark, J.

Brett Hill and M. Steven Shackley; Bruce Huckell; Bonnie Clark; Michael D. Glascock, Kylie Gannan and Thomas R. Hester; Sean Dolan; Carolyn Dillian, Emmanuel Ndiema and Purity Kiura; Robert H. Tykot; Jennifer Kahn and John Sinton; Mark McCoy, Dion O'Neale, Christopher Stevenson and Thegn Ladefoged; Robin Torrence; Robert Speakman; Ellery Frahm; Rosemary Joyce; Nicholas Tripcevich, B. Lee Drake, Lisa Trever, Eric Kansa and Michael Glascock. Discussant: M. Steven Shackley. **Symposium: Making and Breaking Boundaries in the Maya Lowlands: Alliance and Conflict across the Guatemala-Belize Border.** Chairs: Christina Halperin and Carolyn Freiwald. Participants: Michael Callaghan and Brigitte Kovacevich; George J. Micheletti, Sheldon Skaggs and Terry G. Powis; Katherine Miller Wolf; Jason Yaeger and M. Kathryn Brown; Jaroslaw Zalka, Bernard Hermes, Carmen Ting, Christophe Helmke and Wieslaw Koszku; Christina Halperin, Jose Luis Garrido Lopez, Miriam Salas and Jean Baptiste LeMoine; Dorie Reents-Budet, Ronald L. Bishop, Christophe Helmke and Julie Hoggarth; Nathan Meissner; Carolyn Freiwald; Ryan Mongelluzzo, Jose Garrido and Jean-Baptiste Le Moine; Jean Larmon, Vilma Fialko and Lisa Lucero; Jaime Awe and Christophe Helmke; Simon Martin; Eleanor Harrison-Buck and Timothy Pugh; Brett A. Houk and Brooke Bonorden. Discussant: Gyles Iannone.

The 12th ICAANE: International Congress on the Archaeology of the Ancient Near East is scheduled to be held in Bologna, Italy, 14-18 April 2020. Additional information is available at 12icaane@unibo.it. There are eight themes, most of which can accommodate sessions and/or papers on ceramics. **1. Field Reports. Recent excavations, surveys and research.** Excavations of sites, or even of areas within sites which present a specially coherent meaning, territorial surface surveys or field systematic sampling programs (not falling into themes 2 and 3), all preferably from the last four years or otherwise little known. Reports should also systematically address chronological issues, both absolute and relative, as well as intercultural connections in order to foster discussions among scholars working in different areas. **2. Environmental Archaeology. Changing climate and exploitation strategies: impact on ecology, anthropized landscapes and material culture.** The relationship between humans and environment may be viewed from a plurality of angles and a multitude of approaches, through a variety of techniques, in a process which also affects our own perception of landscapes and resources in their spatial and chronological sustainability. **3. Hammering the material world. Characterization of material culture, processes and technologies** From pottery typologies, to artifacts biographies and archaeometrical analyses, the material sphere reveals ultimately the underlying processes

with which ancient societies interacted and changed through time. **4. Cognitive archaeology. Reading symbolic and visual communication networks and structures.** The world view of ancient societies is often embodied in their material culture, specifically in visual materials with their internal as well external set of interconnected relations, but also in how space was built, chaînes opératoires and transmission of knowledge were organized. **5. Modeling the past. Contemporary theoretical approaches to the archaeology of economies and societies.** Data need explanatory models to be properly framed and appreciated: the functioning of societies and the ways in which their economies worked are informed by theoretical models, which thus need a discussion of their own in order to evaluate different approaches, from settlement patterns to cross-cultural comparisons, from subsistence strategies to the commodification process. **6. Networked archaeology. Global challenges and collaborative research in the new millennium.** The Open Data approach requires a coordinated effort if we strive for changing radically the way archaeology works on the field and how data are produced, managed and shared, either online or through timely and accessible publications. New criteria for allocating credit for production and re-use of digital data (e.g. metadata with embedded authorship, and extensive use of DOIs linking publications and primary data) should be evaluated in order to make the open release of primary digital data as the customary output of archaeological projects, which should ideally be conceived according to collaborative and open patterns. **7. Endangered cultural heritage. Coordinated multilateral research, conservation and development strategies.** The last three decades witnessed a steady growth of grave threats to heritage in the Near East: the challenges of its documentation, conservation, reconstruction, protection and enhancement should be set within a truly multilateral approach, respectful in the first place of national needs and policies coupled with best practices, new legislations, such as preventive archaeology, and an inclusive vision. **8. Islamic archaeology. Continuities and discontinuities between a deep past and modernity.** Islamic archaeology, i.e. the archaeology of the Middle Ages and early modern times in the Near East, is the fundamental link for letting contemporary societies bridge the gap with the high antiquity of ANE studies, a long stretch of eventful developments which ultimately shaped the current natural, social, rural and urban landscapes of the region. Papers sharing this chronological focus will be grouped here.

Encyclopedia Note

The Encyclopedia of Global Archaeology, 2nd ed. Claire Smith, editor-in-chief). Cham, Switzerland: Springer,

2018. The Online version is a “living reference work” with entries to the new edition posted immediately online with a print version to follow in 2020. The first edition (2014) published in print had 6 volumes and an online version but the new edition will have many more entries. The following articles (“chapters”) related to ceramics are among those written by Charles C. Kolb. “Provenance Studies in Archaeology” [Ceramics, Lithics/Stone, Metals, Glass, Textiles], 2nd ed. First Online: 17 January 2018. 11 pp. DOI: https://doi.org/10.1007/978-3-319-51726-1_327-2; “Ceramic Ecology.” First Online: 21 January 2018. 9 pp. DOI: https://doi.org/10.1007/978-3-319-51726-1_3228-1; “Clay Tobacco Pipes.” First Online: 21 May 2018. 11 pp. DOI: https://doi.org/10.1007/978-3-319-51726-1_2717-1; “Noël Hume, Ivor,” 2nd ed. First Online: 10 July 2018. 5 pp. DOI: https://doi.org/10.1007/978-3-319-51726-1_1749-2; and “Glassie III, Henry H,” 2nd ed. First Online: 12 July 2018. 4 pp. DOI: https://doi.org/10.1007/978-3-319-51726-1_1750-2. An additional article, “Matson, Frederick R.” is currently being edited, 5 pp.

Book Reviews on Ceramics:

Made to Order: Painted Ceramics of Ancient Teotihuacan. Cynthia Conides. Norman: University of Oklahoma Press, 2018. xvii + 233 pp., 20 color plates, 22 b-w illustrations, 2 tables, 1 map, 711 endnotes. ISBN-13: 9780806160573, ISBN-10: 806160578. \$55.00. Conides received her doctorate in Art History and Archaeology from Columbia University, New York City, in 2001 where she defended her dissertation entitled *The Stuccoed and Painted Ceramics from Teotihuacan, Mexico: A Study of Authorship and Function of Works of Art from an Ancient Mesoamerican City*, 2 vols., xxi + 658 pp. She currently is an Associate Professor of History and Director of Museum Studies at the State University of New York at Buffalo (2005-date) and formerly was the Executive Director of the Buffalo and Erie County Historical Society (2006-2010) – now the Buffalo History Museum -- and is regarded as an expert on Pre-Columbian art and archaeology. In the 1990s Conides undertook this difficult topic and has made highly significant contributions to ceramic studies and cultural interpretations of the inhabitants of Teotihuacan, an ancient city (100 BCE-CE 650) located in the Basin of Mexico that was demographically the largest urban center in Prehispanic Mesoamerica and, indeed, all of North America. As a city-state, Teotihuacan was the political and cultural center of what scholars believe was a vast empire with economic ties to north and west Mexico, the Gulf Coast, and the Yucatan Peninsula into present-day Honduras.

Mesoamerican scholars, particularly those whose research focuses on Highland Mexico and the Classic period, are

likely aware of her dissertation topic and will be delighted to know that her book, *Made to Order: Painted Ceramics of Ancient Teotihuacan*, is a revised and expanded version of her 2001 study, although streamlined general audience. For this review and for comparative purposes I have reread portions of the original dissertation. As an example of the book versus the dissertation, the obligatory Columbia University's required dissertation background material has been deleted and, significantly, the original timeline proposed by René Millon (1973) is replaced by a more recent, better-documented chronology by the late George Cowgill (2015), and the extensive appendices in the dissertation excised. All of the tables and illustrations in her dissertation are clustered in the second volume (pp. 353-463) whereas the illustrations, line drawings and monochrome images in *Made to Order* are inserted at by appropriate locations in the narrative; the 20 splendid high-quality color plates are clustered in the book, pp. 39-54. In addition, the numbers of vessels and sherds she studied originally have expanded from 142 to more than 150 -- chiefly due to new excavations and research since 2001. Likewise, her acknowledgments (primarily recognizing her consultations with other Mesoamerican scholars) are greatly increased and the references have been updated and enlarged with literature consultations through 2017. Before Conides detailed analyses, there had been little interest in how the pictorials were produced, who created them, and why.

First, some background and caveats provided by your reviewer. I know the author as a colleague and friend and have personally looked forward to the publication of the book version of her dissertation. As a graduate student in the early 1960s, I had the opportunity to survey and map Classic Teotihuacan period sites for both the rural and urban for the Teotihuacan Valley Project (Bill Sanders at Penn State) and Teotihuacan Mapping Project (René Millon at the University of Rochester) over three field seasons (totaling 17 months). My research concentrated on the analysis of all Classic ceramic material culture (pottery, figurines, incense burners, etc.) and an ecological focus to prepare a diachronic assessment of Classic settlement patterns. Conides comments on specimens from several archaeological sites where I excavated including Maquixco Bajo (TC-8, a suburban/rural site) and urban apartment compounds such as La Ventilla B, and conduct salvage excavations along the Periférico (a highway constructed around urban Teotihuacan to enhance tourism in 1963-1964). Among my publications relevant to the pottery studied by Conides are: "Classic Teotihuacán Copoid Wares: Ceramic Ecological Interpretations" in *Ceramic Ecology Revisited, 1987: The Technology and Socioeconomics of Pottery*, Part 2, edited by Charles C. Kolb, BAR International Series S-436, Oxford: British

Archaeological Reports (1988), pp. 345-448, 18 figs., 16 tables (Ch. 10) and thin-section petrography of ceramic specimens representing the range of wares from Teotihuacan -- "Analyses of Archaeological Ceramics from Classic Period Teotihuacán Mexico, A.D. 150-750" in *Materials Issues in Art and Archaeology V*, edited by Pamela B. Vandiver, James R. Druzik, John F. Merkel, and John Stewart, Symposium Proceedings 462, Pittsburgh, PA: Materials Research Society, pp. 247-262.

The pottery analyzed by Conides is not the traditional painted ceramics from Teotihuacan which almost exclusively includes designs in red-on-buff or red-on-natural wares. These have been recently studied in detail by Destiny L. Crider as part of her graduate research: *Epiclassic and Early Postclassic Interaction in Central Mexico as Evidenced by Decorated Pottery*, unpublished Ph.D. dissertation, Tempe: Arizona State University, 637 pp. (2011); and two articles "Assessing Mexican Pottery Paint Recipes Using Particle-induced X-ray Emission." *Open Journal of Archaeometry* 1:e5 (2013) and "Complementary Approaches for Understanding Mazapan Pottery," in Sandra L. López Varela (ed.), *Innovative Approaches and Explorations in Ceramic Studies*, Archaeopress Archaeology, Oxford: Archaeopress, pp. 89-106 (2017).

Made to Order centers on a unique and fragile ceramic decoration that has been known and reported for more than a century but has been vastly understudied by a variety of scholars -- art historians, archaeologists, ethnohistorians, and archaeometricians, among others have not attempted a detailed content analysis of the pictorial paintings or a physicochemical analysis of the renderings. Early investigators totally ignored these ceramics, for example, Eduardo Batres (1908) and Carlos Betancourt in Manuel Gamio (1922). Others suggested that these pictographic renditions were somehow related to mural paintings that abound in urban Teotihuacan and one suburban/rural site. Beatriz de la Fuente's magnum opus, *La pintura mural de Prehispánica en México, I: Teotihuacan, México*, Instituto de Investigaciones Estéticas, México, DF, México: Universidad Nacional Autónoma de México (1995), documents the content of the mural art. In the 1990s Conides undertook this difficult topic and has made highly significant contributions to ceramic studies and cultural interpretations of the inhabitants of Teotihuacan, an ancient city (100 BCE-CE 650) located in the Basin of Mexico that was demographically the largest urban center in Prehispanic Mesoamerica and, indeed, all of North America. As a city-state, Teotihuacan was the political and cultural center of what scholars believe was a vast empire with economic ties to north and west Mexico, the Gulf

Coast, and the Yucatan Peninsula into present-day Honduras.

“Stuccoed and painted” pottery is a single genre of pictorial post-fired ceramics from Classic period Teotihuacan. Vessels were placed in human burials and offerings, appearing first during the Late Tlamimilolpa phase (ca. 250-350 CE); became more frequent during the subsequent Early Xolalpan phase (ca. 350-450 CE); were most common in the Late Xolalpan phase (ca. 450-550 CE), a time of intensive urban growth; but diminished and ceased to be produced during the Metepec phase (ca. 550-650 CE). These dates of production and use are the ones used by Conides following Cowgill (2015:11). Completed fired vessels were selected for further elaborated by artisans in Teotihuacan, predominantly these were cylindrical vases with erect walls and tripod supports. The cylindrical vases (n = 130+) *originally* were: 1) plain (unadorned matte or burnished surfaces), 2) altered in the leather-hard pre-fire stage by plano-relief carving, or 3) post-fire decorated (the surfaces were incised, gadrooned, painted, slip-painted, molded, or adorned using appliqué). Two minor vessel shapes that were also selected were shallow flat-bottomed bowls (n = 14) and, rarely, rarer necked jars (n = 5). All three of the unaltered vessel forms were mostly produced mostly as monochrome wares from local clays or imported – like Thin Orange Ware -- from production sites located in present-day Puebla southeast of the Basin of Mexico, or Lustrous Ware made in sites in Veracruz on the Gulf Coast. Only a few investigators, such as the Swedish archaeologist Sigvald Linné (1934) and Americans Alfred Kidder, Jesse Jennings, and Edward Shook (1946) in their analysis of ceramics from Kaminaljuyú, Guatemala, were curious about materials and production techniques used on the stuccoed painted pottery that came from Teotihuacan but pursued no further studies. Most art historians and archaeologists likened the depictions on the stuccoed and painted vessels to architectural façade and wall mural painting, in the main, because of similarities in content. The pottery vessel exteriors were prepared by the application of thin lime “plaster coatings” as a ground for the subsequent painting. One basic question remains: was a binder used, and if so, was it an organic material such as gum or were there different binders? We now know that the surface to be painted (ground) was composed of thin coatings of lime, crushed calcite (calcium carbonate), or argillaceous clay – hence, “stucco painted” is likely a misnomer. A variety of fine-lined drawings and polychrome pigments were used to decorate the whitish surface. Art historians became especially interested in the content of the pictorial composition and imagery, but a few -- like Cynthia Conides – were also intrigued by the techniques and materials used in “stuccoing” as well as in the painting on

these delicate, easily damaged pictorials on fragile ceramic vessels.

Archaeologist Evelyn C. Rattray’s (2001) detailed compendium, *Teotihuacan: Ceramics, Chronology and Cultural Trends / Teotihuacan: cerámica, cronología y tendencias culturales*, co-published by Pittsburgh, PA: Latin American Archaeology Publications, University of Pittsburgh, and México, DF: Instituto de Investigaciones Antropológicas, Universidad Nacional Autónoma de México [bilingual English-Spanish], a massive 704 page volume (plus 13 color plates available electronically) that devotes portions of two pages and three plates to stuccoed and painted ceramics; for the plates, see: <https://www.cadb.pitt.edu/rattray/index.html>.

Archaeometric studies of stuccoed and painted ceramics have been neglected. Noemi Castillo Tejero in *Algunas técnicas decorativas de la cerámica arqueología de México*, Serie Investigaciones 16, México, DF, México: Instituto Nacional de Antropología e Historia (1968), mentions the technique while Mary E. Gaines, undertook *An Analysis of the Painted Programs on Sixty-two Teotihuacan Stucco Covered Tripod Vases*, unpublished Masters’ thesis, Austin: University of Texas (1975), a traditional study of decoration. One of Cynthia Conides’ students, Jessica Fletcher, studied technological issues reported in “Stuccoed Tripod Vessels from Teotihuacan: an Examination of Materials and Manufacture,” a paper presented at the meeting of the Annual Association of Art Conservation Graduate Programs, State University College at Buffalo, April 1999, subsequently peer-reviewed and published as “Stuccoed Tripod Vessels from Teotihuacan: an Examination of Materials and Manufacture,” *Journal of the American Institute for Conservation* 41(2):139-154 (2002). I had the pleasure of being an external reviewer for Fletcher’s work which included an analysis of specimens from the Classic period Maquixco Bajo site the suburban/rural archaeological site located just west of urban Teotihuacan.

Fletcher’s important study (1999), frequently cited by Conides (2001, 2018) was conducted with the goal of characterizing a specific group of polychrome painted stuccoed ceramic sherds from the Maquixco Bajo. Analysis included pigment identification, stucco identification, characterization of the ceramic surface preparation, as well as further investigation into binders and the technology of application. The layered structure of the stucco decoration is described. Analytical techniques used included scanning electron microscopy (SEM), x-ray powder diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), microchemical testing, and polarized light microscopy. Results indicated that red and yellow

pigments are primarily iron oxides, blue and green pigments are mixtures of azurite and malachite with chrysocolla, and most black pigments contain charcoal black. The surfaces being painted are composed of calcite or clay, as well as mixtures of the two materials. Fletcher also proposes calcite as a binder. Megan O'Neil's brief chapter, "Stucco-Painted Vases from Teotihuacan: Integration of Mural and Ceramic Traditions" in Matthew H. Robb (ed.), *Teotihuacan: City of Water, City of Fire*, San Francisco: Fine Arts Museums of San Francisco and the University of California Press (2017), pp.180-187, was the most recent up-to-date assessment but is surpassed by *Made to Order*.

Conides' book focuses on cultural practices and artistic techniques employed by artisan potters. She documents synchronic and diachronic elements of stylistic analysis and narrative theory and theoretical perspectives on artistic exchange among artisans living and working in or near Teotihuacan. An art history approach is evident combined with her effort to anthropologically reveal the importance of this unique ceramic in an urban context where social status and the acquisition and display of its symbols, were paramount in a stratified society. Her art and archaeology perspectives have shed new light on efforts to interpret religious, social, and ritual contexts in which the objects functioned.

Structurally the book includes a "Preface" (pp. xiii-xiv), "Acknowledgments" (pp. xv-xvii), a small "Map of Teotihuacan" and "Chronological Table" (both on p. 2). The eight numbered chapters are supplemented by "Notes" (pp. 203-213) n= 711 endnotes, a "Bibliography" (pp. 215-226) with 351 entries, and a very useful topical and proper noun triple-column "Index" which also includes the illustrations (pp. 227-233). The book's chapter titles and content follow the same format of the dissertation through the first seven chapters. Chapter 1 "The City of Teotihuacan and Its Painting Legacy" (pp. 3-24, 3 figures, 116 endnotes) provides background on the urban center, its barrios (neighborhoods), 2,300 apartment complexes, mural paintings, portable art, and a review of the literature, and methodologies employed in the study. Chapter 2 "Linear Styles of Mural Painters and Ceramic Decorators" pp. 25-54, 15 figures, 22 endnotes, 20 color plates) provides a discussion on the relationships between stuccoed ceramics and mural paintings, and plano-relief ceramic decoration to the stuccoed and painted compositions. Headdresses, hands, eyes, flowers, and circular patterns are documented.

Chapter 3 "Durability and Ephemerality: Materials, Forms and Aesthetics of Stuccoed and Painted Ceramics" (pp. 55-76, 19 figures, 67 endnotes) provides background on the

early observations made on the pictorial pottery by archaeologists. The characteristics of *al fresco* (wet surface) and *al seco* (dry surface) painting are reviewed with the notation that the former term as use by Linné (1934) came from Herbert Spinden's (1913) museum catalog descriptions. Conides refers to the scientific studies undertaken by Jessica Fletcher (1999, 2002) who distinguished the use of clay versus crushed calcite ground as prepared surfaces for painting and proposing that lime washes were intentionally mixed with pigments as an intermediate technique making gum binders unnecessary (1999:14). There are citations to Fletcher's 1999 unpublished paper. Ceramic shapes and forms, especially the cylindrical tripod-supported vessels are documented; there are three basic shapes of supports and 14 styles, as well as variations in wall thicknesses potentially relating to chronological phases. The design layouts and compositional formats inferred painting programs and reported and vessel construction techniques (pastes, forming methods, prefired decorated surface finishes, postfired decoration) are detailed. Manufacturing differences suggest temporal variations or fabrication in different workshops, and the "redecoration" of local and foreign vessels with stucco and painting suggest adaptations and social changes in ownership and modifications in social identity. She states that "a stylistic chronology of the painted programs in context with the chronological placement of the ceramic wares offers some perspective ... on what may have occurred over the period that pictorial ceramics were made and used at Teotihuacan" (p. 76).

Chapter 4: "Reflections on the Functions and Symbolism of Stuccoed and Painted Ceramics" (pp. 77-105, 25 figures, 123 endnotes) provides a discourse on contexts where the pottery has been archaeologically recovered, mostly burials and offerings, but also on patio floors in residential complexes. Use-related activities including repairs using crack-lacing, ritual vessel "killing," wear patterns, and performance attributes are documented. The layout and symbolism on the pictorials are reviewed, especially: 1) architectural structures in the painted programs, 2) headdresses and personal accoutrements (ear spools and nose plaques) worn by personages who provide information on social statuses, and 3) the contents of transitional space in the depictions. Chapter 5: "Water Imagery, Butterflies and the Mechanics of Popular Religion at Teotihuacan" (pp. 107-124, 13 figures, 54 endnotes) focuses on the visual narratives (static, dynamic, and interactive) and thematic topics in the corpus detailed – butterflies are the central theme of 25% of all examples. Associations of butterflies with militarism and deceased warriors, well documented in Postclassic Aztec culture, are considered, and water imagery and circular structures

associated with water represented in architectural murals and anthropomorphic images are reviewed. Notably, butterflies are associated with headdresses of personages involved with water rituals but appear to be absent on personages depicted on ceramic theater-type incense burners (p. 123); some scholars may question this.

Chapter 6 “A Diachronic Framework for Pictorial-style Ceramics at Teotihuacan” (pp. 125-179, 47 figures, 252 endnotes) provides a detailed and well-referenced chronological review of stuccoed and painted pottery dated to each of the four ceramic phases: Late Tlamimilolpa, Early and Late Xolalpan, and Metepec. In the past, the decorative treatment of the cylindrical tripod support vessels has been viewed as “a homogeneous collection of ceramics unified by a common decorative treatment” (p. 125). Conides’ research reveals that there are significant diachronic differences in vessel construction and surface finishes. She specifies her research methodology and proceeds to a stylistic analysis of vessels of both domestic and foreign origins of manufacture and relates these to datable contexts in Teotihuacan and Copan, Honduras. Individual specimens from American, Mexican, German museum collections are described and reviewed in detail. With this body of evidence in hand, Conides notes that ceramic decorative styles crosscut ceramic technological styles and she proposes a “archaeological relationships among plano-relief and stuccoed and painted, and molded/appliqué ceramic decoration, determined by the transfer of pictorial styles emphasizing humans and other life-forms and status, related regalia among three technological styles. ... [and] pictorial-style ceramics show elements of design and design technology earlier than the time period in which they show the greatest frequency, that is, when they become hallmarks of later periods” (p. 177). Plano-relief decoration loses popularity and is gradually replaced by stuccoed and painted pottery but does not completely disappear during the replacement era. Reasons for this chronological change are discussed.

Chapter 7 “Mind over Matter” (pp. 181-196, 64 endnotes) commences with a discussion about intended and unintended messages that the mind-set or training that the artist brought to the work. Conides conjectures that the stuccoed and painted artists were initially trained in other types of pottery decoration. However, she states that occasionally muralists may have tried their hand at small-scale painting. Linné (1934) had proposed that plano-relief was a forerunner of cloisonné decoration but this hasn’t been substantiated. The ebb-and flow of plano-relief is reviewed phase by phase and the technical innovation of stuccoed and painted pottery and layering of stucco and pigments proposed on the basis of the studies by Fletcher (1999). The origins and use of pigments is reviewed based

on Fletcher’s SEM, XRD, FTIR, microchemical testing, and polarized light microscopy analyses of the Maquixco Bajo specimens. But are the sherds from this site identical to those stuccoed and painted vessels from the urban center? Fletcher first noted that the layers on the vessel fragments at this site were clay rather than calcite. The incising to produce plano-relief decoration is time consuming and subject to errors in cutting, while painting errors on stuccoed surfaces can be fixed by overpainting. The issue of supply and demand is examined and social stresses are related to the possibility of ceramic workshop specialization. Unfortunately, only a few ceramic workshops are known at Teotihuacan and a majority produced San Martin Orange cooking wares. Oralia Cabrera’s (2011) work at Site 520 located in Teotihuacan’s periphery is the known producer of the cylindrical tripod vessels.

Chapter 8 “Creativity and Innovation” (pp. 197-201, 13 endnotes) blends two chapters from the dissertation and adds other significant material. Conides summarizes the multiple levels of inquiry used in her analysis and concludes that the stuccoed and painted pottery was produced for a sector of Teotihuacan society that was intent on status acquisition and display, and documents that social disparities increased through time. She demonstrates that pictorial ceramics were a unique product which crosscut technological styles and that demand increased diachronically through the four phases. Burial assemblages were highly personalized and the polychromes stuccoed and painted pottery was a sign of status. She also ponders an interesting question: how many times a vessel might have been reused or refurbished and considers whether the vessels were commissioned by their owners and if production was controlled or sanctioned by the state. Three areas for future research are proposed: stratigraphic evidence, 2) external/foreign connections, and 3) procurement of supplies (stucco and pigments).

As a contribution to art history and ceramic ethnoarchaeology, *Made to Order* includes no appendices. However, Conides’ **dissertation** (2001) includes three splendid, informative appendices: “Appendix One: Cylindrical Tripod Vessels and Stuccoed and Painted Wares from Excavated Contexts at Teotihuacan” (pp. 488-509) which is organized chronologically by phase, sites within each of five phases, context(s) the within sites (mostly burials and a few offerings). “Appendix Two: “Corpus of Stuccoed and Painted Ceramics” (pp. 510-652) detailing 142 specimens in terms of location, context, measurements, paste, ceramic phase, condition, type(s) of supports, upper and lower borders (registers), colors, published and unpublished sources, and provides a narrative description. And “Appendix Three: Locations of

Stuccoed and Painted Ceramic Sherds from the Teotihuacan Mapping Project Surface Survey, 1963-1966” (pp. 653-658) the locations of 99 sherds in terms of the Teotihuacan Mapping Project’s alpha-numeric map site references and she includes descriptions of the sherds.

Made to Order is an impressive, pathbreaking example of multidisciplinary research that supplies a great deal of information about this unique and fragile ceramic decoration, its predecessors, diachronic changes, and sociocultural and religious relationships to Teotihuacan social structure. There is also food for thought about the results and interpretations that provides a framework for additional studies. Her research provides new or reinterpretations of social, religious and economic contexts in which these vessels were made and used. It is a masterpiece of sleuthing in art history and archaeology by assembling the most comprehensive ceramic database of possible from museum collections and archaeological excavations. The findings are well founded and can lead to future research well beyond the three proposed in her final chapter. It is a splendid study and certainly should be read by Mesoamericanists and by anyone concerned with craft specialization, pottery-making, and interpreting material culture.

I would not rewrite anything she has attained her stated goals. I see a couple of possibilities that may be added to the research already accomplished: 1) physicochemical and related analyses and 2) analogs from pottery producing and using communities. Readers of this column can certainly envision scientific studies that could and should be undertaken – well beyond pXRF. Fletcher’s physicochemical research on a few sherds scratched the surface but demonstrates what can and should be done – the problem is getting permission to sample the stuccos and pigments and determine if the Maquixco Bajo sherds are similar and or dissimilar in composition to sherds and vessels recovered from other parts from other parts of Teotihuacan. A portion of this suburban/rural site (TC-8:3) functioned as a storehouse for marine shell (and perhaps a workshop) that acquired raw materials from *both* the Pacific and Gulf of Mexico marine provinces (Charles C. Kolb, *Marine Shell Trade and Classic Teotihuacán, Mexico*, British Archaeological Reports, International Series S-364, Oxford: BAR, 1987, xvi + 227 pp., 35 figs. 5 appendices). This is the only known site outside of the urban center to have stuccoed and painted ceramics.

Conides provides appropriate arguments regarding sociocultural, religious and economic and religious interpretations of her data. A step further would be to find ethnographic and/or ethnoarchaeological analogs to statements about pottery producers, workshops, consumers, and elite statuses that support these contentions. Relationships to Maya painted wares could be

profitably explored. Might the individual skilled workers who actually produced the fragile line drawings and painted the grounds be natives from other parts of Classic period Mesoamerica – the Gulf Coast, Maya Yucatan, or west Mexico -- and been “imported,” impressed artisans? Teotihuacan’s ethnic barrios included persons, often characterized as merchants or traders, from the Valley of Oaxaca, the Tajin region of the Gulf Coast, the Yucatecan Lowland and adjacent Highlands (Copan and Kaminaljuyú), and elsewhere. See: Nawa Sugiyama, Saburo Sugiyama, Veronica Ortega, and William Fash, “Artistas Mayas en Teotihuacan,” *Arqueología Mexicana* 142:8 (2016). As Conides states, the authors of the pottery and polychrome imaging are mute but not elusive.

Maya Ceramic Technology and Ceramic Socio-Economy: A Multifaceted Analysis of Late Postclassic Ceramic Production and Distribution in Northern Yucatán, México. Carmen Giomar Sánchez Fortoul. Archaeology of the Maya 1. British Archaeological Reports International Series S2899. Oxford: BAR Publishing, 2018. 264 pp., illustrated throughout in color and black and white, 59 tables, 132 figures (68 in color). ISBN-13: 9781407316406, ISBN-10: 1407316400. £55.00 / \$82.91 / € 64,14. The author points out that this publication is based on her “Ph.D. project” (p. iii) – not further identified except that it was supervised by Ian Whitbread; actually it is based on her unpublished doctoral thesis: *The Socio-economy of the Late Postclassic Maya: A Regional Perspective Based on Ceramic Production in Northern Yucatán, México*, Leicester, UK: School of Archaeology and Ancient History, University of Leicester (5 October 2017) <http://hdl.handle.net/2381/40445>, embargoed until October 2020. She also states that the BAR volume also derives from her masters project supervised by Clifford Brown; this project was *Ceramics at Mayapán: A Petrographic Study*, unpublished M.A. thesis, Boca Raton, FL: Florida Atlantic University (2009), which is cited in the 2018 monograph’s “References” (p. 179). She also published a brief paper “Ceramic composition diversity at Mayapán, the last Maya capital,” *open journal of archaeometry* 1(1):4, DOI: <http://dx.doi.org/10.4081/arc.2013.e4> (2013). It would appear that she has spent more than a decade assessing the assemblages that are the focus of the BAR monograph which became available at the end of May 2018.

This important ceramic research documents the Maya of northern Yucatán, México, during the last centuries prior to the arrival of Europeans in 1511, and pottery production during the Late Postclassic (CE ca. 1100-1500). Sánchez employs a combination of analytical methods that include petrographic, chemical, and surface features analyses in order to reconstruct ceramic production technology and

also examines regional patterns in the fabrication of vessels from the archaeological site of Mayapán in northwestern Yucatán as well as secondary sites located in north-central and eastern Yucatán. These patterns are examined in term of the wider context, including ethnohistorical, ethnographic, and geological, to gain a better understanding of ceramic manufacture, production organization, and networks of interactions, such as ceramic technological traditions and exchange mechanisms. Mayapán was abandoned ca. 1441-1461 following a rebellion and massacre of the dominant Cocom lineage. Sánchez correctly points out that pottery made in Mayapán has generally been regarded as of “lesser quality” than ceramics produced in previous periods. New insights have been gained regarding the manufacture of Late Postclassic ceramics. However, her results show that the potters who produced these ceramics had a deep working knowledge of the raw materials for pottery-making available in northern Yucatán.

This monograph has 11 detailed chapters, five appendices, and “Bibliography” (pp. 171-180) with 201 entries, but no index. “Chapter 1: Introduction” (pp. 1-9, 2 figures and 2 maps) provides a short introduction to the Late Postclassic in Northern Yucatán including syntheses of four different views of Late Postclassic perceptions: Decadent View, Revivalist View, Political Economy View, and Collective Reciprocity View. She also defines the research problem, six research objectives (she returns to these in the final chapter), and outlines the methodologies she employs. The Objectives of the Research (p. 7): 1. Are there sufficiently varied patterns in raw material selection and ceramic attributes or characteristics to allow the characterization of pottery fabrics into fabric classes and distinct technological classes? 2. What might such technological patterns tell us about how the different classes of pottery (such as with different surface finish or forms) were made? 3. Are the observed homogenization of style and macroscopic composition maintained through different levels of analysis, e.g. microscopic composition and chemical analysis? Do the observed homogenization of style and macroscopic composition reflect a shared technological tradition? 4. What might such technological patterns and traditions tell us about the organization of pottery production, such as number and location of potters’ groups, or associations with and between geographical areas or specific sites, and its social significance? 5. What might such patterns and organization of pottery production tell us about the distribution of utilitarian ceramics and the types of exchange that may have taken place? In particular, were ceramics produced at each center or was it centralized and, if so, where? And 6. How do the results of this research inform current models for the organization

of Late Postclassic ceramic production, distribution, and exchange? All are highly laudable goals.

“Chapter 2: The Late Postclassic: A View from the North” (pp. 10-17) provides background on political organization, tribute, markets, and other economic factors before she summarizes current research at the Late Classic period sites of Tikal and Palenque, and the latest research on the Late Postclassic. Five explanatory models of the organization of ceramic production are reviewed: Mercantile production and distribution; dichotomous ceramic economy; tributary mode of production; production geared to rituals, ceremonies, gifting, and feasting; and calendrically shifting production loci. “Chapter 3: Ceramics of the Late Postclassic” (pp. 18-25, 13 figures [4 in color]) in which she reports cultural spheres (Tasus and Eastern Tasus), periods and regions, pottery classification (R. E. Smith, *The Pottery of Mayapán*, Peabody Museum Paper 66, Cambridge, MA: Harvard University, 1971); and the origins of Mayapán Red Ware and Unslipped Ware and describes both in detail along with Tulum Red Ware and Peto Cream Ware. “Chapter 4: The Geological Setting” (pp. 26-31, 9 figures) focuses on the geological setting, rocks, surface features including *cenotes* (sinkholes that reach underground water), calcrete (redeposition of carbonates into a hard layer also called *caliche*), *sascab* (unconsolidated carbonate powder, pebbles, and boulders) and six clays within the region: kaolinite, red soils and clays, palygorskite, smectite, kaolinite-montmorillonite, and montmorillonite-kaolinite.

In “Chapter 5: Research Methods” (pp. 32-44, 8 figures [2 in color], 4 tables) Sánchez documents an eight-part methodology including the topics of sampling strategies, site selection, sample selection, ceramic selection, and her chosen sampling strategy. A preliminary survey of the pottery led to three hypotheses regarding Unslipped jars, Red-slipped Mama jars, and Eastern Red-slipped Paytil jars. She also details petrographic analyses of the “hand-specimens” (sherds recovered during archaeological survey) using the naked eye, hand lens, and stereomicroscope; the petrographic analysis of thin sections (ceramic petrography using polarized microscopy); and chemical analysis (NAA). “Chapter 6: Results of Hand-Specimen Analysis” (pp. 45-55, 17 figures [16 in color], 7 tables) documents attributes, scales, and measurements as well as a discussion about the inclusions observe. There are two types of white micrite fabrics, three kinds of sparry calcite grains, two forms of dark particles, and two kinds of single crystals. She next reviews associations between hand-specimen studied fabrics, archaeological sites, and ceramic typology for north-central sites and eastern sites, and comments on

ceramic characterization and the assignments of fabrics; there is also a hand-specimen analysis of local *sascab* materials. Figure 6-17 provided a clear summary of the procedures employed. “Chapter 7: Results of the Chemical Analysis” (pp. 56-71, 13 figures [1 in color], 5 tables) begins with brief statements about the structure of the data collected: Cluster Analysis, Principal Components Analysis, Bivariate Plots, Discriminant Analysis, and Mahalanobis Distance. Locations and the sources of each of five chemical groups are reviewed and include salient information on associations, archaeological sites and ceramic typology, and sources of the vessels. The chemical groups are: Group 1 (n = 82), Group 2 (n = 34), Group 3 (n = 8), Group 4 (n = 11, and Group 5 (n = 16). Groups 1 and 2 are very similar but differentiated by degree of mineral depletion; Groups 3, 4, and 5 are easily distinguished from one another. Groups 1, 2, and 5 comprise the bulk of the samples from the north-central sites, including Mayapán.

“Chapter 8: Results from Petrographic Thin-Section Analysis” (pp. 72-107, 37 figures [34 in color], 19 tables [2 in color]) is a long and complex essay. She begins with a discussion of types of inclusions: calcite (micrite, dark micrite, sparite, single crystals, and skeletal remains [fossil shells]); dolomite; and non-calcareous particles (quartz, grog, and argillaceous with embedded crystals). Petrographic fabric classes (scales and measurements used to describe inclusions seen in thin section and, secondly, microstructure and micromass in thin section) are also reviewed. Four dolospar fabric classes, one finely crystalline sparite fabric class, and a single micrite fabric class are described and associations reported between archaeological sites and ceramic typology for all six classes. Next Sánchez considers five medium and coarsely crystalline calcite fabric classes, four medium and coarsely crystalline dolomite fabric classes, and three fabric classes with skeletal remains; associations between fabrics, sites, and ceramic typology are again reviewed. Lastly, two dark micrite fabrics are discussed along with related archaeological sites and ceramic typologies. A final section considers petrographic analyses of clays and marls. The thin sections are shown in color with appropriate scales. Table 8-17 (pp. 98-99) presents the Results of the Petrographic Analysis of Local Marls and Clay. Table 8-18 (pp. 100-106) is a tabulation of 489 thin sections studies and includes information on: Site, Variety, AN ID, Chemical Group (if selected for chemical analysis), Fabric Class, Most common Euclidian match, Vessel Shape, and Sample ID. Table 8-19 (p. 107, in color) is a summary of the fabric classes within 11 sites and ceramic varieties and clearly shows that samples for the north-central sites have a clear division by grain size between utilitarian ceramic varieties; while three sites did **not** show a division between

Mama and Yacman samples; and eastern sites have different grain sizes between elite and utilitarian pottery.

“Chapter 9: Late Postclassic Ceramic Production” (pp. 108-146, 26 figures [10 in color], 8 tables) uses the information presented in the previous chapters to reconstruct the production of north-central Red-slipped Mama pottery and details raw materials selection, its transport to the potting sites, the use of *sascab* temper, clay processing, the resulting fabric classes, forming (concave and convex molds and coiling) and surface analyses of bowls, cajetes, and large slipped jars. Next, in much shorter presentations, the author reconstructs north-central Plain Navulá ceramics and Unslipped Striated Yacman pottery. She replicates the firing of clay samples formed into briquettes from north-central sites and illustrates the different effects of the calcite and dolomite inclusions. Sánchez studied the effects of firing on clay briquettes and replicated pots 700° C for 45 minutes and 600-650° for five hours; she also discusses the issues of lime hydration and the relevance of particle size. Lastly, there is a brief commentary on the fabric classes from the three sites in the eastern region. Ten major results are reported based on her analysis (pp. 145-146) in which, for example, she shows that the three main utilitarian types of vessels (Mama, Yacman, and Navulá) were produced in many centers by many potters’ groups; there is also a correlation between vessel types and temper types related to vessel function; and hand-built Mama ceramics derive from a general recipe.

In “Chapter 10: Patterns of Late Postclassic Ceramic Production (pp. 147-158, 2 figures, 5 tales), the author discusses technological traditions using ethnographic data -- nine towns reported by Raymond Thompson (1958) and one identified by Reina and Hill (1978) -- is employed to assess the *sascab* Red-slipped tradition. The “translucent rock” cooking pot tradition employs archaeological (Smith 1971) and ethnographic data (Thompson 1958, Reina and Hill 1978, and Arnold 2008, among others) focusing on ground calcite as a temper in cooking pots used by the potters because of differential expansion in heating and cooling. The organization of production in the north-central sites is considered and Sánchez indicates a “similar division of potters by raw materials and vessel types” similar to what Thompson (1958) reported. Scenarios for the production location of dolospar fabric utilitarian vessel are reviewed, but no conclusive location can be discerned. In another section, she examines the short-distance and long-distance movement of pots. There is a lack of direct evidence for production, such as kilns or wasters, but chemical and petrographic data suggest very homogeneous compositions in the Mayapán vessels sampled. Elite Payil pottery samples from Mayapán are foreign to the site and

originated in northern Belize, likely in the Laguna de On area. Sánchez next examines the three hypotheses: A: that unslipped jars at different sites were locally produced at minor centers; B: in the north-central area, red-slipped Mama pots were produced at one locality that supplied all other north-central centers; and C: Payil fine-grained red-slipped ceramics common found in eastern coastal sites, when found at north-central sites, was locally made. The data support Hypothesis A.

Chapter 11: Discussion and Conclusions” (pp. 159-168) focuses on the six Research Questions, especially Question 5 (cases for market transactions, gifting, rituals and ceremonies, and tribute) and Question 6 (mercantile production and distribution, tributary mode of production, ritual mode of production, calendrically shifting production location, and dichotomous ceramic production model). Comparisons between her finding and current ceramic production models are then summarized. Her conclusions (pp. 166-168) are that the data supports the postulate that Mayapán was a major producer of pottery but that production was not centralized or supervised. Ceramic production in the north-central communities was dispersed with many producers or production zones engaged in the fabrication of slipped and unslipped vessels. Market exchange and production for rituals better explains the distribution of ceramics made from different fabrics found throughout the site. Production in the minor north-central communities shows that potters purposefully selected their raw materials and production strategies. It is most likely that the distribution of Mayapán fabrics through a market system reflect a political area and she suggests several spheres of influence in the Yucatán. Future directions for research are also suggested.

“Bibliography” (pp. 171-180) as noted previously with 201 entries. A few citations are in different formats: Friedel (1985) and Stark and Garraty (2010), for example; others have missing page numbers: Gelbert (2005), López Varela *et al.* (2001), Morales V. (2005), Sabloff and Smith (1997), and Shepard (1958); Thompson (1958) is a Memoir of the Society for American Archaeology No. 15, 157 pp. Four citations to the work of “D. B. Arnold” should be D[ean] E. Arnold (1971, 2005a, 2005b, and 2008); his 2008 book should be cited as (location and press): Boulder: University Press of Colorado not University Press. Six other entries correctly cite D. E. Arnold. Interestingly, Dean E. Arnold’s classic publication, *Ceramic Theory and Cultural Process* (New Studies in Archaeology, Cambridge and New York: Cambridge University Press, 1985) isn’t cited at all; it would be useful for Sánchez’s examination of distances from clay resource to potters’ locations. Prudence Rice’s *Pottery Analysis: A Sourcebook* (1987) is updated in a second edition (2015). These, plus lack of

some italics or consistent punctuation, do not seriously detract from the narratives. Some minor inconsistencies: Sánchez consistently uses the accent in Mayapán but American authors (for example, Pierce and Glascock 2015 in Appendix B) generally do not. In Sánchez’s monograph, Navulá is sometimes printed without the accent mark.

Readers may wish to know more about the locations and the selection of only 12 raw clays collected and how these relate to the 11 archaeological sites and locations of potters. The firing experiments of briquettes made from raw clays (pp. 138-142) provide basic information on temperatures and friability. Shrinkage measurements were neither taken nor the refiring of archaeological sherds undertaken; these could be a valuable indicator of why some clays were tempered or left untempered. Numerous insights have been revealed about the manufacture of Late Postclassic ceramics in the northern Yucatán thanks to a decade of research and analysis by Carmen Giomar Sánchez Fortoul. This is splendidly laid out body of research employing appropriate multifaceted methodological approaches, and hypotheses that are confirmed or refuted by her petrographic and chemical results. See also the review of *Ancient Maya Ceramic Economy in the Belize River Valley Region: Petrographic Analyses* by Kay S. Sunahara (British Archaeological Reports International Series S-2018. Oxford: Archaeopress, 2009) in *SAS Bulletin* 33(2):8-9 (2010) to see how far multifaceted analysis progressed in less than a decade. Sánchez’s research design and analytical methods sets a new standard that could and should be emulated.

Ceramic Variability: An Ethnographic Perspective, Sharmi Chakraborty, Delhi: Primus Books, 2018. xvii + 196 pp. ISBN-10: 9386552779, ISBN-13: 978-9386552778. \$49.95 / £36.95 / ₹995 (hardcopy). Chakraborty is a Fellow at the Centre for Archaeological Studies and Training, Kolkata, West Bengal, India. Her research interest lies in the archaeology of the early historic period. She has conducted archaeological explorations as well as ethnographic surveys of potteries in western, southern and northern parts of West Bengal. Chakraborty has directed two small excavations at Paharpur and Kusumjatra in Birbhum district of West Bengal. Her published work includes a conference publication, *Archaeology of Early Historic South Asia* (New Delhi: Pragati Publications in collaboration with Centre for Archaeological Studies and Training, Eastern India, 2008, co-edited with Gautam Sengupta) and *Eloquent Earth: Early Terracottas in State Archaeological Museum, West Bengal* (Kolkata: Directorate of Archaeology and Museum, Government of West Bengal, 2007, co-edited with Gautam Sengupta and Sima Roy Chowdhury).

I looked forward to reading this volume as there have not been many recent publications on Subcontinent pottery-making in nearly two decades, and studies of ceramic fabrication in West Bengal are sorely lacking. Alas, there have been several publication delays and the book finally appeared in July 2018. Nonetheless, it joins other significant volumes on the subject, for example: Deo Prakash Sharma, *Harappan Potteries* (Delhi: Bharatiya Kala Prakashan, 2010 – an archaeological study) and ethnographic works by Jane Perryman *Traditional Pottery of India* (London: A. & C. Black, 2000); and Carol Kramer *Pottery in Rajasthan: Ethnoarchaeology in Two Indian Cities* (Washington, DC: Smithsonian Institution Press, 1997 – a classic comparative analysis) – see *H-Net REVIEWS/H-ASIA* (*Asian History*), an electronic book review, 8 pp. <https://networks.h-net.org/node/22055/reviews/22087/kolb-kramer-pottery-rajasthan-ethnoarchaeology-two-indian-cities> Published on 26 March 1998). Other major works ethnographic studies include: Ardhendusekhar Ray, *Crafts and Technology in Ancient India: From the Earliest Times of the Gupta Period* (Delhi: S.S. Publishers, 1998); Neelima Dahiya, *Arts and Crafts of Northern India: From the Earliest Times to c. 200 B.C.* (Delhi: B. R. Publishing Corporation, 1986); S. Gurusurthy, *Ceramic Tradition in South India* (Chennai: University of Madras, 1981); Nab Kishore Behura, *Peasant Potters of Orissa: A Sociological Study* (New Delhi: Sterling Publishers, 1978); Baisyanath Saraswati, *Pottery-Making Cultures and Indian Civilization* (New Delhi: Abhinav Publishers, 1978); Bhuvaneshwar Prasad Sinha, *Potteries in Ancient India* (Patna: Department of Ancient Indian History and Archaeology, Patna University, 1969); and Baisyanath Saraswati and Nab Kishore Behura, *Pottery Techniques in Peasant India* (Memoirs of the Anthropological Survey of India 13. Calcutta: Anthropological Survey of India, 1966).

Chakraborty's new book is based on a survey of villages in different parts of West Bengal and designed to examine ceramic variability within a linguistically similar "community" that occupies different regions. There are six chapters, supplemented with a map, 55 figures (line drawings), 89 plates (black-and-white photographs), and 32 tables – listed pp. vii-xvii, plus "Acknowledgments" (p. xix). In addition, there are two appendices: "Appendix I: Classification of Excavated Pottery" (pp. 139-174, 122 line drawings) and "Appendix II: Appendix II: Handmade Pots: Women in Potters Households" (pp. 175-180, 1 table). The "Bibliography" (pp. 181-185) has 72 entries; the majority of these references predate 2000 with the most recent citations dated 2011, 2008, 2006, 2006, 2004, and 2003. Unfortunately, there are numerous errors in the references, notably: Alchin = Allchin, Philips = Philip,

Nikolas = Nicholas, Grifford = Gifford, Plogg = Plog, Pru Rice "Trail model..." = "Trial model..." and Sheiffer = Schiffer. These often carry over into the narratives and index, which also contains duplicate entries on ritual bowl/s, pitcher/s.

A surprising number of relevant citations useful in making her contentions valid are missing, notably work by Dean E. Arnold and Eduardo Williams in Mesoamerica, and Belgian scholars who work in Sub-Saharan Africa: Olivier Gosselain, and Alexandre Livingstone Smith to name two. The "Glossary" (native terms, n = 36 items; Technical Glossary, n = 15 citations) is essential, particularly for vessel forms and types. For the technical terms, a footnote recommends three publications for further reading: Stephen Shennan (1997) *Quantifying Archaeology*; Todd Van Pool and Robert Leonard (2011), *Quantitative Analysis in Archaeology*; and Robert Drennan (2004) *Statistics for Archaeologists: A Common Sense Approach*. The six-page double-column "Index" (pp. 191-196), including conflated topics and a few proper nouns, is only adequate.

"Introduction" (pp. 1-9, 1 map, 1 table). The author mentions some of the older literature (your reviewer has corrected the typographical errors) including Rouse, Gifford, Binford, and Plog and she states that she prefers the term variation over "style, noting that the former is "loose" versus "precise usage." Vessel form and function are discussed, especially referencing Daniel Miller's *Artefacts as Categories: A Study of Variability in Central India* (Cambridge: Cambridge University Press, 1985) and Carol Kramer's (1997) Rajasthan work. The problems and aims of Chakraborty's research are defined (p. 6) as are the study's methodology. A very detailed map showing the villages surveyed in West Bengal (p. 7) is difficult to read because of small font. The region is divided into three zones (elaborated in Chapter 2); marked regional variability is seen in both shops and clientele (Chapters 3 and 4); manufacturing processes are detailed (Chapter 5), and relationships of shapes and functions, techniques of production, chance and conscious creativity, and regional and local "style" assessed (Chapter 6). In the second chapter, "The Survey" (pp. 10-28, 26 tables) -- based on work by Dipankar Ghosh (2002) -- she describes the three districts: Malda (number of villages unreported) in the north, Birbhum (9 villages) and Bardhaman (6 villages) contiguous districts in the west (differentiated by rivers which are "larger" in the latter), and South 24 Pargonas (12 villages) situated to the south. Vessel types defined in the "Glossary" (pp. 187-188) are tabulated (Tables 2.1-2.27) for 27 villages with diameter measurements in cm reported for rim, neck, body, height, and opening. Sample sizes are not given so the reader isn't certain how many specimens

per type were measured. Some geological information on clay sources and use of molds and slips are mentioned but the reporting on these variables isn't consistent. Clay procurement is within 5 km of the pottery workshop although Dean Arnold's 1985 postulate isn't mentioned (nor are any of his other works).

"Morphometry and Formal Variation" (pp. 29-70, 28 figures, 12 plates, 5 tables). Chakraborty uses comparative morphology with correlation matrices in considering relationships among different parts of vessels including dimensions and angularity of openings. These graphics presented as line drawings are used for 12 vessel forms: basin (*charan*), frying pan (*kodaj*), roaster for puffed rice (*marî*), sieve for muri (*chhaka khole*), rice pot (*bhater handi*), vegetable cooking pot (*tarkarir handi*), water jar, ritual bowl (*malso* and *habishyr khota*), cooking pot (*handi*), roasting platter/plate (*tawa*), and lid (*dhakni*). Morphological types comparisons include: 1) narrow-necked vessels (date pots, jars, water jars, water pitchers); 2) open-mouthed deep to medium deep vessels (roasters, sieves, basins); 3) shallow open-mouthed vessels (frying pan, platters, lids); 4) different *handis* (beef pots, rice pots, vegetable [sic.] pots, *handi*); and 5) frying and roasting vessels. Trans-regional variations in frying pans, *handi*, *marî* muri roasters, sieves, rice pots, ritual pots, basins, and water pitchers were also studied; Plates 3.1-3.12 illustrate these variations and Tables 3.1-3.5 characterize the shapes of pitchers, water jars, cooking pots, rice pots and roasters. Data and observations on "Pots from the Local Market" (pp. 71-92, 27 figures, 21 plates) focus on surveys of household workshops and large and small local markets (actual numbers are not reported); the markets at Raydighi and Kashinagar are the most prominent. Five types of vessels in daily use were studied although the author details 28 distinctive vessel types, noting variations in types and size measurements. Overall, she found small differences in shapes; rice pot rim thicknesses varied and were categorized into two groups. Chakraborty noted that discerning vessel standardization was a "laborious exercise" (p. 92) that yielded minimal data and pointed out that Miller's (1985) study of variable rim types in cooking pots was not relevant in the Kashinagar market.

In "Manufacturing process" (pp. 93-130, 56 plates) she compares her observations with those of other studies including Saraswati and Behura (1966), Miller (1982), and Kramer (1997) and mentions Raghunathbari as a pottery-making community with "industrial scale" production. In rural Bengal, pottery is generally handmade using paddle and anvil, slab-building, turntable, and solid-wheel techniques, but pottery is also formed using molds (both concave and convex) and by wheel-throwing methods. The application of slips (no differentiation is made

between "self-slips" – i.e., a slip made from the same clay as the fabric – or slips created from other clays). Painting is rarely done but incised and stamped decorations are frequently used. The steps in wheel-throwing are described and illustrated in detail for five vessel forms (Plates 5.14-5.56): ritual pot (*ghata*), 17 steps; vase, 18 steps; bowl, 10-12 steps; basin, 10 steps; *handi*, 7 steps, and dish, 10 steps. Initiating changes and problems facing the potter are discussed; the latter include trouble in grooving vessels, rim drooping, tapering ceramic bodies, and creating recurved rim dishes. The "Conclusion" (pp. 131-138) includes a summary of variations in production and their implications, and she that market areas show distributional patterns within a 15-20 km radius of the production workshop. Cultural behavior is not homogeneous and shared and unshared characteristics are seen among producers in the three areas (p. 135). She also comments on variations and classification for archaeological interpretations, pointing out that variations have social significance, but that individual variations in pottery made by a single artisan are not notice quickly by consumers (p. 137). The presence or absence of multiple shapes in a particular functional form is seen as culturally significant and vessels continue to be reused after breakage.

The cultural implications of classifications and site chronologies 600 BCE-CE 600 (Appendix I) are quite interesting but the focus on rim varieties is not well-correlated with the text narrative. Vessel types (jars, pitchers, *handis*, basins, bowls, and dishes) have a long history in Bengal. Appendix II focuses on ethnographic studies of women in pottery-making households and we learn about gender roles, rituals, seasonality of production (pottery was not made during the dry summers) and the rising popularity of the mother goddess which would seem to balance Brahma as the creator god of the kiln. In spite of drawbacks previously noted, your reviewer finds merit in Chakraborty's study, especially in characterizing the various vessel forms, measurements, and uses, as well as details on the production steps of various vessels, and views on cultural behaviors. I would have hoped that the author and publisher could have eliminated the typographic and grammatical errors, presented the correlation matrices with greater clarity, and indicated sample sizes.

Ceramics in America 2017. Robert Hunter and Angelika R. Kuettner (eds.), *Ceramics in America Annual*, Hanover and London: Published by the Chipstone Foundation, Distributed by University Press of New England, 2018. 232 pp. 280 color illus. ISBN-10: 0986385719, ISBN-13: 978-0986385711. \$65.00 (hardcover). Editor Robert Hunter a Fellow of the Society of Antiquaries of London

and an archaeologist and ceramic historian living in Williamsburg, Virginia. He was the founding director of the Center for Archaeological Research at The College of William and Mary, and served on the curatorial staff at the Colonial Williamsburg Foundation. Coeditor Angelika K. Kuettner is the associate curator of ceramics at Colonial Williamsburg. She maintains the website for the American Ceramic Circle and is a Fellow of the Attingham Summer School. Now in its seventeenth year of publication, *Ceramics in America* is considered the journal of record for historical ceramics scholarship in the American context and is intended for collectors, historical archaeologists, curators, decorative arts students, social historians, and contemporary potters; all annual volumes since 2002 have been reviewed in the *SAS Bulletin*.

The 2017 volume of *Ceramics in America* contains the final contribution from Ivor Noël Hume, a long-time contributor to this journal. "Introduction" (pp. ix-xi, 1b/w figure) by Robert Hunter. The volume is dedicated to Ivor Noël Hume (1927-2017) who passed away on 4 February 2017, at the age of 89. Hunter mentions the impact of two of his books *Guide to Artifacts of Colonial America* (Philadelphia: University of Pennsylvania Museum, 1969) the "bible" on historic artifacts in North America and *If These Pots Could Talk: Collecting 2000 Years of British Household Pottery* (Milwaukee: Chipstone Foundation, 2001); a picture of Hume in 2016 is included (p. x). Reviews of the *Guide* appeared in *Historical Archaeology* 37(2):118-119 (2003) and for *If These Pots Could Talk* in *American Antiquity* 68(1):188-189 (January 2003). A biography of Noël Hume by Charles C. Kolb appears in the *Encyclopedia of Global Archaeology* (Claire Smith, ed.-in-chief); New York: Springer, 2014, pp. 5295-5297; an updated 2nd ed. 2018 is in press. The lead article in *Ceramics in America 2017* by Noël Hume – his last publication -- "A Devil in the Details" (pp. 2-6, 6 color figures) is a study of the evolution of English Brown Stoneware tavern mugs. These vessels originated in the 17th century Rhineland but English factories made the ware in Fulham, Lambeth, Bristol, and Vauxhall in the form of sprig decorated mugs and bottles. Manufacturers often capitalized on "fads of the moment" creating vessels with political slogans, military and naval victories, and current historical events. In addition, there are 14 articles highlighting important ceramic discoveries from archaeological contexts in St. Augustine, Florida; Charleston, South Carolina; New Orleans, Louisiana; Alexandria, Hampton, Williamsburg, and Jamestown, Virginia; St. Mary's City, London Town, and Annapolis, Maryland; Philadelphia, Pennsylvania; New York, New York; and Boston and Plymouth, Massachusetts. The chapters on each of these cities follow a basic format: location, geography, and its early history beginning with Native Americans, key historical events,

relationships to maritime economies, and recent excavations or discoveries emphasizing the best and unusual ceramics recovered. The volume's three-column "Index" (pp. 271-275) contains only proper nouns.

"Alexandria, Virginia" (pp. 7-21, 25 color figures, 24 references) by Barbara H. Magid. This city began as a tobacco trading post on the Potomac River in the 1730s, incorporated a formal town plan in 1749 with the construction of a major waterfront warehouse in 1755, and was the principal river port in Virginia by 1790 with 1,000 ships docking per annum. Ceramics from recent works spans the Prehistoric Early Woodland (900-300 BC) to the post-Civil War era and include: sherds of Portuguese majolica (1660-1680) found in early shipping ballast heaps; French Tin-glazed Faience from Rouen (1740-1793), ornate punch bowls from various taverns; Wood and Caldwell Pearlware (c. 1775), Slipwares (1792), earthenware pottery made locally by Henry Percy, imported Liverpool pottery commemorating George Washington's death in 1799, and Stoneware produced by Benedict Milburn (1831-1867). "Charleston, South Carolina" (pp. 22-39, 25 color figures, 30 references) by Martha A. Zierden with Ronald Anthony, Sarah Stroud Clarke, Lisa Hudgins, James Legg, Eric Poplin, Carl Steen, and Michael Stoner. Settled in 1670, Charleston was a significant southern port city where excavations yielded Barbadian Redware a wheel-thrown and kiln-fired earthenware made by enslaved Africans on the Caribbean island of Barbados (c. 1664-1670). Other important ceramics included Black Delftware from Holland (1705-1720); Chinese Export Porcelain (1750s); 18th century Colonowares; quantities of Philadelphia earthenwares (mostly pipkins and dishes dating 1665-1770), local wares made by John Bartram at Cain Hoy (1763-1770); and European and Asian imports including Chinese Yixing pottery (c. 1825). A number of children's cups made in Staffordshire dated to 1810-1830 rounds out the assemblage.

"Hampton, Virginia" (pp. 40-59, 26 color figures, 49 references) by Robert Hunter. Exports from this port city included tobacco, pine tar, wheat, and corn, and the author notes that Native American lithic artifacts date back to 10,000 BP and pottery dating to the Late Woodland. Substantial quantities of European ceramics span the period from the 1590s (Wesser Slipware mugs) into the Civil War era. The pottery included: Portuguese majolica (1640s); North Devon Slipware (1660-1680); Delft punchbowls (1689); Staffordshire Slip-decorated Salt-glaze Stoneware (1690-1700), rare Staffordshire Press-molded earthenware, a Marble-slip Decorated sauceboat, Pearlware and Russian Scenery Transfer-print ceramics; and Civil War era Dipt Ware (c. 1780-1860). "Historic St.

Mary's City, Maryland" (pp. 60-74, 26 color figures, 23 references) by Silas Hurry. This inland settlement was part of a proprietary colony owned by a single individual 1634 ff. The ceramic assemblage included: Rheinisch Westerwald Stoneware jugs (c. 1660), Dongyatt Sgraffito bird bottles (1620-1680), fragments of a Merryman tin-glazed earthenware plate (1680-1700), a Morgan Jones pitcher (1661-1680), Tin-glazed drinking bowls (1680-1700); Ottoman period pottery from Kütaahya (1690-1700), and a monogrammed "Atlantic" vitreous china lunch bowl (1911).

"Boston, Massachusetts" (pp. 75-89, 25 color figures, 20 references) by Joseph M. Bagley and Jennifer L. Poulsen. This major New England port city was established in 1629. Fabric-impressed Native American pottery dates to the Middle Woodland period (2600-1000 years ago). Portuguese Tin-glazed earthenware (1680-1698) was recovered and an undisturbed 17th-century privy yielded an extraordinary collection of materials. The ceramics included Sugar cones (c. 1729); a Parker Pottery porringer (1742-1754); Creamware teapots (c. 1762), Wedgwood and Staffordshire Pearlware (1816), and a German teapot (1860). Japanese students living in Boston (c. 1860-1900) brought Satsuma Ware (1870-1890), while English Dorchester-made pottery including inkwells and foot warmers date to 1895). "Spanish St. Augustine, Florida" (pp. 90-103, 18 color figures, 23 references) by Kathleen Deagan and Carl Halbirt. This coastal city was founded by the Spanish in 1565 because of its substantial harbor but Spanish Florida was traded to England for the island of Cuba at the end of the Seven Years War (1756-1763); in North America, the French and Indian War (1753-1763) between Great Britain and France was part of this larger conflict. Spanish-era remains include Andalusian olive jars and carinated bowls (1566) and a wide variety of polychrome majolica: Isabella Polychrome (1580-1590), Mexican (1580-1700), San Luis Polychrome (1650-1700), Guadalajara Polychrome (1650-1800), and Abo Polychrome made in Puebla, Mexico (1650-1700). Colonowares date throughout the early 18th century and Guale pottery made by Native Americans (1680-1700) was also recovered. English ceramics, notably Salt-glazed Stoneware (1740-1760) and Creamware (1763-1784) were also found.

"Plymouth, Massachusetts" (pp. 104-121, 21 color figures, 34 references) by Steven R. Pendery and Marley R. Brown III. Founded in 1620, this settlement has sparked an interest in Colonial-era historical archaeology since the 1940s and especially for Plimouth Plantation (1620-1660) a site of global interest and significance studied for decades by the late James Deetz. Native American pottery was made in the region for more than 3,000 years ending less

than 300 years ago with the Late Woodland period (coiled pottery dates to ca. 700 BCE). Locally made lead-glazed earthenware was found at the Winslow site (1655-1699) and wares made by Philip Drucker were imported from Charlestown, MA (c.1635). A variety of ceramics came from Europe: North Devon Gravel-tempered pipkins (1635-1650); Bellarmine Grey Stoneware jugs made in Frechen near Cologne, Germany in the late 16th century; French Normandy Stoneware bottles (1635-1650); Delft Salt (1650-1680); Hispano-Moresque Copper-lustre decorated pottery from Manises near Valencia, Spain (1650-1700); Portuguese Tin-glazed earthenware *faiança* and *malequeros* – likely made in Lisbon, Porto, or Coimbra; and Slip-decorated Red earthenwares (1690-1740). Plymouth site C13A yielded an assemblage including plates and chamber pots spanning the period 1760-1835; potter and brick maker Stephen Bradford's pottery kiln near Kingston, MA is dated to 1798. Sugar-drip earthenware jars from the early 19th century were made by African-Americans according to Deetz, rather than by Native Americans as proposed in 1962 by Noël Hume.

"New Orleans, Louisiana" (pp. 122-142, 25 color figures, 42 references) by D. Ryan Gray. This port city experiences its tricentennial in 2018 which began with land clearing by the French who lost control of the area to the Spanish in 1769, and subsequently came under control of Americans in 1810. Recently recovered pottery included: French Polychrome Hand-painted Faience; Rouen Tin-glazed earthenware (1750-1770); Colonoware vessels made by Native Americans and enslaved Africans (c. 1810), and lead-glazed earthenwares from African-American and Catholic cemeteries. Staffordshire and Pearlware mugs and punchbowls (1780-1790); Creamware from the Herculaneum Pottery in Liverpool (1800-1810); Tin-glazed Enameled Rouge pots; Whiteware washbasins and chamber pots from Joseph Heath & Co. in Tunstall, England, and Richard Jordan Transfer Printware (1828-1841) were also imported. During the American Civil War, Confederate New Orleans was seized by Union forces in May 1862, hence, assemblages include quantities of imported pottery reflecting that occupation. Kilns and kiln furniture related to the local Lucien Gex and New Orleans Porcelain pottery manufacturers dated to the 1880s have been recovered. An unexpected find was a Zuni Pueblo olla dating to the 1890s and materials were excavated from the Storyville red-light district in New Orleans (1890-1918).

"Philadelphia, Pennsylvania" (pp. 143-163, 26 color figures, 41 references) by Deborah L. Miller and Jed Levin. This port city was the original capital of Pennsylvania founded in 1682 by William Penn who devised its gridiron

urban plan. There was modest growth before 1720 as it became the center of domestic manufacturing – potters were among the first artisans in 1700 – developing into a ceramic industry producing unequaled earthenware and experimental work in creating stonewares and porcelain. The authors focus on Independence National Historic Park excavations beginning in the 1950s through the present day. European-type pottery included Slipware; Stoneware by Anthony Duché (1720s); and Salt-glazed Stoneware decorated with cobalt blue designs. A privy on the property of retired sea captain William Annis (1725-1742) was sealed in 1750 and yielded Spanish majolica, Chinese Jingdezhen porcelains, Staffordshire, and Litter-Wedgwood Blue ceramics. Colonoware was made by enslaved Africans. The American China Manufactory established by Bonnin and Morris in 1771 produced underglaze blue pottery -- a rare find in archaeological excavations. Columbia Pottery made Philadelphia Queensware press-molded ceramics (1808-1812) which imitated Creamware but appears yellow to the “untrained eye.” Also recovered were Staffordshire-produced jugs commemorating two American naval victories during the War of 1812; and the Tucker & Hemphill Porcelain Co. (1827-1838) fabricated pitchers and dishes.

“New York, New York” (pp. 164-185, 25 color and 2 b/w figures, 55 references) by Meta F. Janowitz and Diana diZerega Wall. The Port of New Amsterdam was established by the Dutch in the 1620s to serve the fur trade but was taken by the British in 1664 and lost to the Americans in 1776. Native American pottery was present over a 3,000-year period ending with the Late Woodland period (AD 900-1600). Each of these cultures contributed to the ceramic history of early New York: Dutch glazed red earthenware cooking pots (1650-1690) and Delft Tin-glazed dinnerware (including depictions of enslaved Africans and dated to 1626); lead-glazed earthenware jugs from King’s House Tavern excavations, and 18th-century stoneware (jars, jugs, and chamber pots) made locally by the potting families of Crolus and Remmey. Imports included Staffordshire Spode and Yorkshire ceramics in Pearlware and Whiteware, and Chinese porcelains (1785-1810). A “domestic revolution” occurred c. 1849 when New Yorkers ceased to follow English ceramic trends and plain white pottery made domestically replaced English transfer-decorated wares.

“Jamestown, Virginia: Virginia Company Period” (pp. 186-204, 21 color figures, 46 references) by Bly Straube. Established in 1607, Jamestown on the James River was controlled by the Virginia Company until 1624. Archaeological works under the National Park Service and Preservation Virginia on Jamestown Island has yielded hundreds of thousands of ceramics among three million

artifacts recovered since the late 19th century. Among the earliest are Surry-Hampshire Border Ware (1600-1610); Hessian clay crucibles used in metallurgy (1608) – the German origin is confirmed by SEM-EDS analysis; Frecher Stoneware Bartmann jugs for beer or wine (1611-1617); and Wesser Slipware handled cups (1590-1617). From southern Europe came Montelupo Polychrome dishes (1580-1617); a Spanish Lustreware earthenware bowl (*escudilla*); and Portuguese Merida-type pitchers (1617-1624) – confirmed by chemical analysis. Slip-decorated Chinese porcelain cups and saucers from Jingdezhen and Zanghou Slip-decorated censers from the Orient; English Essex Black-glazed handled cups (1610) and South Somerset earthenware green-glazed storage jars, wheel-thrown in two parts (1610) completes the early Jamestown assemblage.

“Annapolis and London Town, Maryland” pp 205-219, 22 color figures, 22 references) by Al Luckenbach. Annapolis, originally called Providence, is on the Severn River and settled in 1649, while London Town on the nearly South River was established in 1683. Mark Leone (University of Maryland) has excavated and published on the region for more than 30 years. The earliest pottery includes Portuguese Tin-glazed plates at Broadneck House and a highly decorated Crumhorn (“crooked horn”) clay smoking pipe – likely a presentation piece—attributed to Emmanuel Drue whose kiln (molds, kiln furniture, and wasters) date 1650-1699. Other European ceramics were Tin-glazed Mid-drip candlesticks (1660s); Netherlands Tin-glazed earthenware (1640-1680); and Italian and English punchbowls (early 18th century). Notable English pottery included 37 nearly complete pieces of tin-glazed earthenware from the Rumney/West Tavern excavations (1725), a Tin-glazed spiked bowl; a Fulham, England Salt-glazed tankard (1720-1724); and fragments of a Stoneware Lead-glazed coffeepot.

“Williamsburg, Virginia” (pp. 220-247, 31 color figures, 66 references) by Suzanne Findlen Hoode. Settled in 1633 and located between the James and York Rivers, Williamsburg was the capital of the largest and most populous of the American colonies during its earliest history. Administered by the Colonial Williamsburg Foundation since the 1930s, only 15-20% of the 301-acre historic center has been fully excavated. Ivor Noël Hume came from England and spent a greater part of his career there and initiated its scientific archaeology program. Among the significant pottery recovered was a Tin-glazed Delft vase/urn (1668-1700); Jingdezhen Chinese Export (hard-paste) Porcelain (1668-1700); White Stoneware Salt-glazed teapot made by John Dwight, Fulham, England (c1700) – the earliest in the Americas; locally-made ceramic bird bottles (1720-1745); Westerwald German

Salt-glazed Stoneware jugs (1750-1775); Chinese porcelains with botanical images (1750); and Staffordshire Lead-glazed earthenware teapots (1750-17550). Custom-made Jingdezhen Chinese dinner services (monogramed or with coats of arms) would have included 250-350 pieces. London's Bow Porcelain Manufactory soft-paste porcelain dessert and sweetmeat dishes (1760-1765) and Eastern State Public Hospital washbasins (1773 ff.) have also been found.

"Jamestown and Governor's Land, James City County, Virginia" (pp. 248-270, 25 color and 1 b/w figures, 52 references) by Merry Outlaw. Settled in 1607 excavations have produced local hand-made white clay tobacco pipes (1608) that resemble Native American pipes; Dutch imports three bowl pipes (1618-161625); and fragments of Turkish-made Chibouk pipes from the early 17th century. Jingdezhen Chinese (hard-paste) Porcelain wine cups (1618-1625); press-molded Delft "cat" jugs (late 17th century); and lead-glazed earthenware mugs made by Thomas Ward – the first English potter in the New World – (1620-1635) were notable finds. Other ceramics included Tin-glazed Figural Salt vessels (1673); Portuguese Faience punchbowls (1675-1700); English Fulham Slipware mugs (1685-1695); John Dwight Brown Stoneware from Fulham (1675-1676); Delft Ware plate depicting William & Mary (1689-1693); and Chinese Slip-glazed Porcelain teapot (1745-17500).

This issue of *Ceramics in America* is a valuable resource for historical archaeology in the United States and demonstrates clearly the importance of locating and excavating undisturbed privies (containing almost everything imaginable) and digging tavern sites (datable punchbowls, cups, and tankards). In spite of domestic ceramic production quantities of European and Chinese wares were imported into eastern America from earliest times into the era of the American Civil War. Ports played a major role in import-export trade and entrepreneurs, bureaucrats, and the nuevo rich are represented in these collections beginning in the earliest times.

SAS BULLETIN

NEWSLETTER OF THE SOCIETY FOR ARCHAEOLOGICAL SCIENCES

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