

Pedagogy and the ‘working collection’: teaching technical research and experimental archaeology at the Johns Hopkins Archaeological Museum

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ABSTRACT In 1908, classicist H.L. Wilson wrote of the importance of the ‘working collection’ of the Johns Hopkins Archaeological Museum (JHAM) as a ‘scientific laboratory,’ where students could be inspired by the significance and the humanity of the people of the past by encountering and handling the tangible remains of antiquity. Since 1882, JHAM has functioned as a key pedagogical space within the university, one that has invited students to physically interact with objects from the ancient world as a way of understanding and interrogating the past. While the museum’s collection has been extensively used in teaching by archaeologists, art historians and classicists, and its best-known objects well published, a new emphasis on technical research and experimental archaeology – again within a pedagogical framework – has literally offered new lenses on these ancient works. Focusing on two courses – ‘Recreating Ancient Greek Ceramics’ (spring 2015) and ‘Technical Research on Ancient Roman Egyptian Mummy Portraits’ (fall 2016) – this paper discusses the ways in which the inclusion of classes in the technical study of archaeological objects has transformed the role of the museum in recent years. Both examples have brought undergraduate students across disciplines to closely engage with ancient objects as they learn to utilize many of the examination techniques and tools familiar to conservators. These courses have insisted on placing the observations gleaned from a conservation approach within relevant historical, archaeological, cultural and material sciences contexts, and doing so by engaging with scholars and specialists from these different fields. Importantly, however, the kind of knowledge and insight that a technical research approach brings to the study of ancient objects is not presented as somehow merely supplemental to the knowledge from other disciplines, but rather is framed as an essential means by which we can encounter the people of the ancient world.

Introduction

On the afternoon of April 10th, 2015, I nervously paced around a replica of an ancient Greek pottery kiln as its dome was lifted away (figure 1). Standing around the kiln were 13 undergraduate students and my co-instructors from the Johns Hopkins Archaeological Museum (hereafter abbreviated to JHAM) course ‘Recreating Ancient Greek Ceramics.’ For the previous 10 weeks, we had been attempting to understand and make ceramics similar to the red-figure kylikes or cups made in Athens 2,500 years ago. The opening of the kiln, and revelation of the fired ceramics inside would also reveal whether our experiments over the course of the semester had succeeded. The class participants peered over the kiln edge, some with smartphone cameras in hand as shelf after shelf of ceramics came to light for the first time since being heated beyond 1000 °C. Captured in the short film ‘Mysteries of the Kylix,’ a chorus of camera shutter clicks, and cheers

and groans, signaling success and failure, accompanied the exposure of each new shelf of ceramics.¹ As students reached into the kiln to hold their fired objects for the first time, they called out what had gone right, or more often, gone wrong. “It was wet when it went into the kiln,” was said of an object that exploded. Or, “You can see all my brush marks.” Of his group’s cup that had only partially fired – and was painted with an image depicting the author examining an ancient kylix – materials science student Travis Schmauss said, “This thing is like a textbook, the amount of lessons that are in it”² (figure 2).

The challenge of any object, let alone an archaeological object, is understanding what lessons it holds when it cannot speak for itself. An object’s lessons are taught through its interpreters and interlocutors, people who know *about* the object rather than know the object itself. But what if we could make an object’s lessons more directly accessible? What new questions could we ask of the object and its place in history



Figure 1 Opening the replica ancient Greek kiln on April 10, 2015, at Baltimore Clayworks, Baltimore, Maryland. (Photo: Jay T. VanRensselaer; courtesy of the Johns Hopkins Archaeological Museum.)



Figure 2 A red-figure cup painted by Haley Huang, Kelly McBride and Travis Schmauss showing the author examining a kylix under a lamp and holding a pencil. (Photo: the author; courtesy of the Johns Hopkins Archaeological Museum.)

and society, and what lessons might we carry with us into the future? Two recent courses – ‘Recreating Ancient Greek Ceramics’ (spring 2015)³ and ‘Technical Research on Ancient Roman Egyptian Mummy Portraits’ (fall 2015)⁴ – taught at JHAM hewed closely to the idea that objects contain lessons needing recognition, observation, and interpretation. Through experimental archaeology and technical study, these two courses brought together undergraduate students across academic disciplines for a semester of full immersion in the artistic, archaeological, historical, cultural, and technological

worlds of ancient Greece and Roman Egypt, respectively. By engaging with a close study of ancient objects, encountering scholars and specialists across different fields of expertise, and actually making replicas of ancient objects, these intensive courses were meant to be collaborative, interdisciplinary scholarly pursuits that focused on a single but complex question: ‘How was this object made?’

While at first glance, this question seems an almost simplistic one that is easily answered, this paper argues that paying close attention to the many traces of manufacture still present on an object offers us unique and otherwise inaccessible information on the object as a compact embodiment of knowledge, research, experience and experimentation. These object lessons are not merely limited to the choice and manipulation of raw materials to form images and shapes; rather, these lessons force us to think in a physical sense about the human relationships, desires and expertise that made these objects possible. In 1884, just two years after the creation of the ‘Historical Collection’ (now JHAM) in the Johns Hopkins History and Political Science seminary, history professor Herbert Baxter Adams wrote about ‘special methods of historical study.’ Adams proposed an approach to history that we might label interdisciplinary today, suggesting the need for “a philosophy of nature and history which regards every spot of the earth’s surface, every pebble, every form of organic life ... as a perfect microcosm, perhaps an undiscovered world of suggestive truth. But it is important to remember that all these things should be studied in their

widest relations” (Adams 1884: 17). The insistence on the need to examine the interconnectedness of things by beginning on a small scale and working outward in the ‘widest relations’ guides the current teaching and research at JHAM. Building a rigorous framework for working in this way today is the subject of this paper.

A history of teaching with objects

Only a few scant references trace JHAM’s long history of use as a teaching collection. Museum objects were considered perhaps more as samples than art, similar to the other kinds of evidentiary information available in the “Baltimore seminaries [or departments, which] are laboratories where books are treated like mineralogical specimens, passed about from hand to hand, examined and tested” (Adams 1884: 103). Writing in *The Classical Weekly* in 1908, classics professor Harry Langford Wilson expanded the scientific metaphor, remarking that “the smaller working collection of the university ... fulfills in a general way the functions of a scientific laboratory” (Wilson 1908). By the early 1900s, the collection was used to illustrate lectures in courses in classical archaeology, but with an emphasis on use of the collection as “the basis of original investigation” (Johns Hopkins University 1910). These “investigations” included “practical exercises requiring the use of a wide range of archaeological objects ... in the museum” (Johns Hopkins University 1917), further compounding the connection between scientific study, the close examination of objects, and the understanding of the past. Undated but early images of the museum’s teaching space show student desks hemmed in by display cases filled with museum objects, presumably so that faculty could reach for representative objects as needed. Faculty were also known to keep collections relevant to their teaching in their seminar rooms, or even their own offices and desk drawers, so that objects in frequent use were easily accessible for passing around and turning over in student hands.

How exactly faculty taught with collections remains unknown. Paul Haupt, Professor of Semitic Languages at Johns Hopkins between 1883 and 1926, was known for using his own collection of ancient cuneiform tablets and cylinder seals and plaster copies of important specimens in his graduate seminars. In addition to simply handling objects as tactile aids, Haupt was interested in physically engaging with the raw materials of the ancient objects under study. He made clay cuneiform tablets, inscribing them with texts in Akkadian script,⁵ and required his graduate students to transcribe and transliterate the texts on paper. At least one assignment for Haupt’s graduate students shows their hand copies of his ‘Gilman tablet,’ with (presumably) Haupt’s corrections in red ink.⁶ The physical act of manipulating raw materials or producing copies has therefore been one of the pedagogical strategies of the university’s faculty since the late 19th century, offering a way to be more closely attuned to the objects of the past, and to forge an even more tangible connection with their makers and users.

A checklist for interdisciplinary teaching and learning

Well over a century since Adams, Haupt and Wilson indicated the need for an attentiveness to the smallest of details to ask and understand broad historical questions, the working collection of JHAM functions more and more as a laboratory. The museum is currently envisioned as a place of scientific inquiry and experimentation; a space where hypotheses concerning the past can be investigated through a hands-on study of tangible museum objects; and where a sustained study might evoke a sense of excitement and awe about the ancient past. Unlike the original use of the collection, which primarily supported teaching and research within only a few specific academic disciplines, the new incarnation of the museum as an interdepartmental center opens its space and objects to students, faculty, and researchers across the university. How, then, should a museum collection work to teach a disciplinarily diverse set of students, and why is this kind of interdisciplinarity valuable within the context of a research university?

Teaching in a truly interdisciplinary and collaborative way means taking seriously the different types of knowledge and expertise that must be recognized, understood, and negotiated in order to more fully interpret the lessons that objects hold. The courses ‘Recreating Ancient Greek Ceramics’ (hereafter ‘Recreating’) and ‘Technical Research on Ancient Roman Egyptian Mummy Portraits’ (hereafter ‘Portraits’) drew on expertise from artists, art historians, Egyptologists and classicists, archaeologists, conservators, materials scientists, forensic scientists, historians, and x-ray technicians, radiologists and imaging specialists, among others. No one instructor could have been an expert in all of these avenues of inquiry, but all were necessary to contextualize and analyze the meanings of the objects under our study. Unlike Adams, Haupt and Wilson, who taught within their fields, teaching in this intentionally interdisciplinary way means actively exploring – with a community of student collaborators – things that one does not know. As undergraduate student Anna Soifer wrote in her workshop journal at the beginning of ‘Recreating’:

I knew that it was an experimental archaeology project, but I was not aware of quite how experimental it was. The idea that our teachers will be learning along with us is both exhilarating and terrifying. It is so different from the typical college course where the professor is an absolute authority on the subject and is there to pass on their knowledge to students. Here we will be learning together, and in an active, rather than a passive way.⁷

The following discussion of a short ‘checklist’ for interdisciplinary teaching and learning has grown out of six years of teaching and research as curator/conservator at JHAM. Drawing particularly from the experience of teaching the ‘Recreating’ and ‘Portraits’ courses, the checklist attempts to capture the elements that made possible a more active and transformative learning experience, for students and instructors alike.



Figure 3 Students examining a Roman Egyptian mummy portrait under a stereomicroscope. (Photo: the author; courtesy of the Johns Hopkins Archaeological Museum.)

Is this a question I am genuinely curious about and don't know the answer to?

Teaching as a means for exploring a question one is genuinely curious about produces an urgency and excitement about both the teaching and learning process. For several years, I had taught undergraduate students about the production technology of the ancient Greek ceramics on view at JHAM as a relatively simple set of well-defined steps: throw and assemble a vessel, slip the areas that are desired to be lustrous black, and fire in a kiln using an oxidation-reduction-re-oxidation process. Despite repeating this formula year after year, these transformations of form and surface were still mysterious to me. 'Recreating' took up the challenge of truly understanding how Greek red-figure ceramics were made by physically replicating the process in concert with the examination of ancient examples at JHAM and the integration of new materials science and historical and archaeological evidence into our approach. The course also set out to test the accepted process of ceramics manufacture described by classical scholar Joseph V. Noble, whose work since the late 1960s has codified the production techniques for Greek vases for generations of classicists (Noble 1988). By collaborating with a co-instructor, potter Matthew Hyleck, the course sought to literally test the theories on ancient ceramics production by actually replicating these processes. To do so involved choosing appropriate ancient ceramics, readings, and outside instructors for the students to learn from, as well as selecting clays and making slip, building a replica of an ancient Greek kiln, and most dramatically, controlling the firing of the painted clay vessels – all without a guarantee that this experiment would work.⁸ Ultimately, it was our curiosity as to the question of how these objects were made that drove the class with a sense of focus, creative playfulness and urgency.

Is the question big enough, and are the stakes high?

For the 'Recreating' course, we had exactly 12 weeks to analyze the history of thought on ancient Greek ceramics technology, and to make our own replicas based on our evidence, all the while filming the process. The freshman seminar 'Portraits' came with its own unique set of pressing questions and high stakes.⁹ Developed around the existing Ancient Panel Paintings: Examination, Analysis and Research (APPEAR) project¹⁰ spearheaded by conservator Marie Svoboda at the J. Paul Getty Museum, the course brought together 11 first-year students in their first semester at Johns Hopkins to examine two so-called Faiyum portraits on loan to JHAM from the Eton College Myers Collection in Windsor, England.¹¹ The APPEAR project gathers technical research on extant ancient Egyptian mummy portraits as a means of gaining new insight into questions such as how these objects were produced, commissioned, and used; the trade networks that made these objects possible; and possibly even their provenance and the identification of artist workshops. Within the course at JHAM, students spent 12 weeks examining the two portraits using different non-destructive techniques – visual examination, stereomicroscopy, multispectral imaging, reflectance transformation imaging, and portable x-ray fluorescence – for contribution to the database (figure 3). The students were immediately attuned to the high expectations set for their work when a view of the database participants page showed the JHAM among a group of immediately recognizable museums of international repute. The notion that scholars at these major institutions might be scrutinizing, or more importantly, making use of our findings raised the stakes of the course and identified that this was not a mere exercise, but one that had scholarly value beyond the walls of the classroom.



Figure 4 Students holding an ancient red-figure cup. (Photo: the author; courtesy of the Johns Hopkins Archaeological Museum.)

Do I have a physical thing that can be the focus of sustained and weekly examination and research?

In ‘Recreating’ and ‘Portraits,’ giving students the opportunity to handle and study the same objects week after week was a vital mode of evidence gathering that would not have been possible through any other means (figure 4). Students had the initial thrill of holding an object from thousands of years ago, immediately signaling a sense of both the privilege and responsibility of their work. Handling these objects also attuned the students to qualities that were technologically engineered, for example, the lightness of even the largest Greek ceramic cup to aid in drinking wine or the slight convexity of the portrait panels so that they could be placed over the face of the deceased and wrapped into the mummy. These tactile observations were crucial for thinking about these artworks as also purposefully made functional objects. As we delved into new literatures each week, returning to the same objects allowed us to see or look for new details, reevaluate prior observations, and directly question the veracity of the published texts. Time and time again, the students would find that there were jarring differences between what the existing literatures said about these objects, and what we actually could see; this disconnect forced them to analyze both their readings and their observations with a more critical eye. Finally, such sustained examination gave us a deep appreciation for the artistic and technological achievements of the artists and craftspeople of the past, and a genuine sense of affection for them as well as the images they depicted. This sense of connectedness and attachment to the objects – and these people – informed and enhanced our research in unexpected ways. Students talked of the fondness they had for pots or the handsome gentlemen whose portraits we studied. They went out of their way to visit Greek vases and Faiyum portraits at other museums

on travels beyond the university. The development of such an intimate relationship was reflected in a thank you note from a student from the ‘Portraits’ course who wrote in closing, “Faiyum 4 Life.”

What methodology am I trying to teach?

Unlike classes within any one discipline which draw from a defined literature and body of knowledge, interdisciplinary classes by their very nature incorporate evidence from many different fields. As all of these different fields have their own assumptions, methodologies and terminologies, a course that includes works from art history and archaeology, conservation and materials science, and anthropology, history and hands-on work can be a bewildering experience for both students and instructors alike. The variations in these texts can also make it difficult to understand whether these different kinds of texts corroborate or refute each other. In ‘Recreating,’ students examining the thick contour line or outline painted in slip that surrounds figures in red-figure vases were confounded by the disparate extant information as to how these lines were made. Were they painted as mere outlines by the master painter, or were they ‘safety’ boundaries painted by apprentices who had to carefully paint around the master’s work? Were they a different kind of slip, or were they fired on by the master painter before the apprentices were handed the vessels to complete painting the background? The extant literatures all offered multiple perspectives, but assimilating and analyzing them was a crucial reminder to the students that different kinds of evidence and knowledge exist on the same object, and that these types of evidence must be negotiated and weighed against one another in any scholarly pursuit. Perhaps most useful for finding a way forward in our research



Figure 5 Students painting with encaustic and tempera paints. (Photo: the author; courtesy of the Johns Hopkins Archaeological Museum.)

was noticing what lacunae still existed in the extant evidence and pursuing a path to fill that gap. In 'Recreating,' recognizing that past scholars and even current scholars relied on highly controlled electric and gas kilns to produce replicas of ancient Greek ceramics made us confident of the research value of producing ceramics in a wood fired kiln, tracing in part the experience of the ancient kiln masters who produced these objects in antiquity.

What kind of expertise is needed and who has it and will help?

While analyzing and interpreting the evidence produced across fields is essential to the interdisciplinary teaching and learning process, understanding their nuances is crucial but often beyond the grasp of a non-specialist. In both 'Recreating' and 'Portraits,' numerous scholars visited our classrooms or worksites, either in person or through video conferences, to share their expertise and respond to our observations and findings. For 'Recreating,' students were fortunate to hear from Greek art historian Alan Shapiro, materials scientists Marc Walton and Ilaria Cianchetta, conservator Paula Artal-Isbrand, potter John Wissinger, and archaeologists Lisa Kahn, Eleni Hasaki and Philip Sapirstein. 'Portraits' included conversations with Egyptologist Betsy Bryan, conservators Marie Svoboda, Jane Williams, Anna Serotta, Dawn Kriss, Brian Baade and Kristin deGhetaldi, conservation scientist Glenn Gates, imaging specialists Carla Schroer and Marlin Lum, and forensic anthropologist Caroline Wilkinson. All of these specialists provided different disciplinary perspectives on the same physical objects that the students had grown more familiar with as the semesters progressed. For students and instructors alike, the most exciting moments came from

querying a specialist from one field with questions raised by another specialist, and then offering our own observations from our research experience in the classroom. In 'Portraits,' students had been puzzling over the presence of 'bubbles' in the lead white areas of their objects; conversations with Jane Williams of the Phoebe A. Hearst Museum and Glenn Gates of the Walters Art Museum who had seen this on their own objects gave us to understand that these defects were a result of the fatty acid content in beeswax reacting with carbonates in the lead white. This interactive sharing of knowledge between specialists gave students the opportunity to identify connections not only with other museum collections and other scholars, but also across disciplines, thus producing a sense that our research was part of a larger intellectual pursuit beyond our classroom.

Is my class of students disciplinarily diverse?

Both 'Recreating' and 'Portraits' insisted on a student body that included students from various disciplines across the university. Rather than drawing from a pool of 'typical' students in archaeology, art history, or classics, these courses were specifically advertised as interdisciplinary classes inviting a range of student perspectives. 'Recreating' required students to request permission to enroll by sending emails describing their reasons for being interested in the project; the course eventually included students pursuing not only the more typical disciplines, but also museum studies, art, materials science, biomedical engineering, economics, mathematics and physics. As a freshman seminar, 'Portraits' was open to all students in their first semester in college and drew students who were passionate or curious about Egyptology and art history, but were also planning on majors



Figure 6 Firing the replica ancient Greek kiln. (Photo: Will Kirk; courtesy of the Johns Hopkins Archaeological Museum.)

in neuroscience, biology, writing seminars, psychology and mathematics. These diverse classrooms were an equalizing space where no one student ‘knew’ all of the relevant literature or terminology, and where students grasped and could explain different literatures to each other based on their own strengths or academic training. Given these different backgrounds, students could plainly ask each other questions such as, “What is a symposium?” or “What is oxidation?” and compel each other to explain their assumptions and accepted bodies of knowledge. This interactive querying and explanation process across disciplines regularly produced new insights that would have otherwise been impossible to achieve, but also developed a sense of a community of researchers jointly pursuing a shared set of questions. As one student evaluation stated:

This class is a huge time commitment in that you basically don’t stop thinking about it from the day it begins to the day it ends. That being said, you won’t want to stop thinking about it, you become very invested in the project and its outcome. It is also open to students of many different academic backgrounds, from classics to materials science, and they were all welcome because they brought such different views to the table.¹²

Is the classwork challenging and is there a hands-on component?

As Paul Haupt may have recognized over a century ago, the process of making things takes the literature off the page and forces that knowledge into our own muscle memory, offering a tangible recognition of the skill, problem-solving ability and technical expertise of the craftspeople

and artists of the past. In both ‘Recreating’ and ‘Portraits,’ making replicas of the ancient objects under examination offered a kind of evidence that reading the extant literature could not. Creating replicas also helped us to understand the traces of manufacture such as marks, flaws, or other information visible on our ancient objects, that typically go unrecognized by the non-practitioner. Painting with encaustic and tempera on prepared wood panels immediately attuned students to the highly precise knowledge and skill required at every step of the creation of ancient Roman Egyptian panel paintings, from the quality and luminosity of the wood, to the heat required to keep encaustic at the appropriate viscosity and workability, to the extreme difference in surface quality between the two media (figure 5). Students learned the need for working quickly with tools rather than brushes to manipulate the encaustic in an almost sculptural manner while it was still molten, and that many applications of heat were required to gain the depth observed on the ancient objects. In ‘Recreating,’ students immediately recognized that every step of the ceramic production process was a specialized skill honed over years of practice. This insight came directly from throwing clay, attaching feet and handles, and painting with slip, all of which humbled the students. They came to recognize the end of the oxidation phase and the beginning of the reduction phase during firing as signaled by a dramatic change in the color of the flame and smoke emanating from different parts of the kiln, along with an associated change in the smell of the fire (figure 6). After experiencing all the flaws visible in our fired ceramics, it was possible to recognize some of these flaws in the ancient ceramics at JHAM. These newly recognizable flaws included areas where red slip had not fully reduced to deep black or warpage where the still wet cup was bumped off the potter’s wheel.

Is there an enduring ‘deliverable’ or a regular public component to the class?

Students in both ‘Recreating’ and ‘Portraits’ were required to report on the discoveries taking place within the classroom on course blogs on JHAM’s website.¹³ Writing in their own voices, students were tasked with keeping both an interested general public and a scholarly audience aware of the information that was being learned and produced. This public component was envisioned as both a fundamental responsibility of all researchers, but also as a way of tracking our changing understanding of the objects under study. It had the additional benefit of drawing in an audience that was invested in our results, and that encouraged our efforts throughout the courses through their interest. Digital tools such as Google Analytics made it possible to track this interest in real time; for ‘Recreating,’ for example, the blog had 4,000 page views during the actual course period, and course-related Facebook posts resulted in 7,000 ‘people reached.’ The blog continues to be of significant interest as over 12,000 people have viewed these pages since the course ended in May 2015, over 20,000 have been reached through Facebook, and there have been 3,560 views of the course film ‘Mysteries of the Kylix’ since it was uploaded in September 2015. Other enduring ‘deliverables’ for the course included three radio features on our local National Public Radio stations,¹⁴ articles in the Johns Hopkins magazines (McCabe 2015; Zajac 2015a, 2015b) and the *Baltimore Sun* newspaper (Pitts 2016), and listings on *Archaeology Magazine’s* Facebook page and website (*Archaeology* 2015).

The coursework also began to circulate in other unexpected ways. Since August 2016, the film ‘Mysteries’ is being shown as part of a permanent installation at the Museum of Antiquities, School of Humanities, at the University of New England in Australia.¹⁵ Although the main focus of ‘Portraits’ was to produce new information for a scholarly database, the blog was a way in which our findings circulated among the other participants in the APPEAR project, and, in fact, resulted in our being invited to present our research at an APPEAR interim meeting at the British Museum, London, in April 2016. Describing our discoveries to a group of Danish Egyptologists on a serendipitous visit to the JHAM resulted in an invitation to publish our work in a 2016 *E-News* publication of the International Committee for Egyptology in the International Council of Museums (Balachandran 2016). Our imaging work also inspired two artists from the Maryland Institute College of Art to produce new artworks for the *Research Remix* exhibition held at Johns Hopkins in April 2016. Significantly, all of these means of outreach catered to different audiences, thereby increasing the visibility and reach of the pedagogical work of JHAM.

Am I ready not be in control of what we find out?

Interdisciplinary, hands-on projects are by their very nature unpredictable. Many of the insights gained from working in this immersive and collaborative way depend on numerous

factors, from the very makeup and personalities of the students in the class, to ways that students grasp the disparate literatures, to whether the kiln will fire as hoped. It is therefore never certain that major findings will emerge at the end of 13 weeks of concentrated study. This lack of certainty produces its own anxiety for students and instructors alike, constantly raising the specter of whether ‘it is all worth it.’ And yet recognizing, managing and working through this anxiety is, in fact, an essential component of any research project, let alone a deeply collaborative and interdisciplinary one. These courses have made clear the need for an unwavering faith in the value of the creative and single-minded *pursuit* of a daring question. The process of developing hypotheses based on analyses of what is thought to be understood, and then testing those hypotheses through rigorous observation, creative problem-solving and vigorous discussion is where the value of these interdisciplinary projects truly lies. Trusting in the importance of the *process* of learning is therefore crucial to potentially understanding something previously unimaginable and new, even if it provokes anxiety along the way.

Working in this creative and iterative way also makes possible new kinds of projects and collaborations. For example, a current project on the facial forensic reconstruction of two ancient Egyptians in JHAM grew directly out of speaking with forensic anthropologist Caroline Wilkinson during the ‘Portraits’ course.¹⁶ The coursework in ‘Recreating’ spurred so many questions that it led to applying for and receiving a Johns Hopkins University Discovery Grant for continued research on the production of red-figure replicas. The year-long Discovery Grant has supported the work of an interdisciplinary team of potter Matthew Hyleck, materials scientist Patricia McGuiggan and the author to conduct 12 test firings, present our findings at numerous professional conferences, and travel to Greece for additional research and discussions with Greek colleagues (figure 7). Furthering these studies was also the focus of a six-month residency for the author at the Getty Conservation Institute in 2017. None of these projects would have been possible without the interdisciplinary courses that preceded them.

Do I promise to acknowledge all my collaborators – especially the students – as collaborators?

Within the context of a research university, the work of faculty is often split between time dedicated for teaching and time dedicated for original research. One of the revelations of teaching and working in a truly interdisciplinary manner is recognizing that research can in fact grow out of collaboration with our students. Many of the insights of ‘Recreating’ and ‘Portraits’ were a direct result of students asking questions of each other and the instructors. In ‘Recreating,’ students were the first to ask how the inscriptions found on ancient red-figure vases were made, why they were a different color from the red or black fields in the painting, and when in the production process they could have been painted given their colors and their layering characteristics. Over 18 months since this



Figure 7 Patricia McGuiggan, Sanchita Balachandran and Matthew Hyleck examining examples of red-figure vases at the Athenian Agora, Athens, Greece. (Photo: Ross Brendle; courtesy of the American School of Classical Studies.)

question was initially raised, it is now clear that the inscriptions found on ancient Greek ceramics offer a unique insight into the possible commissioning of inscriptions in the ancient workshop, as they could have been painted and fired in the first, second or even third firing of an object, as demonstrable through test firings. In ‘Portraits,’ students were confused by the lack of a visible ground layer on the paintings even though the extant literature and our own experiments suggested that this was an important step of the production process. We wanted to utilize computed tomography (CT) to see whether it would be possible to identify a possible ground layer as the paintings could not be sampled; when CT work was finally possible nearly a year after the course, preliminary studies suggested that ground layers are not visible, something that has been observed by other scholars elsewhere. While the final published versions of both the ‘Recreating’ and the ‘Portraits’ projects will acknowledge the significant contributions of the many different collaborators who made the research possible, of primary importance should and will be the names of the undergraduates who challenged each other and the instructors to ask and pursue more daring questions.¹⁷

Conclusions

“Monuments and inscriptions can never grow old so long as the race is young. New meaning is put into ancient records; fresh garlands are hung upon broken statues; new temples are built from classical materials; and the world rejoices at

its constant self-renewal” (Adams 1884: 22). The use of the JHAM collection in interdisciplinary learning, teaching and research furthers the vision for the study of history that Hopkins professor Henry Baxter Adams laid out 133 years ago. Beyond simply reading about the past, or even handling remnants of the past as specimens, the current work at JHAM aims to make the past present and alive, and to forge deep personal and intellectual connections between the people of the past and today’s students, teachers, and scholars. Immersive and hands-on interdisciplinary and collaborative work is both vital and revitalizing, for the collection and the people of the past and the present alike. By making possible a sustained looking and learning, and with an insistence on multiple modes of inquiry, we can begin to more sensitively and completely read the lessons of the objects that remain from the past. But this kind of work goes beyond simply seeing the creativity, ingenuity and humanity of the people of the past – it offers us a way to understand the people in our contemporary world, and to approach our world’s most pressing problems with a commitment to collaborating with a sense of urgency, focus and empathy.

Notes

1. ‘Mysteries of the Kylix’: <http://archaeologicalmuseum.jhu.edu/the-collection/object-stories/recreating-ancient-greek-ceramics/film-mysteries-of-the-kylix/> (accessed November 30, 2016).

2. *Ibid.*
3. <http://archaeologicalmuseum.jhu.edu/the-collection/object-stories/recreating-ancient-greek-ceramics/> (accessed November 30, 2016).
4. <http://archaeologicalmuseum.jhu.edu/the-collection/object-stories/roman-egyptian-mummy-portraits/> (accessed November 30, 2016).
5. <http://archaeologicalmuseum.jhu.edu/the-collection/object-stories/recent-re-discoveries/cuneiform-tablet-for-daniel-coit-gilman/> (accessed November 30, 2016).
6. Daniel Coit Gilman Papers, Series 1: Correspondence. Box 1.21. Harris-Hawley; Paul Haupt, 1888–92, Gilman Correspondence, Folder 32, Ms. 1. University Archives, Special Collections, Sheridan Libraries, Johns Hopkins University.
7. <http://archaeologicalmuseum.jhu.edu/the-collection/object-stories/recreating-ancient-greek-ceramics/workshop-journals/> (accessed November 30, 2016).
8. I am grateful to the Johns Hopkins University's Program in Museum and Society and its director Elizabeth Rodini, and to the Andrew W. Mellon Foundation for supporting this course and its projects.
9. This course was made possible with generous funding from the Johns Hopkins University Provost's Office and the Dean's Office of the Krieger School of Arts and Sciences.
10. <http://blogs.getty.edu/iris/unlocking-the-secrets-of-ancient-egyptian-funerary-portraits-through-modern-technology/> (accessed November 30).
11. <http://archaeologicalmuseum.jhu.edu/objects-on-loan/eton-collection/> (accessed November 30, 2016).
12. This information is taken from a summary of student evaluations of the course.
13. Please refer to the project links listed earlier in this article.
14. Baltimore's local NPR station, WYPR, has a listenership of approximately 13,000. See also <http://archaeologicalmuseum.jhu.edu/the-collection/object-stories/recreating-ancient-greek-ceramics/media/> (accessed November 30, 2016).
15. This request came from Bronwyn Hopwood, Senior Lecturer in Roman History, of the Committee of the Museum of Antiquities, School of Humanities, University of New England, Australia.
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