SPECIAL SECTION: A MODEL APPLIED ARCHAEOLOGY CURRICULUM

the SAA archaeological record

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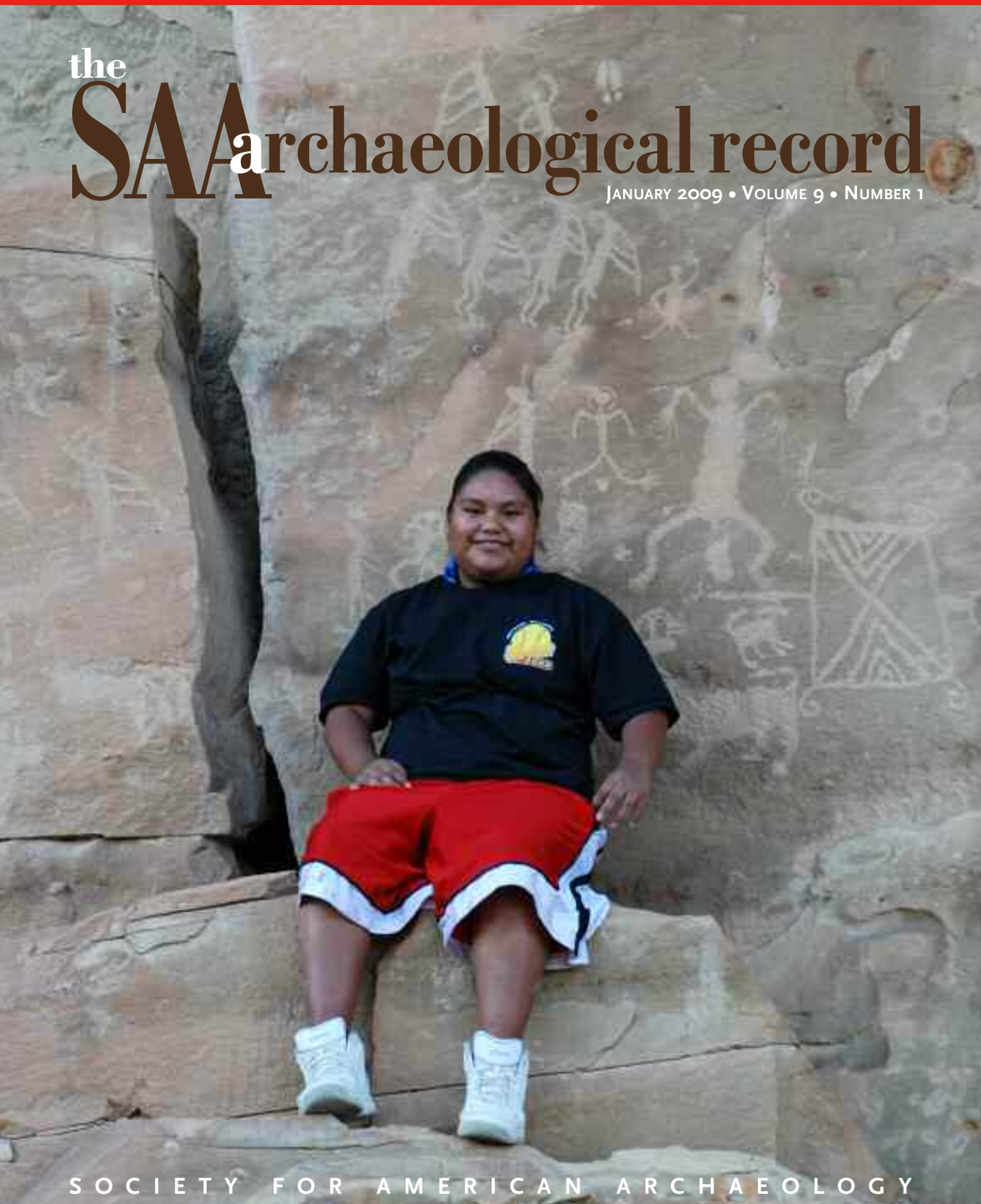

SOCIETY FOR AMERICAN ARCHAEOLOGY

READERS FROM THE SAA PRESS

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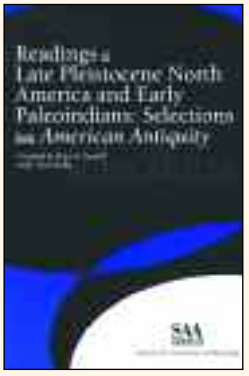
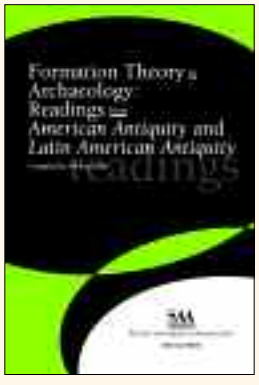


Readings in Late Pleistocene North America and Early Paleoindians: Selections from America Antiquity. Compiled by Bruce B. Huckell and J. David Kilby. 312 pp. 2004. ISBN 0-932839-26-6. Regular Price: $27.95, SAA Member Discount Price: $21.95.

Ceramics in Archaeology: Readings from American Antiquity, 1936–2002. Compiled by Hector Neff. 384 pp. 2005. ISBN 0-932839-29-0. Regular Price: $37.95, SAA Member Discount Price: $29.95.

Readings in American Archaeological Theory: Selections from American Antiquity 1962–2002. Compiled by Garth Bawden. 292 pages. 2003. ISBN 0-932839-25-8. Regular Price: $24.95, SAA Member Discount Price: 19.95.



Formation Theory in Archaeology. Readings from *American Antiquity* and *Latin American Antiquity* compiled by Michael Shott. 352 pp. 2006. ISBN 0-932839-30-4. Regular Price: $37.95, SAA Member Discount Price: $29.95.

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the SAA archaeological record

The Magazine of the Society for American Archaeology

VOLUME 9, NO. 1

JANUARY 2009

On the cover: Krista Honie, a Hopi High School youth, visits Hopi ancestral sites in Chaco Canyon as part of Northern Arizona University's (NAU) Footprints of the Ancestors project. The applied project is a collaboration with the Hopi Cultural Preservation Office and NAU that brings together Hopi Youth, Elders, Archaeologists, and NAU students and alumni to connect Hopi youth with their past in hopes of a future where Hopi culture is preserved.

the SAA Archaeological record

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Deadlines for submissions are: December 1 (January), February 1 (March), April 1 (May), August 1 (September), and October 1 (November); send to Andrew Duff, *The SAA Archaeological Record*, Andrew Duff, Department of Anthropology, Washington State University, Pullman, WA 99164-4910, (509) 335-7828, or email duff@wsu.edu. Manuscript submission via email or by disk is encouraged. Advertising and placement ads should be sent to SAA headquarters, 900 Second St., NE #12, Washington, DC 20002, (202) 789-8200.

Associate editors include:
Gabriela Uruñuela [Exchanges, Mexico & Central America]
email: gabriela@mail.udlap.mx
Jose Luis Lanata [Exchanges, Southern Cone]
email: jllanata@filo.uba.ar
Anne Vawser [Government]
email: Anne_Vawser@nps.gov
Susan Chandler [Insights]
email: susan_chandler@alpinearchaeology.com
Mark Aldenderfer [Interface]
email: aldenderfer@anth.ucsb.edu
John Hoopes [Networks]
email: hoopes@ku.edu
Teresa Pinter [Public Education]
email: tpinter@acstempe.com
Jamie Brandon [The Recent Past]
email: jbrando@uark.edu
Kurt Dongoske [Working Together]
email: kdongoske@cableone.net

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www.saa.org/publications/thesaaarchrec/index.html.

Past issues of the *SAA Bulletin* can be found at

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Manager, Publications:
John Neikirk

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EDITOR'S CORNER

Andrew Duff

Andrew Duff is an Associate Professor of anthropology at Washington State University.

This issue features several pieces describing and reacting to the SAA Committee on Curriculum's proposed model for a Master's program in Applied Archaeology. This group of papers was solicited and edited by Sarah Neusius, chair of the SAA's Committee on Curriculum. These highlight the need for a reorientation in training for students seeking applied archaeology careers and provide useful suggestions for programs considering or already offering such training. The commentaries from those with a range of perspectives provide additional insights. The task of retooling curriculum is important and never ending, and those interested will find several useful suggestions and ideas in these discussions.

The other pieces in this issue also relate to graduate training, public outreach and collaboration.

David Killick and Paul Goldberg provide their observations related to the increasing prominence of archaeological science. They also note that North American scholars are falling behind in developing innovations in the field of archaeological science, and that we generally lag behind in incorporating applications in our research. They provide some suggestions for how we might rectify this problem as a discipline, which they feel requires reconsidering graduate training. I would be interested to receive additional submissions related to the issues raised in these pieces.

O'Reilly and Patterson's article follows up on Jennings and Rand's article from the May issue (Stemming the Tide: How Social Marketers Can Help in the Fight Against Looted Antiquities, 8[3]:28–31]) reporting their efforts to use social marketing practices to change attitudes and protect Cambodia's vast cultural heritage. This approach has great promise and we can only hope that their applications and campaigns prove effective over the long run.

Berkson's installment in the "Public Education" column summarizes the opportunities available for outreach through the Master Naturalist programs in several states, opportunities we need to make more use of.

Finally, Charles McNutt gives those of us who have just finished to the task of grading papers something to look forward to in his discussion of life in retirement, an installment of the "Where Are They Now?" column.

Upcoming issues will feature groups of papers on curation standards, the archaeology of East and Southeast Asia, and ethnoarchaeology, among other articles. As always, I welcome your comments and especially encourage you to submit materials you would like to see appear in these pages. Articles, items for the "News & Notes" and "Calendar" sections, "In Memoriam" notices, and photographs can be sent to me (duff@wsu.edu) or the Associate Editors.

IN BRIEF

Tobi A. Brimsek

Tobi A. Brimsek is executive director of the Society for American Archaeology.

A Taste of Atlanta

The 74th Annual Meeting of the Society for American Archaeology will provide the stage for a wealth of networking, facilitated by the fact that the meeting will be held under one roof—the Atlanta Marriott Marquis. Every meeting, every session, posters, the exhibit hall, receptions—all in the same building! You can explore the breadth and scope of the meeting through the Preliminary Program which is posted on SAAweb (www.saa.org) and was dropped in the mail at the end of December. If you already registered as a participant, don't forget considering to register for events that appear for the first time in the Preliminary Program, some of which are highlighted below:

In addition to the symposia, forums, general sessions, posters, the Ethics Bowl, ArchaeologyLand!, and exhibits, you can choose from activities including:

- **Wonderful Field Trips:** Ocmulgee National Monument, an archaeological and natural history treasure preserved to showcase and interpret 12,000 years of human habitation in middle Georgia; the Atlanta History Center, one of the largest history museums in the United States; and Etowah Indian Mounds Historic Site, one of Georgia's premier archaeological sites. For itineraries and details, please check out the descriptions of these tours in the Preliminary Program and register now!
- **Enriching Workshops:** New Developments in the Preservation of Digital Data for Archaeology; Introduction to Video Production for Archaeologists; Using High Precision Laser Scanning to Create Digital 3D Versions of Archaeological Materials for Analysis and Public Interpretation; Archeology and the National Register of Historic Places and National Historic Landmarks Program (NPS); Designing and Delivering Archaeology Education for Multicultural Students. Register for one or more!

And a quick note on the Roundtable Luncheon—this luncheon is on hiatus in Atlanta, but watch for its return for the 75th Anniversary Meeting in St. Louis, MO April 14–18, 2010.

And About Meeting Abstracts

As the Society has for the past two years, it will continue to include a CD of the abstracts at no additional charge with the purchase of the abstracts book.

Meeting Evaluations Online!

When you open your registration packet in Atlanta, the now familiar meeting evaluation form will be among the missing. Instead, after the meeting, the evaluation will be able to be completed electronically via the web. Each meeting attendee will be emailed a link to the evaluation form. We hope this quick and simple process will encourage more attendees to provide feedback about the meeting.

MORE REASONS TO COME TO ATLANTA!

Michael E. Smith

Michael E. Smith is the 2009 Annual Meeting Program Chair.

HGI SKYLINE (©2008, KEVIN C. ROSE/ATLANTAPHOTOS.COM)

The Preliminary Program for the 74th Annual Meeting in Atlanta, GA (April 22–26, 2009) was mailed in late December and posted on SAAweb in December. There are hundreds of sessions, and nearly 2,000 presentations and posters. Everyone should already have a reason to attend (see "Exciting Archaeology in Atlanta", *The SAA Archaeological Record,* November 2008, p.5). But in case you have any doubt, consider two more good reasons to attend: the variety of sponsored sessions and the sessions that celebrate individual colleagues.

Smith's Prizes for Sponsored Sessions

One thing I discovered in putting together the program is the large number and great diversity of sessions that are sponsored by organizations. There are 22 such sessions, too many to list here. Instead, I have decided to give prizes to some of the sponsoring organizations.

Prize for the Most Sponsored Sessions

(1) The Public Education Committee (and both of these look great):
Forum—Public Education in Archaeology: How are We Doing?
Poster Session—Sharing Archaeology with the Public: Examples from the Homol'ovi Undergraduate Research Opportunities Program

(2) The Rock Art Interest Group comes in a close second, with a 2-part symposium:
Symposium—Crossing Boundaries: Rock Art and Cultural Identity, Part A
Symposium—Crossing Boundaries: Rock Art and Cultural Identity, Part B

Prize for the Best Session Title

(1) Columbia Center for Archaeology (Columbia University):
Symposium—Iconoclash and the Archaeology of Violence Toward Images

(2) Archaeological Division of the American Anthropological Association:
Symposium—Actors' and Artifacts' Agencies: The Dynamics of Creating Living Objects (I must admit that when I think about artifacts having agency, I see images of wind-up cars and other toys that move around)

(3) Media Relations Committee:
Symposium—Must Be True, I Saw it in a Video!

Prize for Tackling the Most Difficult Issues

(1) Committee on Native America Relations:
Forum—Who's Right is More Right? Consultation and Resource Protection in Land Management Decisions

(2) Committee on Museums, Collections, and Curation:
Symposium—Dollars and Sense in Recovering and Managing Archeological Collections

Prize for the Session Most Useful for Students

(1) Student Affairs Committee:
Forum—Students Present! How to Prepare and Deliver a Successful Paper

Sessions that Honor Individuals

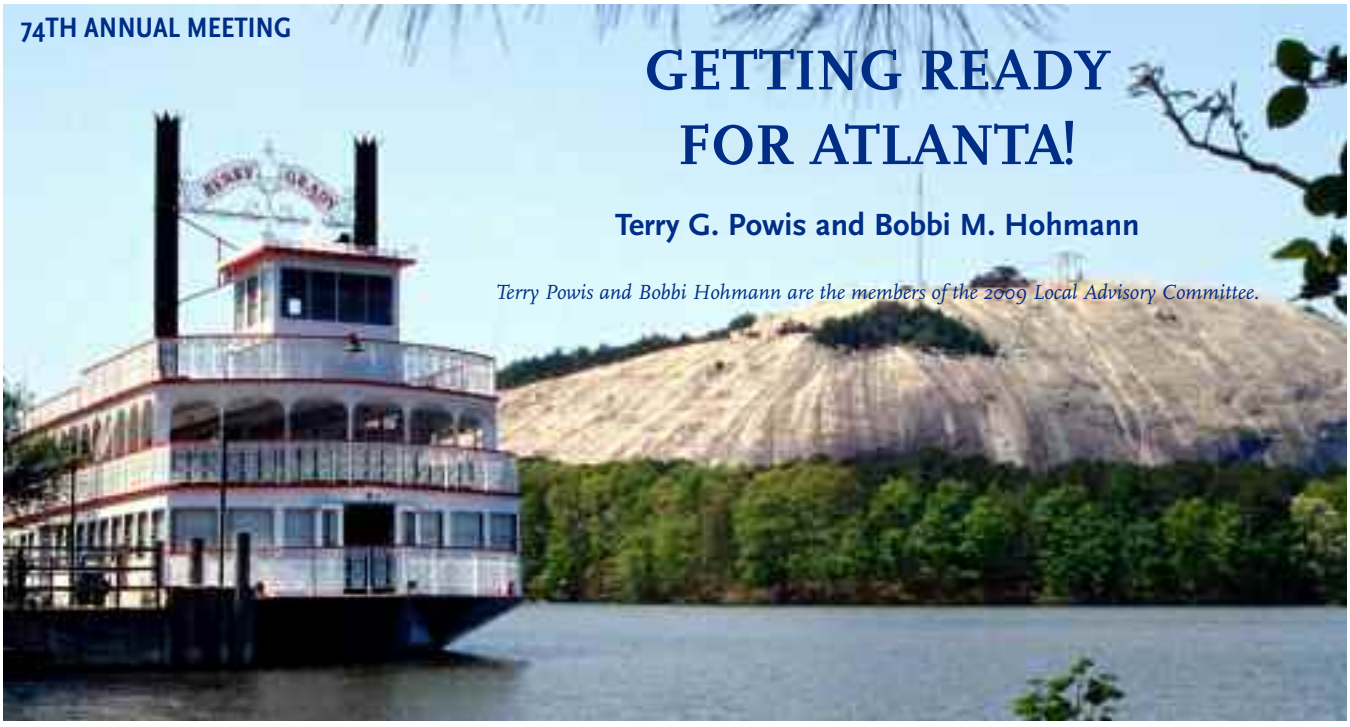
There are a number of sessions that honor popular and productive individuals. These include regular symposia in honor of colleagues such as Christopher Peebles, Gregory Possehl, Elizabeth Brumfiel, Barry Lewis, and James Richardson, as well as the symposium that celebrates the recipient of the 2009 Fryxell Award: "Michael D. Glascock and the MURR Archaeometry Laboratory." Then there are all of the regular prizes and awards that will be announced at the Business Meeting.

So you see, there are few excuses to miss the Annual Meeting. Yes, I know the economy is in bad shape and flying is more difficult, but the SAA really needs the support of its members—both financial and intellectual—and coming to Atlanta is a good way to show your support. I'll see you there!

GETTING READY FOR ATLANTA!

Terry G. Powis and Bobbi M. Hohmann

Terry Powis and Bobbi Hohmann are the members of the 2009 Local Advisory Committee.



STONE MOUNTAIN RIVERBOAT (©1998, KEVIN C. ROSE/ATLANTAPHOTOS.COM)

Atlanta promises to be an exciting venue for the next annual meeting of the SAA. It has been awhile since the meetings were held in Atlanta, so this will be a good opportunity to get reacquainted with the city. Spring is an amazing time to be in Atlanta and there are many exciting activities to fill your itinerary. Be sure to make your travel plans early in the year so you don't lose out on early-bird hotel, registration and airline specials. If you live within driving distance, consider carpooling with your friends or colleagues to save on the cost of gas and hotel parking as well as the headache of Atlanta traffic! For some of you, this could be a great opportunity to bring your family and make a vacation of it. However, remember that there will be no childcare available at least until the 2010 meetings. The cut-off date for reservations at the Marriott Marquis is March 20 and the early registration deadline is March 23, 2009. While you are registering, don't forget to check out the three great tours that have been planned to the Etowah Indian Mounds, Ocmulgee National Monument, and Atlanta History Center.

In addition to the planned excursions, you can also take a couple of hours away from the conference to visit museums like Fernbank Museum of Natural History, High Museum of Art and Michael C. Carlos Museum. *Tutankhamum: The Golden King and the Great Pharaohs* exhibition will be on display at the Atlanta Civic Center just a few blocks away from the conference, so that will definitely be a must-see attraction. Historical attractions nearby include the Martin Luther King Jr. Historic Site, Margaret Mitchell House and Museum, Historic Oakland Cemetery, and Jimmy Carter Library and Museum. Other exciting opportunities within a short distance from the hotel and conference center can be found at the Georgia Aquarium, World of Coca-Cola, CNN Center, Zoo Atlanta, and Atlanta Botanical Gardens. Some of these venues have timed tours, so be sure to plan your schedule accordingly.

The conference hotel's central location and convenient Metro Atlanta Rapid Transit Authority (MARTA) stop make for easy travel to other parts of the city. We hope you will take some time to explore on your own and find out why Atlanta is one of the fastest growing cities in the south. The Local Advisory Committee looks forward to welcoming you to our beautiful city in April 2009.

Etowah Indian Mounds State Historic site in Cartersville, GA will be hosting a reunion of past archaeologists and field workers. Event will include lunch at 11:30 am followed by a special presentation and Guest speaker, Saturday April, 25 2009.

Please RSVP to:
Etowah_mounds@dnr.state.ga.us
or call
(770) 387-3747.

ARTICLE

A QUIET CRISIS IN AMERICAN ARCHAEOLOGY

David Killick and Paul Goldberg

David Killick is a Professor in the Department of Anthropology at the University of Arizona.
Paul Goldberg is a Professor in the Department of Archaeology at Boston University.

It's time for a pop quiz. Which of the following has been the major development in world archaeology over the last decade:

(a) the bridging of the processualist/postprocessualist divide;
(b) the return of migration in archaeological explanation;
(c) the increase in the proportion of female archaeologists;
(d) Neanderthals 24/7; or
(e) none of the above?

OK, your time is up. The correct answer is (e). The major development in world archaeology over the past decade has in fact been the astounding expansion of archaeological science.

What is the evidence for this? Exhibit A would have to be the *Journal of Archaeological Science*. The 1998 volume consisted of 1,271 pages, an increase of 41 percent over the 744 pages in the 1988 volume. The publisher's allocation for the 2008 volume of *JAS* is 3,000 pages—an increase of 136 percent over the 1998 volume. No other archaeological or anthropological journal publishes as many pages or has grown as fast. There has also been a marked expansion in the number of pages in *Archaeometry*; the 851 pages in the 2007 volume represent an 81 percent increase over the 471 pages published in 1997.

JAS and *Archaeometry* are published by Elsevier and Wiley respectively. Their decisions to allocate more pages reflect rapidly expanding readership for their journals. *JAS* is no longer a journal for technical specialists; each year it is more widely read and more frequently cited. As shown in Table 1, the impact factors (standardized rates of citation) for *JAS* have shown steady growth over the past 5 years, and are now comparable to leading target journals for American archaeologists.

Another, Springer, has decided that there is room for another major international journal in this field, and will introduce *Archaeological and Anthropological Sciences* in late 2008 on behalf of the German, Greek, and Italian societies for archaeological science. There is no need here to discuss the regional journals, like *Archeosciences/Revue d'Archéométrie* or *Journal of Nordic Archaeological Science*, or the dozen more specialized journals like *Geoarchaeology* or *Historical Metallurgy*, many of which have been expanded and upgraded within the last decade. The bottom line is that there has been a huge surge in the publication of archaeological science. This obviously reflects an explosion of underlying research in this area.

Between us we have some fifty years of experience in archaeological science in both the Old and New Worlds, and we have followed its growth closely. It is of course true that the archaeologists in the richer countries (Europe, North America, Japan) have much better access to archaeological science than those in poorer regions (sub-Saharan Africa, South-East Asia, South America). But it is our definite impression that within the wealthier nations most archaeologists, whatever their professional orientation, have benefited from this expansion. Many postprocessualists now see the value of archaeological science, prompted in large part by Ian Hodder's intensive use of it in the ongoing excavations at Çatalhöyük. Classical and Near Eastern archaeologists have a long history of partnership with archaeological scientists. (Did you know that the first archaeological applications of neutron activation analysis and lead isotope analysis were in Classical archaeology?) There has been much recent innovative work on geoarchaeology and provenance in Classical archaeology around the Mediterranean, and Greece is a leading center of archaeological science today. France, Germany, Italy, and Japan have also invested heavily in this area, and the number of archaeological science papers published in English by Chinese scholars has grown sharply in the last decade. There are small but highly innovative communities of archaeological scientists in South Africa and Israel. Recent geoarchaeological studies of tell sediments (Berna, et al. 2007; Shahack-Gross et al. 2005) are revolutionizing Near Eastern archaeology, where prior interpretations of these complex sites were based on less-than-complete data sets. Even Biblical archaeologists have discovered archaeological science, as seen in the recent project to test historical chronologies by radiocarbon dating.

What about North America? Here we must draw a distinction between the *use* of science in archaeology, which has shown

Table 1. Impact factors for selected journals 2003–2007 (source: ISI Web of Science online). ISI does not calculate impact factors for *Archaeometry*.

	2003	2004	2005	2006	2007
Current Anthropology	1.837	1.800	2.289	1.628	2.312
American Antiquity	1.784	1.254	1.205	.915	1.533
American Anthropologist	.832	.952	.679	1.000	1.094
Journal of Anthropological Archaeology	1.000	1.103	1.415	1.297	.851
Journal of Archaeological Science	.819	1.186	1.316	1.322	1.439

steady if unspectacular growth, and *innovation* in archaeological science, which has been disappointing. Like most archaeological scientists based in North America, we are deeply concerned that innovation in archaeological science in the Americas is falling steadily behind that in Europe. This has been a matter of concern for some time, but it was made brutally clear at the 37th International Symposium on Archaeometry in Siena, Italy, in May 2008. It was evident to the North American contingent in Siena that by any measure—funding, innovation, new faculty positions and numbers of graduate students training in archaeological science—we lag behind our European colleagues. In the remainder of this article we consider why this has happened, and what can be done to remedy the situation.

The Growing Gap in Innovation

One of us recently published a lengthy comparison of the state of archaeological science in Britain and in the USA as of 2005 (Killick 2008), to which the reader is referred for supporting arguments. This article notes that the USA remains among the leaders of innovation in those fields of radiometric dating that are also of use to geologists and environmental scientists. This is, of course, because funding bodies for these fields pick up almost all of the cost of continuing research and development of these techniques. (This leadership is, however, threatened by the recent decision by NSF Geology to phase out support for many dating laboratories, including the AMS radiocarbon facility at the University of Arizona.) American scholars are also among world leaders in innovation in fields like geoarchaeology and in the use of light stable isotopes in paleodietary and paloeclimatic research (topics that also attract substantial funding from NSF Geology), and in dendrochronology, zooarchaeology, phytolith research and GIS—none of which require really expensive laboratory equipment.

But in many techniques that do require substantial investment, and are primarily of interest to archaeology, the USA and Canada are falling steadily behind Europe. Innovations in archaeological applications of organic chemistry, ancient DNA, micromorphology, tephrochronology, palynology, provenance by heavy stable isotopes, geophysical remote sensing, archaeomagnetism, luminescence dating, archaeometallurgy and ceramic technology have been heavily skewed in favor of Europe in the last decade, as have advances in the field of conservation science. It is also clear that many scientific techniques are more widely accessible to archaeologists in Europe than in the USA. For example, there are three centers of archaeological dendrochronology in the USA—one of which specializes in Mediterranean dendrochronology—versus more than fifty in western and eastern Europe.

Relative Levels of Funding in the USA and in Europe

The most obvious reason for this disparity is funding. British government funding for archaeological science has long exceeded that from Federal funding agencies, even though Britain has only one-sixth of the population of the USA. British archaeological scientists have also been particularly successful in attracting large research training grants from the European Community. When the (unquantified) spending on archaeological science in France, Germany, Belgium, Italy, and Greece is considered, it is clear that the USA is being massively outspent by Europe with respect to research, development and training in this field. Perhaps the greatest contrast between North America and Europe is in the amount of funding devoted to applied science in Cultural Heritage Management. Italy leads the way in this respect, closely followed by France. Perhaps the best integrated system of scientific support for public archaeology is that maintained by English Heritage. It runs its own center for archaeological science, which provides technical expertise ranging from geophysical prospection to dating, faunal analysis, microscopy, chemical analysis and conservation treatment, all available to archaeologists and conservators outside the universities. This comprehensive approach stands in vivid contrast to the patchwork of services available to Federal archaeologists and conservators through the valiant but grossly underfunded National Park Service.

The only pool of funds in the USA earmarked for research and development in archaeological science (excluding conservation) is the NSF Archaeometry Competition, the annual funding for which has fluctuated in a window between $0.8 million and

$1.5 million since the competition was created in 1973. Because of inflation a dollar today buys only 20.5 percent of what it bought in 1973, and this erosion of purchasing power has greatly affected the ability of NSF Archaeometry to invest in innovation. Over the last decade more than 80 percent of funds awarded from this pool have gone to support and upgrade laboratories that offer well-established techniques: dendrochronology, radiocarbon and argon-argon dating, neutron-activation and other trace-element techniques, and strontium isotopic analysis of bones and teeth. While these laboratories certainly deserve the support, this has meant that there has been little left over to support innovation in other techniques. There has also been a more forward-looking policy in Britain than in North America with respect to innovation in archaeological science. From 1995 through 2004 the British Natural Environment Research Council identified a number of areas for special funding. One of these was Ancient Biomolecules, and it is largely as a result of this initiative that Britain leads the world in research on organic residues in archaeology.

With the cumulative Federal budget deficit now estimated at a minimum of $480 billion by the end of the Bush Administration, there would seem to be little possibility of a major boost in funding for archaeological science under a new Administration. Thus it seems inevitable that the innovation gap in this area between Europe and the USA will widen further in the near term. But at least we will be able to adopt and apply innovations developed elsewhere. Or will we? Transplanting innovations into archaeological practice takes more than money. Archaeologists need to understand the science well enough to decide whether innovations are worth adopting for their particular research projects. Then they have to find archaeological scientists who are expert in these techniques and able to collaborate with them. We discuss these issues in turn.

Educating American Archaeologists in Archaeological Science

We are particularly concerned with the use of archaeological science in CRM, which employs many more archaeologists in the USA than do universities and museums. We have both had close ties with CRM archaeologists over the last 15 years, and know that some high-end CRM companies are well informed about advances in archaeological science. But too many of the CRM reports that we have seen make, in our opinion, rather dubious use of scientific techniques. We think that the reasons for this are: (1) that many archaeologists have neither an adequate understanding of archaeological science, nor access to experienced archaeological scientists; and (2) that most CRM reports do not undergo rigorous peer review. This is not to absolve academic archaeology. We do not think that the general level of understanding of archaeological science in academia is much better. Nor is peer review entirely successful in blocking bad science from the journals—there are simply not enough well qualified reviewers in archaeological science for the volume of submissions to regional journals. But peer review is nevertheless reasonably effective in preventing bad science from being published in the leading archaeological journals, or funded by NSF.

We think that much of the responsibility for this state of affairs lies with the system of educating archaeologists. Almost all CRM archaeologists in the USA got their degrees in Departments of Anthropology, so if their knowledge of archaeological science is not what it should be, then the fault lies with the universities. Many British archaeology departments have reorganized education over the last twenty years to reflect the growing importance of science to the discipline (Killick and Young 1997; Pollard and Bray 2007), but the structure of graduate education in American anthropological archaeology has not changed much over the same period. Although an increasing number of programs offer a survey course in archaeological science, almost none require that all graduate students in archaeology take it, and most do not. Even at the University of Arizona, where one of us has offered a survey course since 1991, fewer than 15 percent of archaeology graduate students in anthropology have enrolled in it.

We think that all archaeology graduate students should have an introduction to the potential and limitations of a wide range of scientific methods, so that they can at least know what methods might be applicable to their own interests. But all archaeologists who excavate need much more intensive training in dating methods and in geoarchaeology than is usually provided. One of us has published two reflections, twenty years apart, on his experiences as a geoarchaeologist observing a very wide range of archeologists at work (Goldberg 1988, 2008). Unfortunately, not much appears to have changed over that span. Many students are still not being trained to think systematically about site formation processes, or equipped with the basic techniques to record archaeological sediments and soils, so much crucial information is still being lost at time of excavation.

The response of many academic archaeologists to these concerns is to ask what we would have them cut to make room for mandatory training in these areas. This is a good question that deserves a careful response. We think that the problem lies in the "one size fits all" approach to graduate training of archaeologists in many Departments of Anthropology. Most large Departments require all graduate students to take a suite of required courses in anthropological and archaeological theory, plus required survey courses (hunter-gatherer archaeology, complex societies archaeology, etc.), plus statistics and a foreign language, plus one or more courses in archaeological analysis

(ceramic, lithic, etc.). Any other training is on top of these requirements. This model of graduate training has not changed in a quarter of a century and is intended to ensure that graduates are well grounded across the broad range.

We think that this model is no longer appropriate. Archaeology has become much more specialized, and there is no good reason at this point in time to insist that all students of archaeology have the same intellectual foundation at the graduate level. We would rather see less emphasis on anthropological theory and area survey courses, and more on the acquisition of basic skills (see also the essays in Sullivan 2008). Some skills are more basic than others—any archaeologist who is going to excavate should be trained in geoarchaeological inference of site formation processes, should be trained to survey and to record excavations accurately and in appropriate detail, and should have detailed knowledge of the dating methods that he or she is likely to use. We consider this an irreducible minimum. Beyond this the needs of students will diverge according to their area of specialization, and so therefore should their training.

Who Will Train and House Archaeological Scientists?

In this era of increasing specialization, someone has to attend to the training of archaeological scientists. Why do we need specialist archaeological scientists? First, because most archaeologists don't know enough science to be able to collaborate effectively with scientists who don't know any archaeology. And second, because archaeological science is at this point an established branch of science, with a lot of accumulated experience and know-how. You wouldn't trust a designer of bridges to build a jet fighter, though both are engineers. It makes no more sense to expect any random geophysicist to be able to interpret a scan made across an archaeological site by proton magnetometry. Archaeologists need the particular skills of experienced archaeological scientists, and there are not nearly enough of them in the USA. This shortage has particular impact on CRM archaeology, as specialists in many techniques tend to be based at universities, and to be fully occupied by their collaborations with academic archaeologists.

Why are we not training more archaeological scientists? We have both been heavily involved with this over the last two decades and are agreed that it is often difficult to fully train students within Departments of Anthropology. Graduate students who want to specialize in archaeological sciences are expected to jump through all the hoops outlined in the previous sections, and then to take additional courses in other departments to acquire the scientific training. This stretches out the time to completion of the doctorate, which often discourages students from taking this path. It is also inefficient: at this point in time there is no good reason why every archaeological scientist should also be a fully trained anthropological archaeologist.

What would make more sense? One option is to offer flexible interdisciplinary degrees in archaeology that would allow specialists to take fewer courses in Anthropology and more in their chosen area of specialization. A second option is to encourage students to combine a Ph.D. major in some other Department with a Ph.D. Minor in Anthropology (composed wholly of courses in archaeology). The latter option is the one that we used in the IGERT Program in Archaeological Sciences at the University of Arizona, where only about half of the graduate students funded were in the graduate program in Anthropology. Students in other departments (Chemistry, Geosciences, Geography and Materials Science) were required to complete a minor in Anthropology, which consisted of two courses in archaeological method and theory and a seminar in interdisciplinary archaeology. A similar approach has been adopted at the Kimmel Center for Archaeological Science at the Weizmann Institute of Science in Israel (http://www.weizmann.ac.il/kimmelarch/home.html).

Training more archaeological scientists is only half the battle—there remains the issue of who will employ them. In the 1980s and 1990s some museums (particularly at the Smithsonian Institution and the University of Pennsylvania) were vibrant centers of archaeological science, but this is no longer the case. In fact, MASCA at UPenn has recently been dismantled. Nor is there much likelihood of scientific laboratories springing up in the private sector for capital-intensive archaeological applications of physics, chemistry or genetics. (There are of course private-sector radiocarbon laboratories, but these serve a much wider constituency than just archaeology.) That leaves the universities. The widespread antipathy toward science among cultural anthropologists often makes it difficult to get scientists—whether archaeological scientists or biological anthropologists—hired in Anthropology Departments. One of the major reasons why Britain has been a center of innovation in archaeological science is that British archaeologists don't have to fight this particular battle—social anthropologists are in separate Departments.

The best solution, in our opinion, lies in promoting joint appointments of archaeological scientists between Departments of Anthropology and other Departments. The University of Arizona has had three such appointments since 1971 (Vance Haynes, David Kingery, and Vance Holliday) with very positive results. Joint appointments offer several advantages. They provide some protection to younger scientists in matters of tenure and promotion, they make it easier to come up with start-up funds for laboratories, and they widen the intellectual horizons of all concerned.

Discussion

There are several reasons to think that the current boom in archaeological science is not a passing fad. Archaeological excavation is extremely expensive, and some types of archaeological sites (deep cave sequences, for example) are rapidly diminishing resources. The era when archaeologists could move from one excavation to the next, leaving the excavated materials unanalyzed, are thankfully gone for good. Archaeologists have an ethical responsibility to extract as much information as they can from archaeological sites, and new scientific methods allow them to address a wider range of questions than was previously possible. All archaeologists, whatever their theoretical, areal or temporal preferences, should therefore be aware of what archaeological science has to offer. Archaeology is not a subset of Anthropology but a discipline in its own right (Sullivan 2008), and Anthropology does not have the right a priori to call all the shots. We see no reason why the funding of archaeological science in the USA should continue to be controlled exclusively by anthropological archaeologists.

The expansion of funding for archaeological science in Europe has a definite connection to concerns about global environmental change. Federal funding for research on the history of the environment has lagged behind that in Europe, but there is little doubt that the next Administration will increase spending in this area, if not on other aspects of the past. This should be good for archaeology, since the archaeological record provides many of the fine-grained environmental archives that students of past climate and environment need. Taking advantage of this would however require some adjustment of attitude on the part of some in anthropological archaeology, to which development of archaeological science has been tied since the 1970s. We might anticipate that funding opportunities will attract more archaeologists to become members of interdisciplinary teams in which questions of environmental, rather than cultural, change are driving the research. Many of the scientific methods developed in this research will, however, have wider uses in archaeology.

Lastly, the U.S. has underfunded conservation of its cultural heritage for a long time, and in consequence has a massive to-do list in the stabilization of historic and prehistoric structures

☞ *KILLICK & GOLDBERG, continued on page 40*

THE TIDE IS TURNING

BATTLING HERITAGE DESTRUCTION IN CAMBODIA THROUGH SOCIAL MARKETING AND EDUCATION

Dougald O'Reilly and Graeme Patterson

Dougald O'Reilly is Director of Heritage Watch in Phnom Penh and a visiting scholar at Yale.
Graeme Patterson is an Australian Business Volunteer/Marketing Specialist.

The article "Stemming the Tide, How Social Marketers can Help in the Fight Against Looted Antiquities" raised many valid points regarding the efficacy of using modern marketing tools to convince the general public, collectors, dealers, and museums that the acquisition of looted antiquities is an unacceptable practice (Jennings and Rand 2008). The issue of heritage destruction fueled by the antiquities trade receives some attention in the archaeological community (as evidenced by sessions devoted to the topic at recent Society for American Archaeology meetings in Vancouver), and several small-scale projects have been implemented by archaeologists working around the world. As the authors of the aforementioned article point out, it is crucial, through social marketing, to raise awareness of the damage done by the trade in antiquities. Here we raise the point that in order to maximize the impact, this type of social marketing must not only occur in consumer nations but also in supplier nations.

Heritage Watch, a nonprofit organization founded in 2003, has been working to raise awareness of the impact of heritage loss in Cambodia through a broad ranging program of activities including social marketing. There are many challenges in this effort, not least of which are endemic corruption, low levels of education and lack of funding, but there have also been successes. Achievements include recognition of the scale of the problem by the Cambodian government and the enlargement of the National Patrimony Police; the establishment of a "Red List" by the International Council of Museums for Cambodia; and increased coverage of stories concerning heritage destruction in the local print media. There has also been a growing interest among the business community of Cambodia to support arts, culture, heritage and community development as a result of Heritage Watch's "Heritage Friendly Tourism Campaign"—a broad ranging campaign bringing a heritage protection message to villagers, tourists, government, and the business community.

Jennings and Rand's (2008:29) statement that "the use of marketing principles and techniques to advance social ideas, causes, and/or behaviours—is the necessary next step in the fight against illicit antiquities" hits the mark. Heritage Watch's efforts have shown, however, that these kinds of campaigns can also be effective in supplier countries like Cambodia by reducing the flow of illicit antiquities onto the world market. A well-run campaign in a supplier country can also curb demand among tourists by delivering a strong heritage protection message to would-be antiquities collectors, just as they are contemplating their purchase. Another major benefit of a social marketing campaign in a developing country is that the costs are much less prohibitive than they are in the developed world.

Heritage Watch has implemented many of the strategies outlined by Jennings and Rand in their article. First, the organization created a tag line; "Heritage Watch: Preserving the Past...Enriching the Future," which encapsulates the dual goals of seeing Cambodia's heritage protected while ensuring the impoverished rural poor benefit in a sustainable manner (through tourism) from the vast heritage resources of the country. Second, Heritage Watch has segmented the audience in Cambodia and designed a strategy to fit each of these target audiences. Third, the totality of the projects implemented by Heritage Watch is designed to transform the illicit antiquities trade—both at the supply end (by curbing looting) and the demand end (by promoting responsible tourism).

The organization first addressed the immediate problem of looting in rural areas by creating a heritage manual in Khmer language and a training program that was implemented by Heritage Watch staff in areas most affected by looting. This work was underwritten by a grant from the U.S. Embassy in Cambodia and over 600 individuals attended training in the meaning and importance of heritage. The most effective tool in this case was to appeal to national pride. Those looting the sites in rural Cambodia are severely impoverished and the temptation of easy money through looting is strong. Prior to training, participants did not see ancient cemeteries as valuable heritage when compared to the magnificent temples of Angkor. Post-training sur-

Figure 1. An ad urging visitors to Cambodia to forego the purchase of antiquities.

veys indicated that 98 percent now understood the heritage value of cemeteries, especially as evidence of long term habitation of Cambodia by the Khmer—proof of which has great political import in current Cambodia. Hundreds of posters urging the cessation of looting in the rural Northwest of Cambodia were also distributed to police posts and villages where illegal digging was occurring.

Heritage Watch has also produced a comic book called "Wrath of the Phantom Army" that builds on the messages raised in the rural training program. The inspiration for the comic came from a woman living in a village whose antiquities had been heavily pillaged and told of how, late at night, she could hear the ancient warriors whose graves had been robbed marching through the village. The content capitalizes on the love of ghost stories in Cambodia and uses a comic format accessible to a rural population (the literacy rate is only 73.6 percent in Cambodia, http://hdrstats.undp.org/indicators/110.html). The comic was distributed nationally through a newspaper and has been followed by a children's book called "If the Stones Could Speak." The latter was distributed to rural schools with the aim of nurturing the idea of heritage preservation from a young age. These publications were supplemented by a social marketing campaign using brief radio and television "spots" that urged the protection of heritage and called on people to report looting. Dozens of callers from rural Cambodia reported incidents of looting and the information was passed on to the appropriate authorities for action.

Currently an online petition is being run on the Heritage Watch website (at www.heritagewatch.org/petition.php) to encourage Thailand and Singapore to ratify the 1970 UNESCO convention that would see these countries take steps to stop the trade in antiquities. Most of Cambodia's looted heritage passes through these countries and their cooperation would go a long way to slowing the destruction.

Perhaps the most ambitious social marketing project undertaken by Heritage Watch is the "Heritage Friendly Tourism Campaign." The campaign was launched with the full cooperation and support of the Ministry of Tourism and the involvement of local businesses. The initiative's main aims are to inform Cambodia's visitors about responsible tourism practices, and promote sustainable development in communities affected by tourism.

An important part of the campaign is a magazine called *TouchStone:* a publication that showcases developments in heritage, arts and culture; covers news, activities, events, and information on other NGO activities in these fields; as well as providing useful information for visitors to Cambodia. *TouchStone* includes paid advertising from businesses that support the goals of Heritage Watch, which it is hoped will eventually provide a sustainable revenue base for Heritage Watch.

At the core of the campaign are local businesses that have for years worked to support Cambodian cultural heritage. Businesses that wish to participate and be certified as "Heritage

Figure 2. English language version of an ad that appeared in the local Cambodian press as part of Heritage Watch's Social Marketing Campaign. The iconic Angkor Wat that appears on the national flag is poignantly removed.

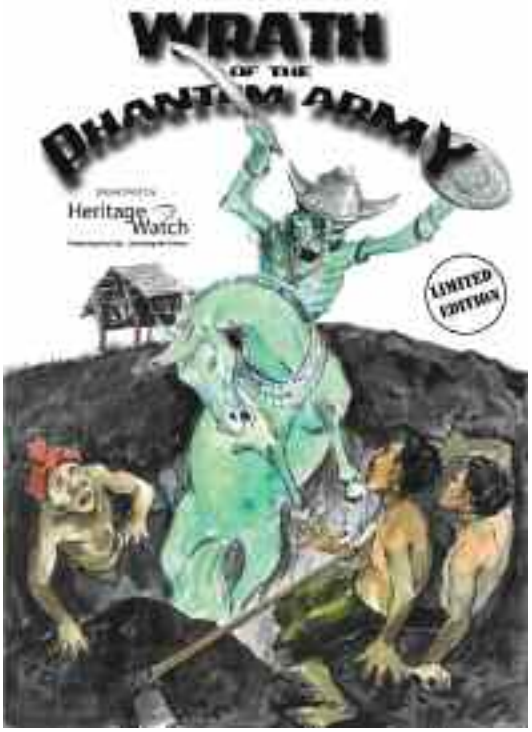


Figure 3. The English language version of Wrath of the Phantom Army, a comic book produced for distribution in rural areas affected by looting.

Figure 4. Copies of TouchStone magazine (in Khmer and English) aimed at the local and tourist market in Cambodia.

Friendly" have to meet a strict set of criteria to prove their contributions to this area; these businesses become members of the exclusive Heritage Friendly Business Association and are authorized to display the Heritage Friendly logo. Being recognized as a Heritage Friendly Business enables businesses to receive further exposure and is a perfect example of how businesses and NGOs are uniting to create a better future for Cambodia.

In the future Heritage Watch plans to focus its heritage protection campaign activities more on schools and young people. "Heritage Heroes Awards" will be presented to Cambodians who are working to save their heritage and who represent a positive role model for young people. Another future project for youth involves the development of an electronic game tentatively named "Looter," which highlights the negative impact of heritage destruction in an engaging way for youth. Currently in beta format, the game is designed to also function on a Windows format and there are plans for a cell phone version. Heritage Watch is also exploring the possibility of having the game loaded on the XO computers produced for Cambodia by One Laptop per Child, a non-profit organization.

The authors of "Stemming the Tide" ask "would a campaign ultimately help to decrease the market for illicit antiquities?" Based on the experience of Heritage Watch so far the answer is "yes it would." Much as People for the Ethical Treatment of Animals (PETA) had success in convincing the general public that wearing fur was reprehensible, heritage preservationists must work together and support, both financially and morally, current efforts to stem the tide of global heritage destruction.

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TALKING TO TREE HUGGERS

INTEGRATING ARCHAEOLOGY INTO NATURAL RESOURCE PROGRAMS

Alice Berkson

Alice Berkson is on the staff of the Public Service Archaeology and Architecture Program, University of Illinois at Urbana-Champaign and is editor of Illinois Antiquity. *She is also an East Central Illinois Master Naturalist.*

The growing movement of environmental education and service programs has been largely ignored by archaeologists in many parts of the country, including those who are active in public archaeology. We are missing the opportunity to reach out to preservation-minded individuals who have a strong conservation ethic, who should be natural allies in studying, preserving, and managing cultural resources. Since I learned about these programs three years ago, I have been impressed with their potential for providing meaningful, ongoing involvement by the public in archaeology. At the same time, I've been discouraged by the lack of progress of integrating archaeology into natural resource programs.

What are these public natural resource programs?

In some places, they are modeled after the Master Gardener program, which was developed in many states by university extension departments. Extension-affiliated programs are often called Master Naturalist programs, and have in common the following features. They are volunteer programs for adults, who complete a series of noncredit classes and field experiences in the natural resources and ecology of their region, including topics such as geology, wildlife, and botany. Following coursework completion, participants go on to volunteer in projects such as natural areas restoration and stewardship, scientific studies, or related educational programs on publicly owned lands. In order to maintain certification, participants must annually volunteer 30 to 40 hours and also take advanced training in natural resource topics.

Natural resource education and service programs began in a few localities but were first organized on the state level in Texas 10 years ago, with the formation of the Texas Master Naturalist program (Texas Master Naturalist State Office 2008), sponsored by AgriLIFE Extension of Texas A&M University and the Texas Parks and Wildlife Department. The Texas program, the largest in the United States, currently has 39 local chapters and 2,700 participants. The Master Naturalist chapters each have local sponsors, around 300 partnering agencies in Texas. Participants have volunteered more than 450,000 hours of service in the 10 years since it was organized at the statewide level. Among the statewide curriculum's 22 sections is a unit on archaeology. Some (but not all) of the Texas Master Naturalist chapters include archaeology in their initial training through a classroom presentation and field trip.

When I first learned about the Master Naturalist program under development in Illinois in 2005, I assumed that since Texas (Haggerty 2003) and the Rock Island County [Illinois] Master Naturalists program (University of Illinois Extension 2008b) included archaeology, many other similar programs would also feature archaeology in their initial curriculum or in advanced training. Instead, I found that most programs do not include archaeology (Table 1). As of late 2008, at least 35 states have some form of natural resource education and service program underway or in the planning stages. Of these, only 11 states (less than one-third) include archaeology training in the statewide program or in projects undertaken at the chapter level.

Why has there not been a connection between the volunteer natural resource programs and archaeology? Is it important to develop such connections?

Although we view the study of archaeology and the environment as integral to the interpretation of past cultures, most of us do not reach out to, or even think of, environmentalists when we seek to involve the public in archaeology education. For example, environmentalists are mentioned only indirectly in the target audiences listed for the new SAA "Archaeology for the public" web pages (Jeppson and Malloy 2007:8). I believe archaeology has been largely ignored by natural resource program planners because they have had little exposure to archaeologists and do not know how to find archaeologists interested in their programs. Some of the program planners might be specialists in wildlife rehabilitation or another area where they simply have never encountered archaeology despite spending a career in natural resources. They have more than enough material to fill

Table 1. States with Natural Resource Education and Service Programs.

Programs that Include Archaeology	Programs That Do Not Include Archaeology
Arizona (archaeoastronomy only), Arkansas, Idaho, Illinois, Indiana, Iowa, Mississippi, Missouri, Nevada, Ohio, Texas	Alaska, California, Colorado, Connecticut, Delaware, Florida, Georgia, Maryland, Michigan, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Utah, Virginia, Washington, West Virginia, Wisconsin

Note: Please contact Alice Berkson (berksonalice@gmail.com) with corrections. Our goal should be to move all states onto one list, with all programs including archaeology.

their initial introduction to natural resources topics without including archaeology.

The Master Naturalist and similar programs have captured the desire of many individuals to have a personal, positive impact on the environment by volunteering in nearby natural areas. The introductory course work is appealing to everyone from the first-time novice with no experience to natural resource professionals who seek to broaden their knowledge beyond their specialty. For those who view public archaeology as necessary to ensure the success of our endeavor in the twenty-first century, natural resource volunteers are vital to enlist. They do not need to be convinced of the importance of preserving nonrenewable resources, they just need to understand that cultural resources are bound up with the natural resources they seek to nurture.

Are there successful programs that combine archaeology and natural resource volunteer programs?

Some of the few existing programs are successful by design at the institutional level, and some succeed by individual initiative. Michael Strutt, Director of the Cultural Resources Program of the Texas Parks and Wildlife Department (TPWD), has several staff members who regularly make presentations to Master Naturalist trainees. Class sessions may be as short as one hour, focusing on regional archaeology and often including hands-on artifact discussions and topics such as ethnobotany and a visit to nearby archaeological sites. Todd McMakin of the East Texas Cultural Resources Program of TPWD is able to present a full day to the local Master Naturalist class, emphasizing how people have interacted with the environment, how humans are affected by climate changes and associated vegetation/faunal shifts, and how we can have a significant effect on the environment through time. The hands-on portion of the class includes describing prehistoric ceramic sherds and chert debitage, trying out atlatl/spear throwing (Figure 1) and sometimes a visit to a local Caddo Indian Mound. He reports: "The archaeology section of the class always gets high marks. I believe there are two reasons for this. First, it's a welcomed distraction from the other class topics. Second, people just have a fascination with history and archaeology, and once they learn how it interacts with nature, they are hooked" (Todd McMakin, personal communication 2008).

East Central Illinois Master Naturalist (ECIMN) (University of Illinois Extension 2008a) trainees have a three-hour archaeology class session, and this spring we provided the opportunity for ECIMN to participate in an archaeological survey of Jasmine Hollow in Piatt County, Illinois. The wooded parcel, situated on either side of the Sangamon River, is privately owned, but designated a Land and Water Reserve by the Illinois Nature Preserves Commission (Illinois Department of Natural Resources 2008). For the survey, we teamed up members of ECIMN with professional and avocational members of the East Central Illinois Archaeological Society, a chapter of the Illinois Association for Advancement of Archaeology (Illinois State Museum 2008). We undertook a 15-m interval posthole survey of the higher elevations of the Jasmine Hollow parcel and found a small amount of cultural material (Figure 2). Just as important as recording the location of some chert debitage and a broken biface tip was the opportunity for informal interaction between the Master Naturalists and archaeologists. After three hours of finding only a small amount of material, many participants enjoyed the process well enough to remain an extra hour to explore the final ridge.

A single person can make an enormous impact through individual initiative in the Master Naturalist program. Donald Higgins, who recently completed the Central Arkansas Master Naturalist program (Central Arkansas Master Naturalist 2008), wanted to volunteer close to his retirement home near Petit Jean State Park (Figure 3). The area was known for decades as the repository of a rich concentration of aboriginal rock art. While some sites were recorded by the Arkansas Archeological Survey (AAS), others were not, because documentation on early discoveries had been lost. After working with AAS archaeologist Dr. Skip Stewart-Abernathy and an intern, Higgins reports: "Through more than 80 hours in the field, we explored hundreds of shelters and overhangs, took updated GPS readings for all the known archaeological sites, rediscovered some 'lost' sites, and discovered at least eight 'new' sites, which included not just aboriginal rock art displays and artifacts, but also Depression-

Figure 1. Archaeologist Todd McMakin provides instruction in atlatl use to a master naturalist class. (Photo credit: Texas Parks and Wildlife Department)

era distilleries." He goes on to say: "My naturalist training, which gave me a distinguished list of experts in various fields that I could tap for information not readily at hand, has also allowed me to assist the AAS Station staff in describing local flora, geology and soils when I have accompanied them on site visits. As an example, I found a plant colony growing in a spring in close proximity to a rock art site. This particular plant can only grow in an area that gets consistent and plentiful year-round water. Thus the spring had to be permanent, which differentiated it from other seasonal springs found in the vicinity" (Donald Higgins, personal communication 2008). Higgins demonstrated in a very clear way the interaction of natural resource knowledge and archaeology.

How can I get involved with volunteer natural resource programs?

In 2006, planners from several statewide programs together formed the Alliance of Natural Resource Outreach and Service Programs (ANROSP, www.nralliance.org). ANROSP is a national organization that supports the development and maintenance of adult natural resource education and stewardship programs. Their fourth national conference took place September 9–11, 2008, at New Braunfels, Texas on the topic "Diverse Practices for Natural Resource Outreach and Service Programs." I was there, presenting a program and poster about the importance of including archaeology in every state and chapter program. Other archaeologists need to join in and communicate with program planners at the national, state and local levels. The ANROSP web site has links to many state programs, but programs under development may not yet be included. I found the best way to locate a program is to enter into a web search engine a term such as Master Naturalist, Conservation Steward, or Citizen Naturalist Volunteer along with the name of a state or locality.

Figure 2. East Central Illinois Master Naturalists join with members of the East Central Illinois Archaeological Society to conduct a posthole survey of a nature preserve in Piatt County. (Photo credit: Alice Berkson)

While all of the ANROSP programs emphasize the overreaching importance of environmental stewardship, only a few include cultural resources in the initial training and subsequent volunteer work. It should be obvious that a full understanding of an area's natural resources is impossible without learning about the impact of past cultures, but this is often not in the background of the environmental educators who plan Master

Figure 3. A rockshelter at Petit Jean Mountain in Arkansas. (Photo credit: Donald Higgins)

Naturalist programs. They typically do not seek out archaeologists. We need to follow the advice of Woody Allen, and "just show up." We should seek out nearby natural resource education and service programs, offer to develop curricula, and teach archaeology as part of initial class work or advanced training. The examples given above are the start of a fruitful collaboration between archaeologists and those in natural resource volunteer programs, but we need to do more than just teach classes.

Teaching classes and going on field trips are the first step in talking with natural resource volunteers. But, in order to be truly effective at bringing environmentalists into archaeology, we must integrate the volunteers into ongoing archaeology projects and design programs that are truly collaborative. Existing public archaeology programs at the federal, state, and local level can help to educate Master Naturalists and then draw on them as participants. Many states have archaeology month programs where participation of natural resource volunteers would be a welcome addition. Places with strong avocational and professional archaeology groups, such as Arkansas, provide a good example of the contributions of nonprofessionals to the study and stewardship of nonrenewable resources.

For the many localities lacking archaeological stewardship programs, ANROSP presents the possibility of developing such programs within their infrastructure. In addition, working with the programs puts us in contact with environmental educators who teach and administer the program and with local sponsoring agencies. Environmental studies are full of examples of

☞*PUBLIC EDUCATION, continued on page 42*

CHANGING THE CURRICULUM

PREPARING ARCHAEOLOGISTS FOR CAREERS IN APPLIED ARCHAEOLOGY

Sarah W. Neusius

Sarah Neusius is the current Chair of the SAA Committee on Curriculum[1] and Professor in the Department of Anthropology at Indiana University of Pennsylvania

In recent years there has been extensive discussion within the archaeological community about the lack of a fit between traditional archaeological curricula and the realities of the current job market (e.g., Bender and Smith 2000; Loffler 2007; McAndrews 2007; Sebastian 2006; Vawser 2004; White et al. 2004; Whitley 2004; Yu et al. 2006). To a large extent, these discussions have centered on the need to provide adequate preparation for those archaeologists who are entering the field of Cultural Resource Management either in the private or government sector. However, there also has been a growing awareness among archaeologists that today's students require greater exposure to topics such as the nature of historic preservation law, working with descendant populations, interpreting archaeological findings for the public, curating archaeological collections, and preserving archaeological records. New courses and new topics are now beginning to appear within the curriculum at many institutions. Perhaps the latest feature of curricular reform has been the proliferation of Master's programs or new tracks within existing programs focused on applied archaeology (see Vawser 2004).

The SAA, as the main professional organization for American archaeologists, has been deeply involved in these issues having put forth "seven principles of curricular reform" (Bender and Smith 2000). In 2003, the SAA established a permanent Committee on Curriculum, which has actively promoted discussion of curricular issues within the archaeological community (see *The SAA Archaeological Record* 6[5], 2006).

In the Fall of 2006, the SAA Board of Directors asked the SAA Committee on Curriculum to work in conjunction with other SAA committees to develop a concise curricular outline for a Master's in Applied Archaeology designed to meet the needs of today's professional archaeologists. This thematic issue presents the model we developed and evaluates it through commentaries provided by archaeologists working in the academic, governmental, and private sectors. It is the committee's hope that this section will continue the discussion about appropriate curriculum as well as be helpful to colleagues involved in design of new curricula or improvement of standing curricula and to students evaluating potential graduate programs.

Committee Procedures

After some initial discussion, committee members divided the task into three subtasks: (1) determining what core courses should be taken by all students, (2) identifying what elective courses would be appropriate, and (3) exploring what experiential courses including internships, fieldwork, and theses ought to be required. Eventually the output and feedback from these three subgroups were combined into a single curricular draft. Once a draft had been obtained, the full committee reviewed and tweaked the proposed model both prior to and after it was sent for comment outside the committee.

We also consulted with various other SAA committees and their members as we developed this model. Committees that were contacted included the Committee on Consulting Archaeology, the Committee on Government Archaeology, the Committee on the Americas, the Student Affairs Committee, the Committee on Museums, the Collections and Curation Committee, and the Committee on Professional Development. Each committee received an initial request for guidance on graduate curricula and later was asked to comment on a draft outline. We are grateful for all the input we had from these committees and their members as well as for the comments received from the SAA Board liasons, Mike Glassow and Jon Driver. The full SAA Board also sent us comments on the draft outline before approving the final version in April 2008. This past summer, our model curriculum was posted on the SAA website at http://www.saa.org/new/maa.pdf.

Perspectives on Applied Archaeology

There was debate among those developing and commenting on this curricular model about what the proper name for an M.A. program designed for today's professional archaeologists should be. In the end we have chosen to retain the name used by the SAA Board in asking us to develop a curricular outline: Applied Archaeology. Nonetheless, in using this name we envision training that should be useful in a broader set of contexts than are found in cultural resource management alone. At the same time, we do not necessarily view the program as providing background and training in all possible areas of cultural resource management, a field that certainly can encompass more than archaeology. For purposes of this curricular model, applied archaeology refers to the application of archaeological research and its results to address contemporary human problems, including (but not limited to) issues that involve cultural resource management, heritage tourism and development, long-term modeling of human/environment dynamics, and public education aimed at awareness and stewardship of archaeological remains.

We also discussed the fact that quality education in applied archaeology is not a separate matter from quality education in academic archaeology. Rather we see substantial overlap in the skill sets needed by twenty-first century archaeologists regardless of their intended career paths. For example, knowledge of anthropological archaeological theory and method is needed by applied archaeologists just as much as by academic archaeologists. At the same time academic archaeologists must be as aware of best practice in working with descendant populations, interpreting archaeological findings for the public, and curating archaeological collections as applied archaeologists. We strongly disagree with the idea that academic archaeological investigations are inherently superior to applications in CRM or in public archaeology. We also note that within applied contexts, the M.A. degree rather than the Ph.D. may be a preferred degree rather than a junior credential.

In some institutions, including those with a well-defined regional service mission, programs in applied archaeology may be highly attractive precisely because they are focused on training individuals who can serve local businesses and the regional public. However, in institutions that stress the generation of cutting-edge research, applied programs are less likely to be attractive to administrations or to help position the department favorably. This means that there is no single approach to graduate curricula that will fit all departments. It also means that institutional mission as well as awareness of the changing discipline can limit departments' and archaeologists' ability to meet the curricular needs of the next generation.

Thus, we present this model curriculum as guidance. The SAA does not have the authority to certify programs in any formal sense, and, of course, each university department will have its own unique circumstances and goals. However, we do believe that there is general consensus that curricular reform at the graduate as well as undergraduate level is needed. We hope that the structure proposed here will be useful in furthering discussions concerning curricular reform at the graduate level.

Required Core Courses

Our model provides a list of suggested core courses and topics, a list of appropriate elective options, and suggested requirements for fieldwork, internships, and theses. Tables 1–3 display the elements of the program along with the kinds of topics we expect courses will cover. The document available on the SAA website presents this information in a less-condensed form (http://www.saa.org/new/maa.pdf). The program we envision conceivably could be completed within two years with core requirements being taken over the first year, and electives, optional internship, and a required thesis supplementing these courses. Students might also elect to use the summer between the two years to gain more experience. The precise numbers of courses and division of credits necessarily would vary between universities that use semester and quarter systems, as could the sequencing. The model also encourages departments to support students wishing to combine a Master's program in applied archaeology with course work in a related field such as an MBA, an M.A. in Museum Administration, or Geographical Information Systems.

Four core courses are envisioned in the Committee's model (Table 1). The model curriculum lists all core courses as being offered in the first year of the program, but some programs might choose to distribute these courses over two years just as effectively. Two of these are seminars covering topics of particular importance in applied archaeology. These two courses would need to be developed by most institutions, and we have listed topics for inclusion with some specificity. The two other core courses are fairly standard courses in graduate education: Archaeological Theory and Research Methods. Existing courses most likely could be modified to include examples and case studies from applied contexts, and students pursuing both traditional and applied career paths might take these courses together.

Appropriate Elective Courses

Table 2 provides a list of possible elective courses. The model we developed envisions students taking two electives from this list during the first year of the program and four after that, but other sequencing of the required seminars and elec-

Table 1. Recommended Core Courses.

Course	Topics Included
Master's Seminar I	History of American historic preservation; Overview of the laws and implementing regulations and case studies at local, state, and federal levels; Introduction to Section 106 process, 36CFR 800, ARPA permitting, NAGPRA, protection of historic properties, undertakings, consultation, agreements, implementation; Introduction to standard CRM information development (such as identification, evaluation, mitigation, and site treatment/protection measures).
Master's Seminar II	Implementation of laws through regulations and agency policies, ARPA damage assessments, recent changes, developments, court cases; international cultural property laws; working with various publics including negotiation and dispute resolution, international perspectives and interested party/tribal consultation; ethics; report writing and introduction to MOAs and MOUs; curating archaeological collections/ cultural property; archival records management and conservation.
Archaeological Theory	History of archaeological thought; current theoretical approaches in archaeology; relevance of archaeological theory in practice; possible class project in which students employ a particular theoretical approach to a research study.
Research Methods	Quantitative methods; sampling strategies and their practical implementation; CAD, GPS, GIS, and spatial analysis in archaeology; practical research design and implementation.

tives might be possible. In addition, internship credits might be substituted for all or part of the second year elective component as well as taken in the summer. Students not pursuing an internship should be encouraged to develop an analytic specialty or other skills such as zooarchaeology or GIS.

What electives are available most certainly will be constrained by faculty expertise as it is in any graduate program. Smaller programs cannot possibly offer as many courses as larger ones although some appropriate electives can be found among the offerings of other departments. However, many existing graduate programs probably already are offering at least some of the courses we suggest, and students in both traditional archaeology and applied archaeology tracks should be taking these courses.

In Table 2 we have organized possible courses into broad categories that the committee believes are important to cover with electives. Departments will want to have elective offerings in each of these categories. We strongly recommend that historical archaeology, regional prehistory courses and a course covering modern Native American peoples and nations be included. We use standard course titles and assume a general consensus on topics included unless otherwise specified. The specific courses offered undoubtedly will vary, and we have made no attempt to include all possible courses.

Experiential Courses

The most difficult issue for our committee was how to incorporate experiential learning in applied archaeology programs. We felt strongly that this is an important part of preparing students for careers in applied archaeology. However, we also concluded that it is not realistic to expect all M.A. graduates to have acquired the real-world experience they need in the course of a two-year academic program. Part of the reason for this improbability is that students entering applied archaeology programs are likely to have varying backgrounds and different levels of experience from the start. In addition, there are limitations to how much experience can be incorporated into a two-year program, and there are aspects of archaeological practice within the government and private sectors that simply cannot be learned in academic settings. On the other hand, programs in applied archaeology can do much to foster experiential learning and the professional community can support these efforts. Table 3 summarizes our recommendations for experiential requirements.

First, competency in applied archaeology depends in part on enough field experience to be able to make informed decisions about developing and managing archaeological data sets. For this reason, it is important that programs in applied archaeology provide opportunities for students who do not already have extensive field experience. We recommend that programs in applied archaeology require an undergraduate field school experience before admission or as a remedial course that does not receive credit toward the degree. Although a two-year M.A. program cannot fully meet the Secretary of Interior requirements for one year of supervisory experience (Code of Federal Regulations, 36CFR61), programs also should provide an option to supervise fieldwork, possibly through advanced field schools available in the summer. Programs also should develop provisions for students who already have extensive experience as archaeological technicians, crew chiefs, or field directors upon admission. Typically, such students would be able to have some or all of these requirements waived or altered.

Second, we also believe that an internship in a CRM firm, government agency, or other applied setting should be

Table 2. Recommendations for Elective Course Offerings.

Elective Category	Examples of Courses
Regional Prehistory	Southwest, Eastern Woodlands, Southeast, Pacific Northwest, etc.
Historical Archaeology	Historical Archaeology
Artifact Analysis	Lithic Analysis, Ceramic Analysis, Historic Artifact Analysis
Specialized Methods	Geoarchaeology, Faunal Analysis, Ethnobotanical Analysis
Ethnography	Contemporary Native Americans, Ethnographic Methods
Other Departmental Courses	Archaeological Collections Management, Landscape Archaeology, Computers in Archaeology, Issues in Historic Preservation*, Geographic Information Systems*
Courses from Other Departments	Technical Writing/ Non-fiction Writing, Accounting/Financial Management, Cultural Geography, Environmental Planning, Urban Planning, Public History, Sustainable Tourism/Heritage Tourism, Museum Methods and Administration*

*These courses might be offered in either Anthropology or other Departments

encouraged in applied archaeology programs. In order to make such internships feasible, we recommend that internships be allowed to replace required elective course work. We did stop short of suggesting that an internship be required of all students, but the importance of such experiences cannot be overestimated. There are many possible sites for internships in both private and public sector organizations. Some governmental agencies, public or private museums, and consulting firms have formal internships, but internships may also be established on a case-by-case basis at the initiative of students and their advisors. Departments should cultivate potential relationships in their area, and internships should be carefully planned so that the experiences involved are useful to the student. Students generally should not be allowed to use their place of employment as an internship site, and working as a field technician or a crew chief in itself would not qualify as an internship. Establishing a formal internship contract may be advisable so that all parties are aware of the educational goals. The faculty internship coordinator should monitor the progress of the internship, requiring evaluations from on-site supervisors as well as the student.

Efforts also need to be made to develop more quality internship experiences, and to address special issues concerning internships. For example, the question of compensation may be thornier for graduate students dependent on on-campus assistantships than it is for undergraduates. Although the track record of cooperation between the academic, private and government sectors in creating such internships may not be stellar, we are confident that archaeologists in all sectors can solve potential problems creatively.

Finally, besides field schools and internships, thesis projects provide a third opportunity for students to gain experience in applied archaeology. Our model assumes that completion of a thesis is just as critical for students in applied archaeology as for those in more traditional tracks. In completing a thesis, students gain independent experience with issues of designing, implementing, and reporting on archaeological work in ways not possible in course papers. This kind of experience is invaluable to applied archaeologists, especially if the thesis is focused on appropriate topics. We recommend that a thesis representing completion of an archaeo-

Table 3. Recommendations Concerning Experiential Coursework.

Program Year	Required Coursework	Recommended Coursework
Prior to Admission or between Academic Years One and Two	Undergraduate Field School	
Between Academic Years One and Two		Advanced Field School or Supervisory Experience
Academic Year Two		Internship (Replacement of up to two elective courses possible)*
Academic Year Two (Following Completion of Core Courses and at least two elective courses)	Thesis (Thesis credit equivalent to up to four elective courses)*	

*As credit structures vary among universities a precise number of credits is not specified here.

logical project and its report be a requirement of applied archaeology programs. In some instances, a policy paper on the management of archaeological resources, which uses site distributions, curated collections, or other archaeological data from a region, might be acceptable.

Cooperation between those in academic, private, and government sectors in creating experiential opportunities for students should be an important part of developing applied archaeology programs. This is likely to be both a challenge and an opportunity for our profession. Nevertheless, without continued attention to the creation of experiential opportunities we will all continue to be frustrated with the preparation of new professionals entering the field.

Conclusions

The model curriculum outlined here envisions a fairly straightforward program involving core and elective courses and providing various opportunities for students to gain concrete experience in applied archaeology. Since it is intended as guidance, its usefulness lies primarily in whether it stimulates thought and debate about the nature of master's training as well as the place of applied archaeology in the academy. We have asked for commentary on the model from several colleagues, and their thoughts follow. These individuals, who represent various work sectors, make a variety of important observations and suggestions, adding their considerable expertise to the discussion of what programs in applied archaeology should include.

We also invite your comments about the curricular model. Please contact the committee directly or consider commenting in a letter to the editor. In addition, please plan to attend the forum, *Toward a New Curriculum: The Future of Applied Archaeology in Higher Education*, which the Committee on Curriculum is sponsoring at the upcoming Atlanta meeting. This session will include archaeologists from other countries and promises to be a lively exchange of viewpoints.

Note

1. The entire SAA Committee on Curriculum contributed to the development of the model curriculum discussed here. In addition to myself, this includes David A. Anderson, Ira C. Beckerman, Meredith D. Hardy, Rebecca A. Klein, Tim L. McAndrews, E. Christian Wells, Patti J. Wright, and Pei-Lin Yu.

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COMMENTARY

Dean R. Snow

Dean Snow is the President of the Society for American Archaeology (2007–2009) and Professor in the Department of Anthropology at Pennsylvania State University.

Let me begin with my conclusion. The recommended model curriculum for a Master's degree in applied archaeology developed by the SAA Committee on Curriculum addresses an important growing need in professional archaeology. Professional archaeology in the U.S. has evolved from a largely academic profession to (in terms of employment opportunities) a predominantly nonacademic one. Academic archaeology has not been replaced, indeed it is not even threatened by applied archaeology. But the growth of the latter has put important new demands on the former.

The landscape of professional archaeology today is nothing like what it was when I was a student. The training I received five decades ago would not serve our students well today. Yet too often the categories and silent assumptions of that era tend to persist today on the college and university campuses where we are training the next generation. Probably the most serious of these is the four-field definition of anthropology and the notion that archaeology will continue to always find its natural home as one of them. Linguistics is separate in some places, a small minority in some others, and nonexistent elsewhere. Meanwhile, many cultural anthropologists have abandoned interest in the problems and issues of greatest use to archaeologists. Probably most significantly, objective descriptions of what individual archaeologists do increasingly cut across the older categories. Moreover, archaeologists in different university departments (even different colleges within universities), private companies, and government agencies appear to me to have ever more rather than less in common with each other. Finally the undeniable vigor and recent growth of archaeology is clear evidence that it is both a discipline and a profession in its own right. We should organize ourselves and train the next generation accordingly.

Academic archaeology will always have its own esoteric, delightfully impractical, interests. Colleges and universities are not or should not be merely vocational institutions. But the academy also has an obligation to train students for the array of professional career tracks that are now available. It is fundamentally a simple matter of supply and demand, and university administrators expect academic programs to modify supply to meet emerging demand. An archaeology program that offers a strategic plan that proposes to let the discipline be simply the sum of the preferences of its current faculty will find itself in deep trouble. A program that takes seriously the curricular recommendations of efforts like the Matrix project and now the new guidelines for master's programs in applied archaeology will thrive in the coming years.

We have come to this place in the evolution of our profession through a process opposite to that taken by many other fields. Engineers began by building things, then teaching apprentices to build things, then designing bachelor's curricula for the same purpose, then creating master's programs, and only more recently developing doctoral engineering programs. The same logical progression describes the historical origins of doctoral programs in fields such as business, education, medicine, and languages. Archaeology did not arise from the same practical foundations. Instead, archaeology was added to the pantheon of intellectual pursuits that sat atop the academic towers of the nineteenth and early twentieth centuries. That was the archaeology that attracted me in the 1950s. That was the archaeology that sober advisors told me then I could not hope to practice. That is the archaeology that is still nurtured in many of our doctoral universities. Applied archaeology was added late in the development of the discipline rather than being the soil from which the discipline grew. In that sense we are more like biologists and physicists than engineers or physicians. But the faculties of even our most august doctoral programs are coming around to the realization that most of their students will have careers that feature at least in part either the practice of applied archaeology or the preparation of applied archaeologists. The numbers appear to be undeniable.

There has been much talk recently about how modern stu-

dents learn, and how different they are from their parents' generation. I can attest to the contrast for I have taught both generations. The younger generation spends much time searching the web and texting on cell phones, and the older one laments the declining interest in reading. Yet MRI experimentation shows that searching the web engages many more neurons in areas of the brain that involve reasoning and memory than does reading (Holden 2008). Most people will agree that dozing off while reading occurs much more frequently than dozing off while Googling. Books are still full of wonders, of course, but rather than lament the shift in student learning strategies we should help students turn it to their advantage.

Add to this the inherent hands-on nature of archaeology and our tradition of working in teams, and it is easy to see why colleagues in other disciplines envy our ability to get students engaged in real research early on. Problem-based learning is a natural for us, and an applied archaeology career track will attract many capable students.

Continuing efforts in curricular reform will probably reveal that we have reversed some logical sequencing, emphasized some things too much, others too little. Even as we sharpen our abilities to provide skills and competencies in our training, new emerging techniques will require the expansion and updating of our curricula. Successful higher education in the twenty-first century will focus on the development of skills and competencies. That means that rigorous scientific approaches are almost certain to prevail over desultory content-driven ones.

The applied wing of archaeological science is growing and developing rapidly, and it is clear that traditional academic programs must accommodate it. The SAA should continue to take the lead in proposing archaeological curricula that can evolve to accommodate the theoretical, experimental, and applied interests of modern archaeology in ways designed to avoid new fragmentation and to consolidate old academic divisions. It is one of the most vital of the many member services provided by the SAA as we move forward together.

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COMMENTARY

George Gumerman IV and Francis E. Smiley

George Gumerman is Chair and Professor and Francis Smiley is Professor and MA Internship Coordinator in the Department of Anthropology at Northern Arizona University.

Today's archaeology students pursue diverse careers outside of traditional academia. We, therefore, argue that it is critical for academic programs to train students to meet the needs of applied archaeology's private and public sectors. As SAA's curricular model emphasizes, applied archaeology encompasses much more than traditional CRM to include governmental service, indigenous heritage, public education, public archaeology, heritage preservation, heritage tourism, and museum practice. Accordingly, we define applied archaeology as the process of using the methods and knowledge of archaeology to solve broader societal issues and concerns (Downum and Price 1999). Given this definition, applied archaeology takes on problems that range from climate change to land claims to K-12 math and science education to cultural preservation. SAA's model master's curriculum in applied archaeology fills the need to develop programs that meet the growing demand for a wide range of applied archaeologists.

Our comments on SAA's model curriculum draw upon Northern Arizona University's (NAU) thriving Master's in applied archaeology program that has successfully placed hundreds of alumni in satisfying careers outside of academia. Our program establishes curricula, advises students, and graduates professionals who can compete for jobs and promotions to meet the demands of today's job market. We train students to be professionals, seek responsibility, complete projects, and be leaders. NAU's program demonstrates that applied archaeology master's programs similar to the SAA model curriculum are effective while pointing out

strategies and philosophies that help make such a program successful.

Professionalization

Our top priority is aimed at professionalizing our students. Professionalization training takes place in all courses as a conscious priority of instruction and is also emphasized in extracurricular activities. Senior federal archaeologists and private sector CEOs and supervisory archaeologists all uniformly tell us, and we are generalizing from years of feedback: **"We like what you are doing, especially the professionalization and computer instruction ... we want you to continue do it and do it even harder."** Our students graduate ready to hit the job market in the private sector, in government service, in museum specialties, and in public archaeology. They also are accepted into top-ranked Ph.D. programs—often with substantial funding. The strength of our program lies in the development of graduates who are professionals with in-depth knowledge of theory and method (and how to bridge the two), grant-writing experience, computer application, and every level of report production. In addition, our students must understand the archaeology-related legislation and archaeological and anthropological ethics—all components of SAA's model applied archaeology curriculum.

Employers of our students stress the importance of writing skills. We do not rely on outside programs or course work to develop excellent writing skills. Students learn to write article-length, book-length, poster, and web-based materials using a clear, expository writing style that avoids passives, pronouns, and stilted constructions. In addition, students learn book and report design using industry-standard software. We also emphasize this through competitive student grant development exercises; students learn how to develop a grant idea, find a granting agency, write the grant, and serve on a grant panel that reviews and recommends grant awards.

In addition, we train students in public-speaking styles appropriate for professional meetings and symposia as well as for general public presentations. Students master skills in video presentation, presentation software, and vocalization. Most of our applied archaeology students present at various national meetings, including the SAA and the Society for Applied Anthropology, where they often organize, chair, and moderate symposia, developing organization and leadership skills.

NAU's Applied Archaeology Curriculum

Another strength of our program lies in our "learner-centered" approach to education that we and many other programs have focused on for decades. Learner-centered graduate teaching includes the immersion of students in hands-on exercises, involves giving as much leadership and public presentation experience as possible, and requires faculty availability to give advice and answer questions. Learner-centered graduate training also includes faculty assistance in the job search and job procurement. NAU archaeologists work closely with our students while integrating our national and international research into our pedagogy.

Specifically, our curriculum is based on a set of core theory and method courses that include anthropological theory, archaeology theory, applied anthropology, CRM, archaeological methods and inference, and an internship experience that results in a defended internship paper that is par with a thesis. A variety of electives round out the curriculum.

We argue that both anthropological and archaeological theory courses are essential to a student's broad training. The courses provide the theoretical underpinnings that place applied archaeology in a broader theoretical context. We also require an applied anthropology course that offers an overview of applied anthropology and the anthropological perspective as they relate to understanding the roles, responsibilities, and current practices available to applied anthropologists. Students learn to apply anthropological knowledge in a practical setting and are expected to explore and develop an increasing awareness of issues, ethical dilemmas, and the possible solutions that confront today's applied anthropologists.

Our CRM core course is a consolidation of related topics into a single challenging and comprehensive seminar that focuses on the legal, ethical, fiscal, management, personnel, and theory surrounding the practice of CRM. The course prepares the student for the real world of CRM by emphasizing the basic philosophies and legal frameworks of CRM. Students come away with the knowledge, technical expertise, and managerial skills needed to obtain, administer, and fulfill the legal requirements of CRM research and application.

Our Master's students assimilate their quantitative, analytical, and sampling skills in a comprehensive method and inference seminar that stresses computer application and report production experience, as well. The archaeological method and inference course comprehensively covers research design, sampling, quantitative methods, and provides exercises in ceramic, lithic, faunal, and paleoethnobotanical analysis. We also train our students in industry-standard computing applications that archaeologists need: graphics, GIS, quantitative, database, and publishing applications.

The design of our applied archaeology internship places the student into a new, challenging, and relevant situation that fosters the development of leadership abilities, networking skills, and an unsurpassed work ethic. Our students think big by taking on internships located all over the world. Typical internships are with national and international muse-

Figure 1. Site stabilization at Tonto National Monument by Chris Duran (left, NAU) and Duane Hubbard (NPS and NAU Alum). (photo credit: NPS photo)

ums, tribal agencies, and the United States Park and Forest Services. Importantly, the internship is a structured educational experience where the student has specific goals and deliverables. The internship results in a high-quality internship paper that is similar in many ways to a thesis—except for its applied nature. Our students finish their graduate career at NAU by defending their internship papers before their committees, other faculty, and their peers.

Applied archaeology students also enroll in several electives that they arrange around a theme, such as material analysis or museum studies. Our list of courses is quite similar to SAA's model curriculum with some minor differences. One of our unique electives, Indigenous Perspectives in CRM, provides students with multivocal perspectives in applied archaeology.

In terms of field experiences, all our graduate students must complete an approved field school, ideally prior to entering our graduate program. Regardless, all applied archaeology students must complete field school requirements before conferral of the Master's degree. The field school ideas in the SAA model are excellent and the proposed advanced field school that gives graduate students supervisory and leadership opportunities is an especially valuable experience.

NAU's applied archaeology curriculum is slightly different from the SAA's model curriculum but produces many similar outcomes. While our course structure might be viewed as just another method for organizing an applied archaeology curriculum, we have a great deal of experience with the structure, we work to constantly assess and improve it, and we find it works extraordinarily well. We are pleased that the SAA developed an applied archaeology curriculum model that has a great deal of merit and will serve the needs of a whole new generation of archaeologists. The majority of archaeologists are gainfully employed in applied archaeology and we feel it is about time that the discipline serves its largest constituency.

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COMMENTARY

THE M.A. IN APPLIED ARCHAEOLOGY AND CURRENT TRENDS IN GRADUATE EDUCATION

Dan Sandweiss and Scott Delcourt

Dan Sandweiss is Professor of Anthropology and Quaternary & Climate Studies, and Dean and Associate Provost for Graduate Studies, and Scott Delcourt is the Associate Dean of the Graduate School, both at the University of Maine.

Industry, government, international organizations, and non-governmental offices have a growing need for professionals with post-baccalaureate training. However, these careers often do not require the extensive research training associated with doctoral education, which is largely intended to (re)produce academic scholars and scientists. The past decade has seen a trend toward more professional master's degrees that combine training in practical and theoretical aspects of a disciplinary field with a set of professional skills necessary to work in job arenas outside of academia. Many of these programs fall under the rubric of Professional Science Master's (PSM), considered as a terminal degree and an alternative to the doctorate for non-academic professionals. PSM programs have been developed and evaluated by institutions that are members of the Council of Graduate Schools and offer some useful lessons for the M.A. in Applied Archaeology (http://www.cgsnet.org/?tabid=227 see also http://www.sciencemasters.com/). The Council of Graduate Schools has also recently begun an initiative to study and promote Professional Master's of Arts (PMA) programs for social sciences and humanities (http://www.cgsnet.org/Default.aspx?tabid=121), but this effort is less advanced. Here, we situate the M.A. in Applied Archaeology (MA^3) within this broader landscape of graduate studies.

The PSM initiative began in 1997 with funding from the Alfred P. Sloan Foundation to 14 research universities (Stripling 2008). This was a deliberate attempt to bridge the gap in workforce preparation between science and industry, much as the MA^3 is intended to connect academic archaeology to those public and corporate arenas where archaeological methods and knowledge play a role. Outside the academy, there is need for what is sometimes called "the T-shaped professional with depth and breadth" (Colwell et al. 2008: 14). Such individuals "have 'contributory knowledge' (deep learning in the science) and 'interactional/articulatory expertise' (breadth of workplace skills)" (ibid), and, as such, have a working understanding of science, but can speak the language of business people, policymakers, and others outside of the academy. Both the PSM and the MA^3 are designed to prepare T-shaped professionals who can bridge the academic and nonacademic worlds.

The core of a PSM program is a combination of disciplinary, science-related courses and workplace skills courses such as communication, business, and law (often referred to as "science plus" courses), and frequently an internship or other field experience. "For students seeking a pragmatic route to a career involving science, a PSM merits serious consideration" (Benderly 2008:3). The PSM is meant as a terminal degree, not a "'stepping stone' en route to the doctorate or a 'consolation prize' for those who were not admitted to candidacy or dropped out" (Colwell et al. 2008: 19). The MA^3 is also conceived in these terms, and one challenge will be to change the culture of American archaeology to accord appropriate respect to those who choose the MA^3 route.

The model curriculum for the M.A. in Applied Archaeology is largely consistent with the new generation of professional master's degrees that are intended to function as Professional Science Master's. The Master's Seminar I and II cover the legal issues specific to applied archaeology in the U.S. and some parts of a communication module (see Neusius, this issue, Table 1). The Archaeological Theory and Research Methods courses and some of the electives cover the disciplinary knowledge base. An internship is required. One difference between the two degrees is the thesis requirement: the MA^3 holds to its academic roots and requires a thesis, while most PSMs do not do so, because the skills involved in thesis-writing are not considered necessary for the "out of academy" career tracks PSM students seek.

This raises the question of the advantages and disadvantages of requiring a thesis for the MA^3. On the one hand, many applied archaeology positions will require the production of lengthy manuscripts; a thesis is good experience in this regard. On the other hand, a thesis requirement takes time, and therefore, costs the student more both in terms of tuition/living expenses and delayed employment. At the University of Maine, our M.S. in Quaternary and Climate Studies trains archaeologists, among other climate-related scientists, and requires a thesis (Figure 1). Looking at those archaeology students who successfully completed our QCS M.S. program between 1990 and 2008 ($n = 23$), the average time added to the program by the thesis requirement was ~3.4 semesters, or

more than one and a half years.[1] That represents a significant cost, yet does not include those who completed all coursework but stopped short of finishing the thesis, and therefore, never received a degree. An additional cost is faculty time, as thesis supervision requires additional, and usually unremunerated, effort that may result in decreased faculty productivity in research and publication. As resources for graduate education decrease, a thesis-based program may be less attractive to universities precisely because of the potential productivity costs. We recommend that the thesis be optional in the MA^3. A program might choose to replace the thesis with an extended paper arising from the internship when the student's projected career path does not require thesis-writing skills, or the report-writing section (Neusius, Table 1) might be considered sufficient for this purpose.

The other obvious difference between the MA^3 and the basic PSM model is the lack of a business module in the MA^3. A few of the suggested electives cover some aspects of business, but a more inclusive course for public sector financial management would be useful. Many applied archaeology jobs are likely to be in small organizations where a single individual wears many hats, including that of manager.

Employment trends and prospects will be a controlling factor in the adoption of the MA^3 by universities. Who works in applied archaeology now? What are the job requirements? How do practitioners and employees see the job market for applied archaeologists evolving? These are questions that all graduate schools ask as they consider any new degree program, and the SAA is better positioned to provide answers than individual sponsoring programs—the Society has regular access to a large and diverse membership to survey. Prospective students will also want the answers to the above questions, as most if not all will be expected to fund their graduate studies. Will the degree have sufficient value to justify that investment?

In the arts, the value of a practice-based master's degree (the MFA or Master of Fine Arts) has long been recognized, and the MFA is considered an appropriate credential for tenure stream faculty. Professional master's degrees are also common in education and allied health services such as speech pathology, nursing, and social work (though for employment outside of academia). The social and natural sciences have been much slower to find value in master's-trained individuals, perhaps because of overwhelming centrality of universities in these disciplines. The PSM initiative was driven by a growing recognition that research focus and specialization of most doctoral programs did not fill the needs of all potential graduate students or their prospective employers (Walker et al. 2008). The MA^3 seems to have similar roots. A problem both programs face is the cultural attitude toward doctoral vs. master's credentials in sectors of the marketplace dominated by the academy. The development of new master's degrees as explicitly terminal degrees indicates a change in perception, but an anti-master's bias is still prevalent in many areas. One positive outcome of the current economic crisis may be more rapid acceptance of the value of appropriate, cost-effective training for jobs that actually exist, even when they fall outside the academy. Graduate education must be nimble enough to make itself relevant outside of the Ivory Tower. PSMs, and specifically the MA^3, represent a good faith effort to meet non-academic professional needs.

Figure 1. UMaine Climate Change graduate students in the field at Waynuna, Peru, May 27, 2004. Far right: Kurt Rademaker (UMaine M.S. in Quaternary and Climate Studies, 2006). Second from right: Louis Fortin (UMaine M.S. in Quaternary and Climate Studies, 2008).

Note

1. The median and mode were two semesters (1 year) and the range was 0–12. Not all students were continuously enrolled between completion of credit and course distribution requirements and completion of the thesis/awarding of degree, but the average number of semesters enrolled after completing all course distribution and credit requirements was not much less (~3.1); this figure includes summers when tuition was paid, while the count of semesters between completion of requirements other than thesis and granting of degree did not include summers.

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☞*SANDWEISS & DELCOURT, continued on page 42*

COMMENTARY

WILL THIS DEGREE GET ME A JOB WITH YOUR FIRM?

William H. Doelle

William Doelle is the President of Desert Archaeology, Inc. and President and CEO of the Center for Desert Archaeology.

I recently had the following "conversation" with a completely hypothetical young student who is halfway through her senior year at a state university where she is majoring in anthropology. She handed me her resume and a copy of the SAA's model curriculum in Applied Archaeology and she boldly asked: "Could I get a job with your company with an M.A. from a program like this?" I confessed that I hadn't done a great deal of thinking about college curriculum in recent years, but I agreed to read through the guidelines and we met at a coffee shop two days later. What follows is the gist of our conversation.

WHD: A few years ago my daughter, who is now 26, was making career decisions similar to yours. Eventually she chose an intensive two-year Master's program where she was trained to be a Physician's Assistant. She recently began her first job, and her starting salary and benefits are pretty much the same as mine, even though I have a Ph.D., 38 years of experience, and own a firm that employs 35 full-time staff. You are about to invest two years to get a Master's degree in Applied Archaeology, but if you made an alternative career choice, like a Physician's Assistant, you might well start your career earning about double what you will earn as an archaeologist. Have you considered that carefully?

Student: I knew that I wanted to be a professional archaeologist even before I went to field school last summer. And this fall I added some extra archaeology electives to my course schedule. I am definitely ready to make that commitment—and I know that there are more lucrative choices.

WHD: I realize that you really want to get moving on your career, but I strongly recommend that you take a full year off between your B.A. and entering a Master's program. Your participation in an undergraduate field school is a good start, but there is a lot more to learn about fieldwork. Investing a year working in contract archaeology on as many field projects as possible will provide invaluable perspective and will pay benefits for the duration of your career.

Student: But I hate to lose a whole year.

WHD: Well, what I am really suggesting is that you redefine your program to extend for three years—even if the academic program doesn't require it. However, now is the perfect time to carefully consider which Master's program you want to attend. I can think of at least three reasons to move to the city, or at least the region, where you will be attending graduate school. First, a CRM firm is more likely to hire you if you are locally available than if you have to relocate across country. Second, many elements of contract archaeology are regionally based, so consider a program in a region where you want to have your career. Third, your year out of school should be used to start building a network that can serve you during grad school and afterwards.

Student: But what about my original question of whether a degree in Applied Archaeology could lead to a job?

WHD: I'm not ready to answer that yet. Let's consider how you should evaluate and make choices between programs. I would look at three attributes of a program: intensity, diversity, and flexibility. Let me elaborate. To assess intensity, I would look for a program that runs for a full 24 months, not two nine-month academic years. If you want a high-value degree, I think you need to invest a full 24 months. Your first summer would be a required internship and the second summer is when you would complete your thesis. Regarding diversity, I would look for a program that offers at least several opportunities for specialization (such as faunal or ceramic analysis) where at least two or three courses are offered in the particular specialty of your interest. It has been my experience that adequate training in a specialty like ceramic analysis will require significant on-the-job training as well, but having completed three courses at the Master's level provides a strong start. And it is important that there be opportunities to take at least some courses within the broader field of anthropology. Finally, when evaluating flexibility I would search for a program with a strong set of core requirements and a willingness to work closely with you regarding elective courses to create a training program that fits your needs and interests.

Figure 1. Early morning sun illuminates over 4,000 years of Tucson's past. The world of contract-funded archaeology encompasses projects from the small and mundane to those that are very grand in scale. This photograph shows one small portion of a major excavation project carried out in multiple phases over the course of more than a decade. Excavations have revealed 4,200 year-old maize and pithouses as well as irrigation canals that date to 3,500 years ago. Homer Thiel is shown recording Early Agricultural (round) and Early Ceramic (rectangular) period pithouses. Extensive historic period components include a Spanish mission, residences of Chinese railroad workers who settled down and grew garden crops for Tucsonans, and the early brick yard that provided materials for many University of Arizona buildings. There was public programming both during and after the excavations. The project research team involves over two dozen individuals, with roles for both generalists and specialists. Photo credit: Henry D. Wallace.

Student: Are there some specific courses or programs that I should look for?

WHD: Let's try to answer that question in the context of your personal strengths and weaknesses. For example, give me an honest assessment of your writing skills,

Student: Well, that is an area where I consistently get comments from my instructors. So, I would have to say that my writing definitely needs improvement.

WHD: You know, that is a pretty common problem. I think that an inability to write clearly and efficiently is a consistent weakness that I observe in the contract archaeology environment. I strongly recommend that you take a special technical writing course. You may never write a good short story or a novel, but you do have to explain how you developed your research questions, clearly describe the methods you applied, and most importantly lay out your interpretations of the results. Poor writing skills can seriously impede a career in applied archaeology, whereas strong writing skills often pave the way for success.

Student: Well, if effective writing is that important for success, then I will make the effort to improve in that area. How can my choice of a thesis topic help prepare me for my future work environment?

WHD: That work environment is likely to be very dynamic. You will find that your research focus and your daily life at work are organized around projects. One project may involve an early time period in the northern part of your state and the next one might involve the historic period in your local downtown. You will be called upon to re-focus your thinking and apply your research skills in new ways on a regular basis. You will be expected to digest the relevant literature from previous work in a rapid fashion and you will then have to move forward on a schedule to implement an effective plan of work. You will also have to realize that some research questions can't be effectively addressed within the framework of your current project. Writing a thesis can help prepare you for these kinds of tasks. It is helpful to recognize that throughout your career you will find that it is challenging to craft the proper fit between your time and budget and the infinite number of interesting questions that you could pursue. Keep that in clear focus when you plan your thesis. And be sure that you make an absolute commitment to finishing that thesis on schedule.

Student: It sounds like you are saying that I need to take on a lot of the responsibility if I pursue this degree.

WHD: Yes! Take charge of your own success. Look for a program that expects a lot of you and one where you feel that you will be working with a faculty and other resource persons in the community who are willing to help you achieve your goals. Hopefully they will push you and you will cause them to stretch as well.

Student: Can we get back to my original question? Do you think that I can get a job with one of these Master's degrees?

WHD: When you first asked me the question, I really didn't know how to answer. But as we have talked through this, I am getting more encouraged. I think that a program like this may indeed open up some real opportunities. It is important to recognize that this is a time of generational change in the world of contract-funded archaeology. Over the next decade there will be a large number of persons retiring from careers in private firms. It is important to be able to gain some working experience with individuals who have done the kind of work that you seek to do for the past two or three decades. Recognize that as an opportunity to continue learning in the early stages of a new career. Learning from an experienced "master" is one of the best ways to gain skills rapidly and to avoid reinventing the wheel.

COMMENTARY

Benjamin Resnick, Jon Berkin, and Patricia Trocki

Benjamin Resnick is Group Manager, Cultural Resources at GAI Consultants, Inc.
Jon Berkin and Patricia Trocki are both Cultural Resources Specialist at Natural Resource Group, LLC.

As the largest organization of professional archaeologists in North America, the Society for American Archaeology (SAA), specifically its Committee on Curriculum, is leading the discussion on curricular reform in archaeology. The diversity of experience and employment represented in its membership has allowed the Committee to develop a well-rounded model curriculum for applied archaeology. However, applied archaeology is extremely broad in scope and it is inevitable that the curricula of different institutions will emphasize different aspects of applied archaeology.

Based on our collective experience in the private sector, our commentary focuses on the requisite graduate training for archaeologists who will be employed in the private sector as cultural resources project managers and principal investigators. We have concluded that there are several fundamental skills necessary to function successfully in the private sector, both at the technical and managerial levels. In our commentary, we divide these skills into four categories: (1) a sound understanding of the regulatory and compliance process; (2) field skills; (3) communication skills; and (4) knowledge of basic business/management practices. We conclude our discussion by evaluating the extent to which the recommended model curriculum for the Master's in Applied Archaeology (MAA) provides the necessary professional training to meet these demands.

Knowledge of the Regulatory and Compliance Process

Unlike other branches of archaeology, CRM has its foundation in a legally mandated process. This distinction is critical because it distinguishes CRM from most other forms of archaeology that focus purely on research. While research plays a critical role, the goal of CRM is to achieve compliance with various historic preservation laws and regulations (NHPA, ARPA, NEPA, etc.) and comprehension of the application of these laws in real world contexts. Consequently, an understanding of the regulatory framework of the CRM industry represents an essential component of the training of any successful CRM professional.

McAndrews (2007) recently conducted a survey of members of the American Cultural Resource Association to determine the most important professional qualifications and skills for a CRM archaeologist. The survey revealed that an understanding of CRM legislation was ranked among the most important qualifications for professionals in the industry. In particular, McAndrews noted that the following skills associated with the regulatory process were repeatedly cited in the survey: specific legislation, working knowledge of the policy making process, ability to navigate the complex compliance process, understanding of the purpose of legislation, and understanding of the broader planning process and the role of archaeology in that process.

A CRM consulting firm functions in a regulatory environment. Therefore, CRM archaeologists working in the private sector must be trained to think in regulatory terms to effectively manage the compliance process and to develop effective resource management strategies.

Practical Field Experience

The importance of developing MAA candidates with adequate field training cannot be overemphasized. There is no more important skill for a successful CRM archaeologist than to be proficient in fieldwork and to be able to adequately interpret and synthesize data. Without such expertise, one would be hard pressed to prepare research designs, develop field strategies, and evaluate the significance of archaeological sites (i.e., evaluate National Register of Historic Places eligibility).

We feel that the most critical field skills for individuals (e.g., principal investigators) obtaining an MAA are an understanding of soils and geomorphology, and an ability to design logical and effective sampling strategies. The ability to identify and differentiate soil horizons in the field is essential (Figure 1). Such knowledge has practical applications in applied archaeology involving the ability to distinguish between intact vs. disturbed soils, and the presence and age of landforms. This training should lead to a better understanding of archaeological potential and/or significance—indispensable tools for managing cultural resources successfully under Section 106 of the NHPA.

A second vital field skill is an ability to design and assess sampling strategies that are effective from both an economic and statistical perspective. Realizing the goal to identify resources and develop strategies to minimize effects on cultural remains requires field strategies that adequately sample

Figure 1: Familiarity with soils and geomorphology is essential for interpreting landform age and site depositional history.

cultural resources potentially affected by an undertaking. Constraints imposed by engineering, planning, or public resistance to development, however, often make this challenging. How does one effectively sample very narrow and linear development corridors that may cut across numerous cultural and environmental regions? Sampling strategies may also need to be revised on short notice if project designs are changed, or access to areas selected for sampling is denied due to changes in project permitting. Once the sampling strategy is developed, CRM managers must be able to assess whether the field strategy is working.

Communication Skills

A successful CRM archaeologist also must possess effective written and oral communication skills. CRM is driven by laws and regulations, such as Section 106 (NHPA) and 36 CFR 800 (Protection of Historic Properties). CRM managers are faced with the conflicting forces of legislative mandates, the nature of the industry proposing the undertaking, budget demands, and time constraints. Although CRM projects are driven and structured by laws and their implementing regulations, resolving conflicts between preservation and project goals requires creative solutions that vary from project to project. As a result, cultural resource managers working as consultants are perhaps most simply defined as "problem solvers" for their clients (Bergman and Doershuk 2003:90).

Effective communication and, more specifically, effective consultation are required to solve or avoid cultural resource management problems. In some cases, consultation may be legally defined as it is in Section 106 (36 CFR 800.16). For the present purposes, we define consultation as the process through which knowledgeable persons, aware of legal requirements and cultural diversity, respectfully work together toward informed consensus based on shared data.

Successful consultation requires the ability to communicate effectively both orally and in writing. When the nature of consultation is legally defined, it often involves formal communication, which must follow legal requirements and guidelines (e.g., letters of consultation, technical reports, site treatment plans, or memoranda of agreement). More fundamentally, however, effective consultation requires an understanding of the perspectives of the various stakeholders as well as an understanding of the information they will need to make decisions. The most often cited communication skill that many archaeologists lack is technical writing (McAndrews 2007; Yu et al. 2006). Concise, clear, well-organized technical writing allows the efficient transfer of information from an applied archaeologist to a regulatory agency or stakeholder. This skill is perhaps the most difficult to find across the industry and the program would benefit from the participation of a seasoned CRM practitioner.

Knowledge of Business Practices

The practice of CRM in the private sector occurs in a business environment. While knowledge of the regulatory process and effective field and communication skills are all critical, a CRM organization must have a core staff of employees with effective business skills to succeed. The goal of a successful CRM business is to complete the compliance process in a cost effective manner.

An effective CRM business requires a wide variety of skills, including budgeting, proposal writing, managing projects and employees, contracting, marketing, and interacting with clients. An experienced project manager must prepare scopes of work that define the area where the work will occur, the methods to be employed, state and federal guidelines that will be followed, the staff needed, the time necessary to complete field and lab work, deliverables (e.g., technical reports), and an accurate calculation of costs. The project manager must also identify and account for conditions that could reduce the ability to perform the work in a timely or cost effective way (e.g., inclement weather conditions, a lack of landowner permission to enter the project area, or difficult logistics for work in an unfamiliar region).

A contract between the project sponsor and the cultural resource management firm legally defines the firm's obligation and often includes the scope of services. A project manager must understand these legal obligations under which archaeological work is conducted.

Evaluating the Proposed Curriculum

In general, we find the proposed model to be very good. However, we offer a number of changes to the curriculum that would place greater emphasis on the skills we believe are essential to CRM professionals who will be employed in the private sector. Some of these skills will be enhanced through on-the-job-training or formal training programs sponsored by an employer.

A cultural resource consulting firm plays the important role of ensuring that a project sponsor navigates the compliance process by balancing competing interests of stakeholders and providing quality work delivered in a timely manner. The skills to achieve the objectives require a solid understanding of historic preservation law. Regulatory training figures prominently in the MAA model curriculum. Master's Seminar I provides instruction in the major CRM laws and regulations. In addition, it also has an associated class exercise that entails designing a project and taking it through the regulatory process. Topics covered in Master's Seminar II include instruction in the implementation of CRM laws/regulations and a section on agreement documents. Ideally, the MAA thesis should also include a regulatory component as well.

It is important to consider how this regulatory training should best be delivered. Case studies with associated student exercises would be well suited to illuminate the regulatory framework of CRM. These case studies should cover a wide range of project types and be drawn from various regions of the country. In addition, student exercises should be group oriented, since most CRM projects are group efforts. It would be beneficial if the program could feature guest CRM lecturers working in both the private and public sectors, including agency staff. These speakers could provide presentations highlighting the regulatory components of specific projects as well as the challenges of current regulatory issues. Finally, internships of the types noted in the MAA model curriculum also could afford students real world exposure to the compliance process.

Overall, the principles of archaeological fieldwork also are well represented in the MAA model curriculum. However, we have a number of suggestions that would significantly enhance the effectiveness of archaeologists working for CRM companies. Classroom instruction (during Academic Year 1) should include a solid background and understanding of soils, soil horizons, and geomorphology. This was not apparent either in the core or elective courses in the recommended model MAA curriculum. In addition to the above, artifact analysis (presently an elective) should be integrated into the core courses of the model curriculum along with the application of Global Positioning Systems (GPS) and Geographic Information Systems (GIS). Given the industry trends, these skills will make newly minted MAA students eminently more employable.

While classroom instruction in field archaeology is essential, this must be followed by in-field training. We recommend a *mandatory* field school (between the first and second year) providing practical experience and field supervision opportunities for students. A mandatory field school will enable instructors to closely monitor a student's field competency and focus instruction on those field skills requiring improvement. Additionally, most employers in CRM will not hire staff members that have not completed a field school.

Legal mandates guide the types of communication that are necessary and the way in which information is communicated to all of a project's stakeholders. Emphasis should be placed on technical writing and effective public speaking. In evaluating the curriculum, the report writing component in Master's II (Academic Year 1) is an important part of communication skills. In this core class, students should be instructed on how to produce many kinds of documents required in cultural resource management (e.g., letters of consultation, technical reports, programmatic agreements, etc.). The course would benefit from critiques of the prepared documents and oral presentations by other students and professors knowledgeable in cultural resource management. In addition to this formal training, these skills should be incorporated into as many courses as possible throughout the 2-year program. "Writing across the curriculum" will help the cultural resource manager develop the kinds of skills required by legal mandates.

Given the importance of business skills to the CRM industry, we found the curriculum to lack adequate business training. Such training should be incorporated into the core course curriculum. A module that focuses on how a CRM company operates as a business should be included in the first Master's Seminar. An overview of other, more advanced, business-related topics would then be introduced in the Master's Seminar II. Students also should be trained in basic marketing and business development skills. Classroom instruction should be accompanied by a class exercise focusing on business skills. For example, students would be required to respond to a proposal request and prepare a proposal with a scope and budget for a project. The scope would also include a staffing plan and schedule. Optimally, students would receive such instruction from a program-sponsored internship and from feature presentations by CRM business owners and key administrative staff in CRM firms. A more detailed business course that focuses specifically on the CRM industry should be offered as an elective as well.

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COMMENTARY

IT TAKES MORE THAN THE RIGHT CLASSES

Scott Anfinson

Scott Anfinson is the Minnesota State Archaeologist.

There has been much talk about the need for focused and comprehensive CRM archaeological education in the United States over the last 30 years, but very little action. A few universities have implemented programs and many universities have offered a single CRM course, but there has been little broad support for CRM educational programs, especially within anthropology departments. Many CRM programs have come and gone and the value of courses has varied greatly from institution to institution. The proposed SAA Master's in Applied Archaeology curriculum should finally bring some focus and consistency to CRM education, but there are critical elements that still need examination and discussion.

The SAA model curriculum currently consists of four parts: coursework, field experience, internships, and thesis. In this paper, I will briefly examine each of these parts, but I will reserve the majority of my comments for what is still missing: who will teach the courses, who will evaluate a student's progress, and what course materials will be used in the core CRM seminars.

The coursework component of the model curriculum is subdivided into three elements: core courses taught within the program, elective courses taught within the parent department, and elective courses from exterior departments. The four recommended core courses are two CRM-focused seminars and two standard advanced archaeology courses, Archaeological Theory and Research Methods. The internal electives include courses currently available within most anthropology departments that general advanced degree archaeology students take. The outside elective courses partially bring the focus back to CRM-specific needs with such topics as Urban Planning and Public History.

I concur with most of the coursework recommendations, but have a few additional suggestions. I think the core should be expanded to include a regional prehistory/history course and an American Indian ethnography course. The former is essential to evaluate site significance and prepare research designs, while the latter is essential for effective consultation and site evaluation. The internal electives will no doubt be tailored by individual schools based on their strengths and weaknesses, but most of the SAA recommendations are fine. I do think that History of Anthropological Thought is also an important course as modern CRM is increasingly involved with tribal consultation, dealing with sacred sites, and working internationally. An anthropological perspective is more valuable than just an archaeological perspective in these matters.

As for outside electives, I would suggest deleting business methods and writing courses as these are technical courses that students should pursue on their own based on their individual needs. While good writing is essential to CRM, graduate-level students should not be allowed to enter a program if they are significantly deficient in this skill. As for business courses, few Applied Archaeology graduates will immediately start their own businesses, and if they do, it is unlikely they will initially employ more than themselves and a partner. Major CRM firms understand you need a business specialist if you are going to run a big company. Architectural History and Geomorphology are two additions that should be made to the outside electives.

In the Field Experience section, I would stress that CRM practitioners need to learn more than intensive excavation techniques and they should be familiar with fieldwork on both prehistoric and historic sites. I agree that the need for supervisory experience is critical considering professional qualification standards. It is also valuable to work in different regions and different parts of the world, but if a graduate practitioner is going to stay close to home, a local fieldwork component is essential.

Internships are important, but they are often difficult to implement. Many CRM firms will not take interns and some universities are located in cities that do not have ready access to governmental shops with appropriate programs and personnel. The supervision of interns within firms and agencies is often an unreimbursed burden and interns can be relegated to doing repetitive "busy-work" that may have little value in CRM training. Intense departmental supervision is essential to making sure the intern experience is worthwhile. The same is true of Independent Studies courses.

The thesis requirement is a standard for most Master's Degrees as it provides an opportunity for faculty to make a final assessment of a student's ability to intensively do research, write about that research, and bring projects to completion. All of these are essential CRM skills. A thesis has the added benefit of providing other archaeologists and the public with a detailed study of topics of wider interest. Indeed, many important excavations and analyses would never get written up if not for master's theses.

Some schools (e.g., the University of Minnesota) have given CRM-track students the option of doing several short papers in lieu of a thesis. I personally can see the benefit of both tracks. The non-thesis track is easier for most students to complete in a timely manner, getting the student out into the workforce sooner. It also is more focused on CRM specifics, but this track does a poorer job of truly evaluating a student's writing/research skills and preparing the student for a broader contribution to archaeology. Furthermore, the short papers are never as satisfying as a thesis is to larger archaeological needs. Some schools also test a student's knowledge with focused written or oral exams that look at basic CRM competency.

As I have stated elsewhere (Anfinson 2006), the biggest failing of many Applied Archaeology programs is the failure to provide adequate, focused CRM instruction. Most professors of anthropology or archaeology at American universities have only limited experience with the depth and breadth of CRM. The CRM experience of many is limited to a government contract to excavate a site or to a few development project surveys. Yet at many universities these limited-experience faculty members are supposed to be qualified to send the next generation of CRM archaeologists out to the agencies and firms. An occasional "expert" guest speaker just doesn't do the trick to truly prepare a CRM professional.

If we look at the SAA Curriculum Model core Master's Seminar I, it should provide:

> 1) a History of American historic preservation and 2) overviews of the most important laws and implementing regulations, including state and local in addition to federal laws; case studies for each; introduce the Section 106 process, 36CFR800, ARPA permitting, NAGPRA, protection of historic properties, undertakings, consultation, agreements, implementation; introduce standard CRM information development, including identification, evaluation, and mitigation of adverse effects, and site treatment/protection measures.

Yet how does excavating a site for an agency or doing a basic reconnaissance survey for a housing development prepare you to teach all or even most of the above? The CRM experiential inadequacies of many academics become even more apparent in Master's Seminar II.

Not only are many current archaeological faculty poorly equipped to teach focused CRM courses, they are also marginally equipped to monitor a CRM student's progress and to evaluate that student's final CRM readiness. Faculty members do more than teach the courses, they lead the fieldwork, ultimately supervise the internships, and assess students' final products. Faculty must know options and variations in fieldwork that apply by field situation, agency needs, and state requirements. They must find appropriate settings for internships and evaluate an intern's progress. If a thesis topic or comprehensive exam involves detailed CRM knowledge, only a knowledgeable advisor can assess adequacy.

We cannot expect most anthropology departments to hire tenure-track instructors just for Applied Archaeology programs as most departments will want faculty who complement their core mission. Most also do not have the funds for supplemental full-time staff. That leaves several options: (1) properly train the staff you have, (2) start an in-house CRM contracting firm, or (3) hire adjunct instructors who know what they are talking about. The first option can be accomplished by sending faculty to the various courses that are available through several CRM training institutions such as the National Preservation Institute (NPI). NPI courses are held across the nation and cover most of the topics necessary to teach a core seminar on CRM. Faculty should also attend CRM events such as State Review Board Meetings, SHPO/THPO training sessions, and national or regional CRM/Historic Preservation conferences.

The second option, an in-house CRM facility, is already in place at some universities. It provides more than just CRM-experienced faculty. It also provides for internal fieldwork and internship opportunities that are conveniently located and closely supervised. However, there are numerous complications with such facilities: there must be space to house them, projects must be found to keep them busy, university accounting procedures can make it difficult to compete in a timely manner, and someone has to manage the business end. There also may be ethical conflicts of interest, and private companies may complain to university officials and legislators of unfair competitive advantages.

As for the third option, the use of adjunct faculty, many universities are in close proximity to agencies or firms that have qualified individuals who could teach a focused CRM course or serve on a student's committee. It is critical, however, to get an individual who has a broad and deep knowledge of CRM. People who work for or have worked for agencies are often a better choice than people who have just worked for private business. Business-only archaeologists may be too specialized, while most agency archaeologists see many dif-

Archaeologists and public officials examine the Federal Reserve Bank site in Minneapolis (photo by the author).

ferent situations, have worked with different laws as well as with a variety of cultural properties both prehistoric and historic, and have some experience with tribal consultation. Perhaps the best experience comes from working at a SHPO where federal, state, and local laws come into play. Once again, a university's location plays a big role in access to appropriate adjunct faculty.

As for CRM course materials, most instructors currently use King (2004) and Neumann and Sanford (2001) as the texts, supplemented with journal articles, government publications, and webpages. Other popular texts are additional CRM books by Tom King (2000, 2002, 2003, 2005), the book on significance by Hardesty and Little (2000), and the various books in the *Archaeologist's Toolkit* series. There are good things to be said about all these books. However, the biggest criticism is the lack of broad CRM experience by some of the authors, which leads to a tendency to present academic perspectives that have limited practical application. Tom King is the clear exception to this as few practitioners have as deep and wide a CRM experience as he does, and most of his books provide many essential insights. Unfortunately, his sarcasm about certain topics and colloquial writing style can rub some professionals the wrong way and confuse some students.

There is a need for new texts that provide practical guidance about the National Register of Historic Places, how to deal with problematic property types (e.g., lithic scatters, recent farmsteads), Indian consultation, and international perspectives. CRM archaeological educators also have to make better use of other key Historic Preservation texts such as National Trust for Historic Preservation (1999), Murtagh (2006), and Stipe (2003). The SAA Curriculum Guidelines should provide an overview of appropriate texts and highlight key journal articles, government publications, and websites for CRM education.

The immanent retirement surge of baby-boomer CRM practitioners will create numerous employment opportunities for a new generation of archaeologists, but these archaeologists must be ready to hit the ground running. When CRM archaeology began in earnest in the 1970s, the first practitioners had to not only invent the laws and methods, but had to self-learn their craft. On the job training will continue to be an integral part of CRM, but this training will be more effective if applied to a sound educational base. SAA can help provide that base with a comprehensive Applied Archaeology curriculum model.

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COMMENTARY

S. Terry Childs

S. Terry Childs is an archaeologist with the Archaeology Program of the National Park Service.[1]

Several, related issues invariably arise when federal government archaeologists meet: (1) the growing number of retirements by federal archaeologists and the resulting loss of institutional memory and skills; (2) the lack of adequately trained archaeologists to fill those positions; and, (3) whether or not those positions will be filled. I am very pleased that the SAA Committee on Curriculum has developed a recommended model curriculum in applied archaeology at the Masters level, since it has great potential to help alleviate one of these concerns.

It is instructive to examine the current distribution of full-time federal archaeologists to recognize the significant scale of need for appropriate training and skills. The Office of Personnel Management (OPM) reported in September 2007 that 974 permanent archeologists (GS-193 series) were employed by Federal agencies. The largest numbers of archaeologists worked for the Department of the Interior (400), Department of Agriculture (374), and Department of Defense (175).[2] Data on the age groupings for federal archaeologists (Table 1) clearly show that the vast majority of those employees are in the 40–49 or 50–59 age brackets and many will retire soon. Unfortunately, it also shows the relatively small number of employees in the 20–29 and 30–39 age brackets, but we anticipate and are advocating for more young hires as the older work force retires.

Archeologists hired by Federal agencies typically meet the Secretary of the Interior's Professional Qualification Standards. In addition to a firm grounding in archaeological method, theory, and field experience, agencies also look for individuals with particular knowledge, skills, and experience with:

- historic preservation law, regulation, and agency policies;
- Section 106 compliance procedure, including inventory, applying the National Register of Historic Places evaluation process, consultation, collections management, and options to resolve adverse effects;
- Section 110 activities;
- contract management and oversight;
- excellent report writing;
- Archaeological Resource Protection Act permitting and resource protection; and,
- interpretation and public outreach.

A number of additional knowledge sets and skills, however, are increasingly important in government, particularly federal, archaeology. These are not exactly comparable so I group them into three general categories: communication, management, and topical.

Communication includes:

- The ability to work closely with agency experts in a diverse range of other disciplines, such as historic architecture, museum property, cultural landscapes, natural resources, interpretation, planning, facility management, law enforcement, fire management; budget, and contracting.
- The capacity to convince colleagues and managers of the public values of archaeology and historic preservation when their utility is questioned for a particular project, agency budgets are being cut, and programs are being evaluated for their cost efficiency and effectiveness.
- The facility to recognize and negotiate cultural sensitivities and concerns when working and consulting with Indian tribes, other descendent groups, and stakeholders in many different types of projects.

Management includes:

- Understanding asset management, including heritage assets. This requires in-depth condition assessments of archaeological sites as assets, and then planning, budgeting for, and treating the assets for long-term use and protection.

Table 1. Age Groupings of Federal Archeologists from OPM Data in 2007.

Federal Agency	Total	20 – 29	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79
National Park Service	159	1 (1%)	33 (21%)	43 (27%)	70 (44%)	11 (7%)	1 (1%)
Forest Service	337	8 (2%)	55 (16%)	94 (28%)	157 (47%)	23 (7%)	0 (0)
All US Gov Agencies	974	21 (2%)	167 (17%)	252 (26%)	437 (45%)	97 (10%)	no data

- Developing and maintaining partnerships, including volunteer programs.
- Understanding accountability, which entails documenting and accounting for the resources owned and managed by the agency and responding to careful review of those resources by the Office of Management and Budget as well as independent auditors.
- Being computer literate in Geographic Information Systems, database management, graphics, Internet use, and webpage development.

Current topics include:

- The benefits and impacts of cultural tourism.
- Climate change, which involves identifying the high density areas of archaeological sites that will be impacted on public land, conducting site surveys in those areas, prioritizing the sites found for further evaluation of significance and integrity, and setting priorities for extensive research, interpretation, and/or protection. This topic also entails communicating with land managers about the unique insights into long-term human/environment dynamics that archaeology can provide within a systematic approach to climate change.
- Cultural landscapes and the issues of how, when, and what archaeological resources are included on those landscapes.

The recommended model curriculum for applied archaeology addresses many of these needed skills that, as the SAA Committee on Curriculum strongly states, are also beneficial to students pursuing an academic career in archaeology. While it is critical that all applied archeologists are well versed and tested in the methods and theories of anthropological archaeology, academic archaeologists will learn valuable skills from the applied side of archaeology. In fact, when archaeological methods and theory are used to tackle real world problems like climate change, warfare, gender issues, crop domestication, and water control, some may argue that all archaeology is applied.

Lynne Sullivan and I have strongly advocated that all archaeologists need training in archeological collections management as it applies in the field and in the repository (Childs and Sullivan 2004; Sullivan and Childs 2003). CRM-career archeologists, in general, know much more about budgeting for collections, artifact sampling, records management, and preparing collections for the repository than do academic archeologists (Childs 2007). Unfortunately, many CRM archeologists gain that knowledge on the job and not through formal coursework.

Historic preservation law is also directly relevant to academic archeologists. Professors and their students may want to conduct research on federal or state land, which necessitates a permit and other requirements, or work in a foreign country with various legal requirements. Archaeologists in academia are asked to be peer reviewers or expert witnesses for cases in CRM and historic preservation and must know the laws involved and related issues.

All archaeologists need to know how to: develop a research or project design with a comprehensive budget and collecting strategy; articulate the public benefits of archaeology; write and speak well; write peer-reviewed articles, reports, agreements, and grants; consult with a variety of stakeholders for the benefit of a project or in compliance with a law; collaborate with partners; interpret the results of archeological research, whether academic-based or CRM-based, to the public in simple English; and, use Geographic Information Systems (GIS) and make use of archaeological data layers for planning purposes, whether in research or resource management.

I now want to suggest several ways to extend the effectiveness of the recommended model curriculum in Applied Archaeology. The first way is to provide a clear statement about the benefits of a Master's in Applied Archaeology, including why a student might want to choose a Master's over a Ph.D. program. Not only are there more jobs available in CRM, but such a program prepares students in a timely manner to be practicing professionals who can face the challenges of stimulating, non-academic work environments.

Second, the faculty members who teach the curriculum must work together to stress how the topics presented in each course are interrelated and to select specific subjects to thread through the various courses. For example, issues related to archaeological collections management and ethics are relevant in every course, not just in the Master's Seminar II and a possible elective. The history of American historic preservation, federal and state laws and regulations, undertakings, project design and budgeting, research methods, consultation, site protection, permitting, ethics, sampling strategies, and quantitative methods all relate to collections management and ethics.

Third, current Executive Orders (EO) issued by the President should be discussed in Master's Seminar I or II. EOs should be recognized because they may have a profound effect on the goals of historic preservation and related performance during that President's administration and, sometimes, beyond. For example, EO #13287, "Preserve America," was signed in 2003. Its goals are to actively preserve America's heritage through advancements in the protection, improvement, and/or contemporary use of federally-owned historic properties, and to manage those historic properties as assets that can support federal agency missions and the economic vitality of local communities. Also, EO #13327, "Federal Real Property Asset Management," was signed in 2004. It serves to promote efficient and cost effective use of America's real property assets, and to assure accountability of the opera-

tional and financial management of federal real property assets. Not only have these two EOs introduced new vocabulary to federal government archaeologists, but they require skills in accounting and being accountable, property management, writing, databases, interpretation, and community collaborations. Notably, efforts are underway to transform EO #13287 into federal law to ensure that its goals live well beyond the Bush administration.

A fourth way to add to the effectiveness of the program concerns consideration of other core courses, electives, and relations to other departments for electives. Another core course should be Anthropological Theory and Methods. Other electives to consider are Human Ecology, Issues in Consultation, and Issues in Historic Preservation Law. Other departments that might be able to provide useful electives are American History (e.g., Historiography), Law (e.g., Environmental Law), Economics (e.g., Micro and Macro), and Philosophy or Business (e.g., Ethics).

Fifth, internships should be strongly encouraged and, when possible, made mandatory in Applied Archaeology because both the student and the organization that provides the internship can benefit in significant ways. The student learns the inner workings of the organization and gains expertise in a specific subject matter, which may help to orient or solidify career goals. The organization often gets desired end products, as well as abundant stimulation from fresh, young minds. For example, the National Park Service's Archaeology Program has participated in the National Council for Preservation Education (NCPE) internship program for over ten years. Many significant products have resulted from this internship program, including:

- *Distance learning courses*
  www.nps.gov/history/archeology/tools/distlearn.htm
- *Studies in Archeology and Ethnography*
  www.nps.gov/history/archeology/pubs/studies/
- *Technical Briefs*
  www.nps.gov/history/archeology/pubs/techbr/
- *Teaching with Historic Places lesson plans*
  www.nps.gov/history/nr/twhp/descrip.htm .

Finally, I would broaden the types of thesis projects acceptable for a Master's in Applied Archaeology. I support the types mentioned, however, researching extant archaeological collections should be more than satisfactory. There are many collections from federal, state, or tribal land that have never been analyzed and interpreted within the context of the excavation(s) or survey(s) that occurred years ago. These include, but are certainly not limited to, collections from the New Deal's public works projects in the 1930s and from the River Basin Salvage Program in the Midwest beginning in 1945 (Sullivan and Childs 2003). There are other collections that have been researched to various degrees, but the application of new research questions to those collections may yield exciting new insights that enhance the value and significance of a collection for future use (Barker 2004). Many of these collections also need rehabilitation, which is a major undertaking in itself. Theses on existing collections will benefit the student, the university program, the repository that curates the collection, the collection owner, if it is a federal or state agency or a tribe, and future researchers. Why keep excavating when we have exciting collections to dig through and research?

The SAA Committee on Curriculum is to be commended for developing an excellent Master's level curriculum. The effort expended to consult with a number of SAA Committees certainly is evident and has paid off. Those of us who worry about the level of training and skills of the archaeologists who will eventually fill our federal positions can rest easier now. Our next task is to encourage universities that are contemplating developing such a Master's program to carefully consider the Committee's recommendations.

Notes

1. Many thanks to Frank McManamon, Barbara Little, and Teresa Moyer of the National Park Service, Sarah Bridges of the Department of Agriculture, and Owen Lindauer of the Federal Highway Administration for their comments on an early draft of this commentary.

2. These numbers do not include term appointments, seasonal positions, and archeologists in non GS-193 series jobs, which often add a significant number of additional archeologists to the government roster in any given year.

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and artifacts. Whether a new administration will choose to put any more money into this is an open question. If it does, however, we can expect some of it to develop methods that are also applicable in archaeology, as there has historically been a tight connection between conservation science and archaeometry. This applies especially to studies of ancient technology.

The bottom line, as we see it, is that there are some rays of hope in the present situation. We have some catching up to do as far as archaeological science is concerned, and to some extent this depends upon funding decisions that are beyond our control. But we can change the way that we educate archaeologists and archaeological scientists, and so position ourselves to better take advantage of the opportunities that advances in archaeological science offer for archaeological interpretation.

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Charles H. McNutt

LIFE AFTER RETIREMENT

Charles H. McNutt

I retired a decade ago, in 1998, after a long and stimulating career in academic anthropology. I had not given much thought to my "afterwards," primarily because I already knew what I would do. Like the vast majority of my colleagues, I would just keep on doing about the only thing I knew much about—I would keep on doing archeology. (We Michigans do archeology, Harvards do archaeology.) Kind of a "default" decision.

I had enjoyed teaching—there were periodic feelings of accomplishment when you felt you had helped open a young person's mind to at least some of the beauties of the cultural world. I was also the rare person who enjoyed faculty meetings. They were like participant observation on tiny ethnographic field trips. I hated grading papers, and was insecure in assigning graduate students responsibilities for grading undergraduate essays. My dislike of paper-grading was a major factor in my decision to retire.

What I had not anticipated was the tremendous enjoyment I would receive from what appeared to be a rather uninspired vision of the future. In the absence of teaching and faculty meetings, one begins to write. Being more of an article person than a book person, I began writing articles. They concerned old, unfinished papers, new ideas, and most of all, alliances with and inspirations from new co-authors. Writing is very much an attempt to open your own mind to new things, and self-perceptions of success (provided by acceptance for publication) engender a feeling of satisfaction that is very different from that achieved in teaching.

I have been very fortunate thus far, and have a number of articles in progress. I sometimes wonder if I don't seek out enjoyable projects just to avoid boredom—which I fear greatly.

Another aspect of retirement that carries over from ones previous life is attending academic meetings. I must admit that I have never been a major contributor of papers at meetings. Attendance is pleasurable in being able to pick up new knowledge, particularly from younger colleagues. A major attraction, of course, is visiting with older colleagues—social anthropology.

I fear that Hester Davis had hoped for a somewhat longer article, but she has forbidden any discussion of current health, operations, and the like, which we retirees find so fascinating. In all seriousness, I would only hope that others have the same rewarding experience that I have enjoyed—there is no reason not to.

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unintended consequences, where for instance an introduced species wreaks havoc with the local or regional flora or fauna. For us, integrating archaeology into environmental programs should be a win-win situation for all.

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NEWS & NOTES

The Don D. and Catherine S. Fowler Prize will be awarded annually to one book-length, single-author manuscript in anthropology submitted for publication to the University of Utah Press. Successful entries will focus on the human experience in the American West and demonstrate excellence in substantive research and quality writing. Submissions in archaeology, ethnography, ethnobiology, ethnolinguistics, biological anthropology, and paleoecology as it pertains to human behavior are especially welcome. The winning author will receive publication under a standard book contract that includes a cash prize of $3,000.

The 2009 Prize Submission Guidelines are as follows. (1) Manuscripts should be no more than 800 pages in double-spaced Courier 12-point font and should be otherwise formatted to conform to the manuscript and graphics guidelines stipulated on the University of Utah Press Web page under "Author Resources" (http://www.uofupress.com/AuthorResources/). (2) Submissions must be in English. (3) Manuscripts must be postmarked between January 1 and June 30, 2009. Early submissions are encouraged. If you desire proof of receipt, please send the manuscript using Certified Mail or Delivery Confirmation services from parcel delivery carriers. (4) Manuscripts that do not win the Fowler Prize will also be considered for book publication. (5) Manuscripts will not be returned and will be recycled after the competition. (6) Portions of submitted manuscripts may have appeared previously in journals or anthologies, but previously published monographs will not be considered. (7) The competition is open to all authors except current students, faculty, and staff of the University of Utah. (8) All submissions should include the following materials: cover letter, C.V., and complete manuscript, including all figures and tables. Please mention the competition in your cover letter.

A panel that includes Don D. and Catherine S. Fowler and other representatives of the Press will determine the winning submission. Awardees will be contacted directly, and the results of the competition will be posted on the Press Web site by November 1, 2009. Please do not call the Press or the judges to check on the status of your submission. The decision of the judges is final. The winning manuscript will be published in 2010. The Press reserves the right to make no award in any given year. Please send all submissions to: The University of Utah Press, c/o The Don D. and Catherine S. Fowler Prize, J. Willard Marriott Library, Suite 5400, University of Utah, 295 South 1500 East, Salt Lake City, UT 84112-0860

National Park Service's 2009 Archaeological Prospection Workshop entitled Current Archaeological Prospection Advances for Non-Destructive Investigations in the 21st Century will be held May 18-22, 2009, at the National Park Service's National Center for Preservation Technology and Training, Natchitoches, Louisiana. Lodging will be at the Ramada Inn. The field exercises will take place at the Los Adaes State Historic Site (a Spanish presidio and capital of the Spanish province of Texas between 1719 and 1772). Co-sponsors include the National Park Service, the U.S. Army Corps of Engineers, Los Adaes State Historic Site, Northwestern State University of Louisiana, and the Louisiana Division of Historic Preservation. This will be the nineteenth year of the workshop dedicated to the use of geophysical, aerial photography, and other remote sensing methods as they apply to the identification, evaluation, conservation, and protection of archaeological resources across this Nation. The workshop will present lectures on the theory of operation, methodology, processing, and interpretation with on-hands use of the equipment in the field. There is a registration charge of $475.00. Application forms are available on the Midwest Archeological Center's web page at http://www.nps.gov/history/mwac/. For further information, please contact Steven L. DeVore, Archeologist, National Park Service, Midwest Archeological Center, Federal Building, Room 474, 100 Centennial Mall North, Lincoln, Nebraska 68508-3873: (402) 437-5392 ext. 141; fax: (402) 437-5098; steve_de_vore@nps.gov.

Journal of Art Crime Call for Papers. The Journal of Art Crime, published by ARCA, is the first peer-reviewed academic journal in the study of art crime. This biennial publication welcomes interdisciplinary articles from both academics and professionals, related to art crime, its history, and its repercussions. Relevant fields include criminology, law, art history, history, sociology, policing, security, archaeology, and conservation. The Journal welcomes submissions or proposals for any of the aforementioned. Each issue will include at least five academic essays, which will be subject to anonymous peer review, and will also include book and exhibition reviews, conference write-ups, capsule summaries of major recent art crimes, and editorial columns. The first issue will be published in spring 2009, the second issue the following fall. The journal will be published both as an e-journal and in printed form. For more information about submission requirements, the editorial board, the review process, subscriptions, or to see the Journal of Art Crime Media Pack, please visit http://www.artcrime.info/publications. Please direct any queries to editor@artcrime.info.

CALENDAR

March 20–21

The First Annual Graduate Student Conference: "Ancient Cultures in Contact: Catalysts for Change" will be held at the Center for Ancient Studies at the University of Pennsylvania, Philadelphia. Please visit http://www.sas.upenn.edu/ancient/ for conference details.

March 22–26

The 37th Annual Conference on Computer Applications in Archaeology (CAA) will take place at the Colonial Williamsburg Foundation in Williamsburg, Virginia. For information, please visit http://www.caa2009.org.

April 3–5

The Society for Pennsylvania Archaeology, Inc. will hold its 80th Annual Meeting at the State Museum of Pennsylvania in Harrisburg, PA. Call for Papers information and meeting announcement may be accessed at www.PennsylvaniaArchaeology.com.

April 22–26

The 74th Annual Meeting of the Society for American Archaeology will be held in Atlanta, Georgia. For more information, please visit SAAweb at http://www.saa.org/meetings and watch future issues of *The SAA Archaeological Record*.

Give the SAA a Gift on its 75th!

CRM Firms are Leaders in SAA Endowment Campaign

As we work to add $500,000 to the SAA endowment funds by 2010, cultural resource management firms across the country have stepped up to play a significant role in meeting that goal. The eight CRM Firm Leadership Donors listed below have contributed a total of $67,500 to the campaign—over 20% of the entire $320,000 raised as of October 2008! Our sincere appreciation goes to these firms' owners and staff members for their generous support.

$20,000 and above:

—Cultural Resource Analysts, Inc., Lexington, KY

$10,000–$19,999:

—Alpine Archaeological Consultants, Inc., Montrose, CO

—Desert Archaeology, Inc., Tucson, AZ

—Statistical Research, Inc., Tucson, AZ

$5,000–$9,999:

—Commonwealth Cultural Resources Group, Inc., Jackson, MI

—William Self Associates, Orinda, CA

$2,500–$4,999

—EDAW, San Diego, CA

—Soil Systems, Inc., Phoenix, AZ

CRAI personnel excavating one of many sites in advance of the Avenue of the Saints Project, Missouri Department of Transportation, Lewis County, Missouri.

Donor Profile: Cultural Resource Analysts, Inc.

Over the past 25 years, **Cultural Resource Analysts, Inc.** (CRAI) has grown to employ more than 75 professionals working from offices in West Virginia, Ohio, Illinois, and Colorado, in addition to maintaining its corporate headquarters in Lexington, Kentucky. With over 350 years of combined experience, CRAI specializes in historic, prehistoric, and industrial archaeology; bioarchaeology; paleoethnobotany; zooarchaeology; architectural history; and various special materials analyses. CRAI is also a pioneer in the field of geophysical archaeology.

Often conducting large-scale, concurrent projects across the nation, CRAI serves government agencies, non-profit organizations, and small to international entities in the private sector. CRAI upholds a commitment to make substantial methodological and theoretical contributions to the discipline of archaeology within the framework of a compliance-based business.

Join Us!

As the campaign to "Give the SAA a Gift on its 75th" enters its final two years, now is the time to make your own statement of support of the SAA's efforts on behalf of archaeology across the country through a generous gift or pledge to the 75th Anniversary Campaign. Join our generous CRM leadership donors and the more than 500 other SAA members who have already become donors by making your gift on-line at www.saa.org. Contact Tobi Brimsek at 202-789-8200 or tobi_brimsek@saa.org with any questions.

CRAI personnel working on the Rockies Express Pipeline, Pike County, Illinois, just after Hurricane Ike paid a visit. The two meter deep excavation block was completely filled with rain water.

IT'S TIME TO SUBMIT YOUR ARCHAEOLOGY MONTH POSTER!

The Council of Affiliated Societies, the SAA Public Education Committee, and the Public Archaeology Interest Group invite states to participate in the Archaeology Week/Month poster competition at the 74th annual meeting in Atlanta, Georgia.

The submission deadline is April 1, 2009. All posters produced between May 2008 and April 2009 that we receive by the April 1 deadline will be displayed at the meeting.

All those attending the conference are invited to vote. (The ballot is in your registration packet.) Awards will go to the top three "best" posters as determined by a vote of participants at the meeting.

Be sure to check out the new Archaeology Month section of the web pages at http://www.saa.org/public/resources/ArchMonthforpublic.html where you'll find a history of the SAA contest, resources for creating posters, and a complete archive of Archaeology Month poster winners dating back to the first contest held in 1996.

To enter the contest, please complete the steps below by April 1, 2009

1. Cover sheet with contact name, title, mailing address, email, and phone number. Information must be typed and printed out on a white 8½ x 11 inch piece of paper. Please include written permission to display images of the winning posters on the SAAweb and in the annual CoAS newsletter.

2. Two copies of state poster. Posters must be clean, unmounted, and unfolded.
Mail two copies of your state archaeology week or month poster that was produced between May 2008 and April 2009 to: Maureen Malloy, SAA, 900 Second St. NE #12, Washington, DC 20002

3. Email a digital copy of the poster to Maureen_malloy@saa.org.

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