NATIONAL ENDOWMENT FOR THE
Humanities

OFFICE OF DIGITAL HUMANITIES

Narrative Section of a Successful Application

The attached document contains the grant narrative and selected portions of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and each applicant is urged to prepare a proposal that reflects its unique project and aspirations. Prospective applicants should consult the Office of Digital Humanities program application guidelines at http://www.neh.gov/grants/odh/digital-humanities-start-grants for instructions. Applicants are also strongly encouraged to consult with the NEH Office of Digital Humanities staff well before a grant deadline.

Note: The attachment only contains the grant narrative and selected portions, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

Project Title:	Mobilizing the Past for a Digital Future: The Potential of Digital Archaeology
Institution:	Creighton University
Project Directors:	Erin Walcek Averett (Creighton University) Derek Counts (University of Wisconsin-Milwaukee) Jody Gordon (Wentworth Institute of Technology)
Grant Program:	Digital Humanities Start-Up Grants, Level 1

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Abstract

This project brings together pioneers in the field during a two-day workshop to discuss the use, creation, and implementation of mobile tablet technology to advance paperless archaeology. Session themes will facilitate presentation, demonstration, and discussion on how archaeologists around the world use tablets or other digital tools in the field and lab and how best practices can be implemented across projects. The workshop will highlight the advantages and future of mobile computing and its challenges and limitations. The workshop will consist of formal paper sessions and opportunities for informal discussion of the issues and themes at moderated discussions, demonstrations, round tables, and speaker meals. The workshop's goal is to synthesize current practices and establish a blueprint for creating best practices and moving forward with mobile tablets in archaeology. The data generated will be made available through a website to promote ongoing discussion and information sharing.

Statement of Innovation

This project innovates by providing an opportunity to bring together archaeologists from different fields (Archaeology, Art History, Classics, and History) working in different regions around the world at a collaborative and dynamic workshop intended to facilitate and begin discussion of best practices and protocols. The dissemination of the workshop proceedings will fill a lacuna in archaeological publications geared towards mobile computing and paperless archaeology.

Statement of Humanities Significance

This project engages scholars in a discussion on how mobile computing and paperless archaeology enhance our study and interpretation of the human past. Involvement in this project benefits those working in many humanities fields. The result will be an ongoing dissemination of best practices that will benefit projects using mobile tablets and those considering their use and will contribute to more timely research, publication, and dissemination of archaeological data in an accessible format.

Enhancing the Humanities through Innovation: We request an NEH Digital Humanities Level I Start-Up grant to fund a two-day workshop in January 2015. This project consists of a scholarly workshop that will bring together archaeologists from a variety of fields (Archaeology, Art History, Classics, and History) and information and instructional technology experts to discuss a series of research questions related to how currently-emerging methods and approaches to recording, managing, and disseminating archaeological data with mobile devices are impacting the interpretation of past cultures and societies. Mobile tablets will serve as a lens through which to explore several aspects of the broader field of digital archaeology, including field recoding, data management, spatial visualization, and museum display and visitor interaction. Key questions will include: 1. How do these new methods affect the collection and interpretation of data? 2. What resources are currently available and what is needed to establish a set of 'best practices' for mobile, tablet-based archaeological recording? 3. What are the current models for the design and implementation of site-specific apps and what is the potential for open-access availability? 4. How do new digital technologies impact public outreach and the broader humanities? The project's primary goal is to create a forum where we can begin to establish best practices and protocols for mobile computing in digital archaeology, which will be disseminated immediately through live streaming of key lectures and round tables. Ultimately the data produced by the workshop will be published through a dynamic website, which will host video, image presentations, text files and other open access resources (including apps), discussion boards, and best practice documents. This effort will be spearheaded by the grant team under the aegis of the Athienou Archaeological Project (AAP), one of the forerunners in utilizing mobile computing in field archaeology in the Mediterranean.[1]

AAP began experimenting with the use of Apple iPads in the field in Cyprus in 2011, and has since developed protocols for their use in field recording, data processing, and born-digital archiving (App. III).[2] AAP is one of many projects embracing this new technology, and thus there exists today a substantial, critical mass of scholars and technicians utilizing a variety of approaches to mobile computing in archaeology (App. IV). The time is ripe for an in-depth, rigorous dialogue and discussion to establish best practices and protocols that might encourage and facilitate other archaeological projects' transition to what is now commonly called "paperless archaeology." Moreover, the broader implications for archiving, research, interpretation, and dissemination of archaeological data must be explored. We are excited about the many ways that these new approaches can potentially impact the broader humanities, facilitating more dynamic open-access to the study of past societies, while also merging the growing interest in classroom applications of the digital humanities with the research potential of primary data both collected in the field and analyzed in the lab.

This proposal centers on the organization of a national workshop to be held at the Wentworth Institute of Technology (WIT) in Boston. Wentworth is the ideal academic setting for such a conference because of this STEM school's strong focus on stressing both the rudiments and potential of emergent technologies as well as their application to social scientific disciplines. WIT, the home institution of project co-director Gordon, is currently formulating a Digital Humanities Program (Media, Culture, and Communication Studies) that it hopes to launch in 2014-15. A workshop devoted solely to this topic (the first of its kind) is preferable to organizing sessions at academic conferences since the format allows for focused, in-depth coverage and discussion, and also provides an ideal opportunity to produce accessible resources and promote meaningful, multidimensional and multidisciplinary collaborations in a way discipline-specific conferences cannot. By bringing together archaeologists and technology specialists from diverse disciplines, who often do not work in the same geographical area, this workshop also

[1] Fee et al 2013. "Taking Mobile Computing to the Field." *Near Eastern Archaeology* 76, 50.

[2] AAP (http://sites.davidson.edu/aap) combines systematic survey and excavations with an intensive undergraduate field school. Founded in 1990 by Michael Toumazou, the project has received generous funding for the field school through the National Science Foundation – Research Experience for Undergraduates Sites program for 10 seasons (SBR-942165 [1995], SBR-9619760 [1997], SBR-9732407 [1998], SES-9820549 [1999-2002], SES-0354003 [2004-2007], and SMA-1156968 [2012-2014]).

promises to build a dialogue across disciplines and regions and promote a rigorous discussion about the future of mobile computing in archaeology. A workshop agenda and program is included with confirmed speakers noted (App. I). **100%** of the speakers we have invited have agreed to participate, comprising more than 70% of our projected program. This group includes our keynote and plenary speakers (John Wallrodt and Bernard Frischer) as well as key scholars including Eric Kansa (one of President Obama's Champions of Change in Open Science), Steven Ellis, Shawn Ross, Eric Poehler, and more.

The timing for this workshop is critical. Since the debut of tablet devices, such as the Apple iPad in 2010, and the groundbreaking experiments of projects such as the Pompeii Archaeological Research Project: Porta Stabia, both New World and Old World excavations have begun experimenting or have already adopted mobile computing in the field to various degrees (App. IV). The ever-increasing and expanding functionality of mobile devices with high-resolution cameras, coupled with the refinement of network and cloud accessibility has provided a stimulus to move archaeology toward fully integrated born-digital archives, eliminating time-consuming and cost-prohibitive back-end digitization processes, while promoting open-access publication and data sharing. The rapid pace in the development of this new technology combined with the lack of synthesis on best practices and use have impeded the widespread adoption of these devices and, consequently, limited the scope of publicly available best practices and protocols. We are confident that a project such as the collaborative workshop proposed here is overdue and has the potential to be a "game-changer."

We are requesting $27,277 from the NEH to fund the organization and implementation of this project. The immediate products of this workshop will be live streaming of all presentations and round tables of the workshop, publication of the proceedings on a dynamic website, and the project's white paper. The long-term goals of this project include producing an open access digital edited volume of the workshop proceedings; opening the dialogue between archaeologists working in different regions using tablets and related devices; and establishing best practices and protocols. Because the devices are still new, no comprehensive publication or systematic overview of their use within archaeology exists. This workshop and its products will fill this lacuna. Out of this dialogue we will gain a more complete understanding of the variety of uses for mobile devices in digital archaeology and how different projects use this new technology. Our workshop will produce not only a single protocol for use, but will also present multiple best practices that a variety of archaeological excavations can adopt and adapt to suit their particular projects.

Environmental Scan: By bringing together a dynamic group of practitioners and their practices to create an open dialogue and produce easily accessible information, this project expands upon the work of several archaeological projects that have become paperless by implementing the use of mobile computing and "paperless" archaeology (App. IV). The University of Cincinnati's excavations at Pompeii, The Pompeii Archaeological Research Project: Porta Stabia, was one of the first excavations to integrate iPads into traditional modes of archaeological data recording, under the direction of Steven Ellis and John Wallrodt.[3] To date, Wallrodt's online forum, *Paperless Archaeology*, remains the foremost commentary on iPad use in the field. Other projects have recently begun experimenting with tablets for a variety of purposes, but this has been done experimentally and provisionally in most cases.[4] There have been isolated paper sessions devoted to digital archaeology at academic meetings, such as the "Using Tablet PCs to Support Field Documentation" session at the 2012 Computer Applications an Quantitative Methods in Archaeology Meeting at the University of Southampton, the 2013 and upcoming 2014 session "Managing Archaeological Data in the Digital Age: Best Practices and Realities" at the Annual Meeting of Archaeological Institute of America or, most recently, the "Digital Transitions" session at the meeting of the Society for American Archaeology sponsored by sponsored by the Center for Digital Archaeology, UC Berkeley.

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[3] http://classics.uc.edu/pompeii/index.php/project/methodologies.html; see also http://paperlessarchaeology.com/.

[4] For example, see Pyla-Koutsopetria Project: http://pylakoutsopetria.wordpress.com/2012/05/31/ipads-in-cyprus/; and Fee et al. 2013. "Taking Mobile Computing to the Field." *Near Eastern Archaeology* 76: 50-55.

History and Duration of the Project: AAP began transitioning to digital data recording in 2011 (App. III). Based on our own experience, the general 'pulse' of the field right now, and the high acceptance rate of our esteemed workshop participants, we are confident that a collaborative workshop where pioneering scholars can share their successes, trials, and failures to facilitate establishment of new best practices is perfectly timed. As a result, we are seeking a Level I Start-Up Grant to compare our own practices and experiences with those of a large, diverse archaeological community, and ultimately to share the significance of these new technologies with other humanities scholars.

Work Plan (1 May 2014 – 30 April 2015): Participants will include approximately 25 humanities faculty and technology specialists (see App. I-II). The workshop will include demonstrations and other presentations, as well as more dynamic round tables with moderated discussions. Social events and meals will foster networking and further discussion. Participants have been chosen based on their experience and expertise in the field and in discussion with invited participants who have already agreed to be a part of this workshop. Care will be taken to ensure that the full range of mobile tablet use is represented and that projects from different geographic regions and academic disciplines will be represented.

Phase I: Workshop Planning and Preparation (May-Dec 2014) includes finalizing the participant list, creation of project website and social media page, and announcing the workshop. Preliminary project planning will be facilitated by the UWM Digital Humanities (DH) lab (see letter of support).

Phase II: The Workshop Event (Jan 2015) consists of a two-day workshop held at WIT, co-sponsored by Creighton University, Davidson College, and UWM supported by WIT and Creighton technology faculty, event staff, and students. Keynote and plenary lectures, workshop round tables, and key papers will be live-streamed via WIT (App. I).

Phase III: Dissemination of Workshop Proceedings and Discussion (Feb-Apr 2015) involves updating the workshop website by posting papers and discussions, and uploading video/audio files. A website, hosted and maintained by Creighton, the UWM DH Lab, and our project team, will also be established to act as a dynamic and interactive resource to further discussion and update protocols. The team will also produce a white paper and report for the NEH. The long-term goal is to produce a peer-reviewed, open-access volume of the proceedings.

Staff: Averett (Assistant Professor, Creighton) will serve as project director in charge of oversight of the project and the intellectual agenda of the workshop, budget management, overseeing the organization and workshop, and final products; she will devote 10% FTE to this project. Gordon (Assistant Professor, WIT) will serve as co-director responsible for organizing the logistics of the conference, intellectual agenda of the workshop, and outreach and promotion. Counts (Associate Professor, UWM) will serve as co-director responsible for communication and outreach, the intellectual agenda of the workshop, oversight of the UWM DH lab's contribution, and will assist to create the white paper. Toumazou (Professor, Davidson, and Director of AAP) will serve as project manager, overseeing general implementation and quality control. WIT faculty and staff will help with the workshop facilities, staffing, and workshop logistics.

Final Product and Dissemination: By the end of the project, we will have hosted the workshop, published the workshop proceedings and innovative outcomes on a curated website maintained by the project directors, and produced the NEH white paper. All of this work will not only be of direct benefit to all those involved, but also to new or existing projects that that have not yet moved toward "paperless archaeology." Our open-access and collaborative approach to disseminating the workshop's findings will also appeal to other fields in the humanities and reach a broad audience of scholars, students, and the informed public. The ultimate goal of this dissemination would be not only to share information, but also to contribute to the way archaeology is conducted and to establish best practices in the field at a time when many projects are moving from traditional paper-based archaeology to integrated, digital archives.

Project Director
Erin Walcek Averett is Assistant Professor of Archaeology at Creighton University and an Assistant Director on the Athienou Archaeological Project on Cyprus. She specializes in Iron Age Cypriot Archaeology and early Greek art and archaeology, focusing on terracotta figurines in the Geometric and Archaic periods in the Eastern Mediterranean. She has excavated widely in Greece and Cyprus. She recently published a chapter, "The Ritual Context of the Malloura Figurines," in *Crossroads and Boundaries: The Archaeology of Past and Present in the Malloura Valley, Cyprus*, and an article on Cypriot masking rituals in the *American Journal of Archaeology;* she is currently working on the publication of a monograph on the terracotta figurines dedicated at the rural sanctuary at Athienou-Malloura on Cyprus. Dr. Averett has traveled throughout the Mediterranean. She was awarded a Fulbright Fellowship to Greece (declined) as well as two consecutive fellowships for the American School of Classical Studies at Athens in Greece from 2002-2004. She is senior personnel for the NSF-REU grant SMA-1156968 (2012-2014).

Co-Project Director
Jody Gordon is an Assistant Professor at the Wentworth Institute of Technology and a classical archaeologist whose research utilizes globalization theory to examine how imperial states expand their hegemony through the negotiation of novel, inclusive identities. He received his Ph.D. from the University of Cincinnati, and his dissertation involved a comparative study of how the Ptolemaic and Roman empires influenced the construction of local identities in Cyprus. As an Assistant Director of the Athienou Archaeological Project, he has drawn on computing skills developed at UC to implement the AAP's "digital notebook" and to serve as a contributor of design and content to project's website. Dr. Gordon has excavated at sites throughout the Mediterranean and has received research scholarships from the University of Cincinnati, Mount Allison University, the American Schools of Oriental Research, and the Cyprus American Archaeological Research Institute.

Co-Project Director
Derek Counts is Associate Professor of Classical Art and Archaeology in the Department of Art History at the University of Wisconsin-Milwaukee and Associate Director of the Athienou Archaeological Project. He has published extensively on the archaeology of Iron Age Cyprus, with a particular emphasis on Cypriot religion, as well as limestone votive sculpture and its associated iconography. His current research explores divine representation in Cypriot sanctuaries. He has published three co-edited volumes, including most recently *The Master of Animals in Old World Iconography* (Budapest, 2010) and *Crossroads and Boundaries: The Archaeology of Past and Present in the Malloura Valley, Cyprus* (Boston, 2011). Additionally, he is co-editing a special volume of the *Bulletin of the American Schools of Oriental Research* on Iron Age Cyprus, and serves as co-editor of book reviews for the *American Journal of Archaeology*. As co-PI, Counts was recently awarded an NSF-REU grant for 2012-2014 (SMA-1156968); he previously served as co-PI on two other 3-year REU grants.

Project Manager
Michael Toumazou, a native of Cyprus, is Director of the Athienou Archaeological Project and Professor and former Chair of Classics at Davidson College. His publications include articles in *Old World Archaeology Newsletter*, *Journal of Field Archaeology*, *Annual Report to the Department of Antiquities, Cyprus*, *Cahier du Centre d'Études Chypriotes*, and translations of several works from Greek to English.

Most recently, he co-edited a volume focusing on the work of AAP, *Crossroads and Boundaries: The Archaeology of Past and Present in the Malloura Valley, Cyprus* (Boston, 2011). His research centers on the history and prehistory of Cyprus, Greece, and the Levant; mortuary practices; and ancient Greek art. He has been funded by grants from Dumbarton Oaks, the National Endowment for the Humanities, and the National Science Foundation; he has received *six* REU awards from NSF, most recently in 2012-2014 (SMA-1156968). In 2003, he was awarded Davidson College's prestigious Hunter-Hamilton Love of Teaching Award for excellence in teaching.

Types of Data
The data produced by this proposed project will include presentations given by participants and data generated from moderated discussions in the proposed workshop. Presentations will consist of image presentations, video recording, and text files documenting a multidisciplinary two-day workshop on establishing best practices and protocols for mobile computing in digital archaeology. Dialogue and discussion generated during and after the workshop is an additional source of data. A website will be generated by the project team to publicize the event; post text, video, and graphic images from the event; post best practice and protocol documents generated after the event; and continue to post discussion generated after the workshop. A project white paper and final report will be produced for the NEH.

Data Standards and Capture
The Creighton Digital Repository (CDR) has committed to providing a stable and secure digital archive indefinitely in order to store, preserve, and make accessible the data generated from the proposed workshop using DSpace. Data for this project consists of documents related to the organization, running, and follow up on the two-day workshop. Project directors in coordination with the CDR will upload event promotional material, and practical information for attendees and participants, as well as the presentations (text and PowerPoint), video, and discussion from the workshop itself. After the workshop, continuing discussion, and best practice and protocol documents will be uploaded by project directors and participants. Wentworth Institute of Technology has committed to providing audio and video recording of workshop events; these will be captured as uncompressed audio or video but will be converted and maintained in the form of widely-adopted open formats such as MP4 that are suitable for storing efficiently and sharing over the network. Selected key lectures and events will be live-streamed through Wentworth (http://www.wit.edu/dts/media-services/stream.html). Effort will be made to use widely-adopted formats, such as Adobe PDF and Microsoft Powerpoint, which are likely to remain readable across multiple technical environments. Some conversion may be performed to normalize presentation files to PDF format as necessary for long-term accessibility.

Metadata
Descriptive metadata will be created as part of the process of depositing items with the Creighton Libraries digital archives. The CDR uses DSpace as the technical platform and Dubin Core as its metadata standard.

Legal Policy
Participants in the workshop will retain their copyright and other intellectual property rights in material submitted for the workshop, but all will agree to license materials prepared for the conference under permissive open-source licenses (such as Creative Commons) according to both Creighton and Wentworth's standard policies or a similar arrangement agreed upon by participants and the workshop organizers. Contributions to the final white paper will be considered under a similar agreement. Participants will be asked to sign waivers giving consent for audio and video of presentations to be shared. There are no other legal policy issues associated with data created or captured for this project.

Period of Data Retention
Data generated will be stored on a Digital Archive through the Creighton University Libraries and the project website will be hosted on a password-protected server maintained by Creighton University indefinitely or as determined by the project director.

Access, Sharing, and Reuse

All data generated from this project will be made available for download from either the dedicated site hosted by Creighton University or from the Digital Collections of Creighton University Libraries within 6 months of the end of the workshop. There will be no additional permissions required to download or reuse data except for those specified above. Data from this interdisciplinary workshop will be useful to researchers in the fields of Archaeology, Art History, Classics, History, and related disciplines of information science and computer science. Data may also be used by humanities researchers in related fields.

APPENDIX I: Preliminary Workshop Agenda & Program

WORKSHOP AGENDA

The purpose of this intensive workshop is to bring together the leading figures in the field to discuss the use, creation, and implementation of mobile tablet technology in advancing "paperless" archaeology. The workshop is planned for January 2015. Session themes are aimed to facilitate presentation and discussion on how archaeologists around the world from different disciplines are using tablets or similar digital tools in the field and in the lab, and how best practices are emerging and might be implemented across projects. The workshop will highlight the advantages and future of mobile computing as well as its challenges and limitations. The workshop format will consist of formal paper sessions, a hands-on demonstration, a round table, and break-out session, as well as ample opportunities for informal discussion at meals and breaks. A final session will focus on producing a consensus regarding the best way to disseminate the information gleaned from the workshop and how it can be maintained for future academic and public use.

PARTICIPANT CRITERIA

The program below represents a tentative schedule. We have invited thirteen scholars, including keynote and plenary speakers, to participate in this workshop in order to advance the conversation and create a blueprint for moving forward with the dialogue and establish best practices and protocols. We intend to engage these participants in a conversation about the final schedule, soliciting their advice on other senior or emerging scholars to invite. This dialogue will determine the final schedule. Care will be taken to ensure that the full range of mobile tablet use is covered and that projects from different geographic regions and academic disciplines are represented.

PRELIMINARY PROGRAM

All events are hosted on the campus of Wentworth Institute of Technology (WIT) unless otherwise noted.
Confirmed speakers are noted by an * after their names (see letters of commitment).

DAY 1

12:00 – 5:00 pm **Registration**, Blount Auditorium

3:00 – 5:00 pm **Interdisciplinary Demonstration: Archaeology Meets Computing**
Moderator: Jody Gordon* and Charlie Wiseman* (WIT)
Demonstrators: WIT Technology Faculty*
This hands-on demonstration showcases the way that mobile tablets are currently being used in archaeology and seeks constructive critiques from computer science specialists working outside the discipline. The goal will be for projects to introduce their devices, apps, and workflows briefly, and then invite WIT's computer science faculty to offer cross-disciplinary advice. We will invite several projects (including the Athienou Archaeological Project, Pyla-Koutsopetria Archaeological Project, Chavín de Huántar Project, the Pompeii Porta Stabia Project, and examples from the Center for Digital Archaeology) to present and demonstrate their use of mobile computing in data recording and analysis. The format will be informal: a semi-moderated demonstration during which presenters can walk participants through the ways in which they use mobile computing while engaging in questions, discussion, and hands-on training.

5:00 – 6:00 pm **Keynote Speaker:**
John Wallrodt,* University of Cincinnati
"Making Paperless Archaeology the Norm" Blount Auditorium

6:00 – 7:00 pm **Keynote Reception**, Casella Gallery (sponsored by Wentworth)

7:30 – 9:00 pm **Speakers' Dinner & Dialogue**, Watson Auditorium

DAY 2

7:00 – 8:00 am **Registration and Continental Breakfast**, Casella Gallery

8:00 – 8:05 am **Welcome**, Blount Auditorium
Ron Bernier,* Chair of Humanities and Social Sciences, and Zorica Pantić
President of WIT

8:05 – 8:15 am "Twenty-five Years of Computing and Digital Technology at AAP," Michael K. Toumazou* (Davidson) and Derek Counts* (UWM)

8:15 – 8:20 am **Opening Remarks**, Blount Auditorium
Jody Gordon* (WIT), Erin Averett* (Creighton), Derek Counts* (UWM)

8:20 – 10:20 am **Session I:**
Mobile Computing in the Field: Establishing Best Practices
Moderator: Steven Ellis* (Cincinnati)
Agenda: This session allows participants to present experiments (both successful and not so successful) and best practices currently in use by various projects in terms of mobile computing in the field. The goal is to highlight the current diverse uses of mobile tablets and gain an understanding of the best practices for different types of projects. After the presentations, the moderator will facilitate an in-depth discussion among participants and audience regarding the future of these devices with the goal of establishing a blueprint for moving forward in this field and establishing best practices through shared resources.

Confirmed Speakers:
"Digital Pompeii: Dissolving the Fieldworld-Library Research Divide," Eric Poehler* (UMass Amherst)
"Practical Opportunity and Conceptual Challenges: Mobile Computing and Technological Agency in Archaeological Fieldwork," Bill Caraher* (UND)
"iPads at the Athienou Archaeological Project on Cyprus," Jody Gordon* (WIT), Erin Walcek Averett* (Creighton), Derek Counts* (UWM), Michael Toumazou* (Davidson)
"Mobile Computing at the Sangro Valley Project," Chris Motz* (Cincinnati)
"Experiences in Mobile Computing at the UNESCO World Heritage site of Chavín de Huántar, Peru," Matthew Sayre* (USD)

Potential Speakers:
"Creating iDig at the Agora," Bruce Hartzler (American School of Classical Studies at Athens)
"iArchaeology: Explorations in In-Field Digital Data Collection at Piara, Peru," Rebecca Bria (Vanderbilt)

CRM Representative

Extended Moderated Discussion

10:20 – 10:40 am **Coffee Break**

10:40 – 12:40 pm **Session II: Round Table**
App/Database Development and Use for Mobile Computing in Archaeology
Chair: Eric Poehler* (UMass Amherst)
Agenda: This round table forum allows participants to present brief (10 minutes) overviews of their experiments in app and database development. The session highlights the apps currently being used by various projects for field recording and spatial visualization and how the development of new apps will improve the integration of data and workflow in the future.

Confirmed Speakers (10 minutes each)**:**
"A Review of the iPad at Pompeii: a Look at Various Apps in the Excavation of a Complex Urban Site," Steven Ellis* (Cincinnati)
"Creating semantically interoperable digital datasets: the Federated Archaeological Information Management Systems (FAIMS) project," Shawn Ross* (FAIMS group, UNSW, Sydney, Australia)
"Building Data Collection Apps Using Open Source Standards," Sam Fee* (Washington and Jefferson College)
"Beyond the Basemap: Deep Mapping Architecture through Low Altitude Aerial Photogrammetry and Mobile GIS in Highland Peru," Steven Wernke* (Vanderbilt)
"Digital Imaging and Spatial Analysis in Archaeology: Problems and Prospects," Brandon Olson* (Boston University)

Potential Speakers:
"Utilizing ARK (The Archaeological Recording Kit) in the Field," Andrew Dufton (Brown University)
"The Mukurtu Mobile App: Collecting and Mobilizing Archaeological Data," Michael Ashley (Center for Digital Archaeology)

Moderated Discussion

12:40 – 1:45 pm **Speakers' Lunch & Discussion**, Beatty Multipurpose Room

1:45 – 3:45 pm **Session III:**
Tablet Computers Beyond the Site: the Curation of Tablet/Digital-born Data & the Utility of Tablets for Data Dissemination
Chair: Eric Kansa* (UC Berkeley)
Agenda: This session explores the new uses for mobile tablet computers post-excavation for data processing, digital archiving, data visualization, and data dissemination. The goal is to demonstrate how mobile devices facilitate the creation of born-digital data.

Confirmed Speakers:

"From the Web to the Field: Using Online Data Collections in Field Research," Eric Kansa* (UC Berkeley)
"The Promise of Web-Based (PHP) Archaeological Databases for Mobile Computing and the AAP Database," Kyo Koo* and Michael Toumazou* (Davidson College)

Potential Speakers:
"From the Field to the Web: Publishing and Linking Born-Digital Data Online," Sebastian Heath (Institute for the Study of the Ancient World, NYU)
"Last House on the Hill Publication for Çatalhöyük," Ruth Tringham, Berkeley
"iPads in the Michael C. Ruettgers Gallery for Ancient Coins," Media Representative, Museum of Fine Arts, Boston
"iPads in the Museum," Allan Doyle MIT Museum Studio

Discussion

3:45 – 4:00 pm **Coffee Break**

4:00 – 5:00 pm **Afternoon Break-out Session**
Moderated Discussion: The Potential of "Paperless" Archaeology and its Significance to the Humanities
Moderators: TBD from participant pool
Topic 1: What is the ideal role of mobile computing in archaeology? What are its limits?
Topic 2: Digital Archaeology Best Practices Forum – the Establishment of the MCA (Mobile Computing in Archaeology) online presence. What is the best format: wiki, blog, other alternative?
Topic 3: What is the broader significance of "paperless" archaeology and mobile computing for the humanities? How do these types of changes in the way we "do" humanities affect how we cognitively craft our research processes and how we interpret our evidence? How does this enhance dissemination of information and visitor experience and create a dynamic educational environment? There will also be discussion of iPad ease of use for creating augmented reality visitor experiences and documentaries.

5:00 – 6:00 pm **Plenary Address:**
Bernard Frischer* (Indiana University, Editor of *Digital Applications in Archaeology and Cultural Heritage*)
"Digital Archaeology and Augmented Reality: Bringing the Results to the Site"

6:00 – 7:00 pm **Plenary Reception**, location TBD

7:00 – 9:00 pm **Speakers' Dinner & Discussion:** Dissemination of Workshop Proceedings & Establishing a MCA (Mobile Computing in Archaeology) website

APPENDIX II: Project Work Schedule

Completion Date	Responsible Parties	Task
1 June 2014	Averett, Gordon, Counts, and Toumazou	Participant list finalized through conversation with accepted workshop participants. Final participation invitations sent.
1 Aug 2014	Averett and Counts (in coordination with staff in the Creighton and UWM Digital Humanities labs)	Creation of workshop website and social media page
30 Aug 2014	Averett, Counts, Gordon	Workshop event and website announced via academic sites, AAP website, social media, and listserves
30 Aug 2014	Averett, Counts, Gordon	Preliminary Workshop Schedule Posted
30 Sept 2014	Averett, Gordon	Final Workshop Schedule Announced and Posted
Jan 2015	Averett, Gordon, Counts, and Toumazou	Tentative Workshop Dates
15 Mar 2015	Averett, Gordon, Counts, and Toumazou (in coordination with staff at Creighton and UWM Digital Humanities labs, and Creighton Libraries)	Project Website Updated to reflect outcome of moderated discussion from workshop on how to best disseminate and maintain workshop proceeding and how to continue dialogue; papers and videos uploaded to website and digitally archived with Creighton University Libraries
30 April 2015	Averett, Counts	NEH White Paper produced

APPENDIX III:
Three Years of Mobile Computing at the Athienou Archaeological Project

Since its inception in 1990, the Athienou Archaeological Project (AAP) has been dedicated to utilizing digital technologies to help interpret the Cypriot past. In fact, AAP was among the first projects in Cyprus to employ laptops, relational databases, GIS, and digital photography. Over the last three seasons, AAP has shifted its focus to digitizing its excavation data in the field via Apple iPads. In this appendix, we present an overview of AAP's use of tablet-based approaches to digital data collection and interpretation.

In 2010, the Apple iPad tablet computer was released, and almost immediately archaeologists recognized its potential as a robust and multifaceted data-recording device. iPads seemed to be ideal field devices due to a series of features that made them more rugged than traditional laptops. They were lightweight and portable, had a long battery life, and were equipped with digital cameras, touch-screens for typing, and a number of apps aimed at cataloguing, equations, producing flow-charts, and writing. In addition, their iOS operating systems were user-friendly and promoted multi-tasking.

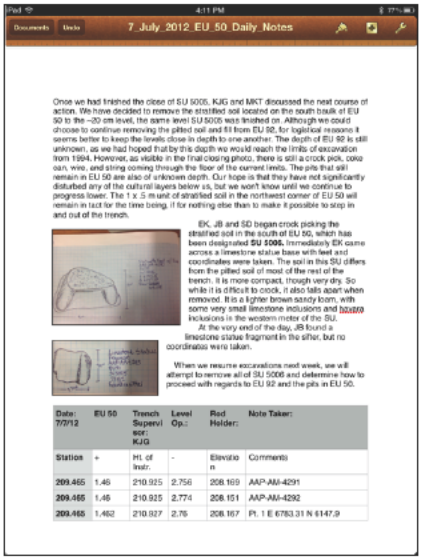

Figure 1 *Sample AAP digital notebook with text, elevation chart, and drawings.*

Following the pioneering implementation of iPad-based workflows at projects like the Pompeii Archaeological Research Project Porta Stabia (PARP:PS), during the summer of 2011 AAP's assistant director Jody Gordon beta tested a digital workflow using an iPad 2 equipped with a Belkin Folio case, an anti-glare screen protector, and an Apple Bluetooth keyboard. Following PARP:PS' example, Gordon subjected the iPad to the harsh heat, light, and dust conditions of the Malloura site and utilized a series of "off the shelf" apps to record data that was typically recorded on paper. For example, sketches of trench features could be vector traced or digitally drawn freehand in *iDraw*, detailed field notes complete with digital photos could be typed into *Pages*, and Harris matrices (flow charts that visualize a site's stratigraphic relationships) could be created in *Omnigraffle*. Overall, the test was a success. The iPad 2 performed well in the heat, did not get clogged with dust, did not run out of battery (over eight hours), was relatively easy to learn, permitted the incorporation of text and image via interconnected apps, and allowed for the accessing of reference images (e.g., archival photos) and files (e.g., the AAP *Handbook of Excavations*, final reports, and interpretative studies). The iPad's video camera also facilitated the recording of trench tours for future study. Most importantly, the iPad's photographic and written data could be backed up in the field by connecting to a roving laptop computer via a USB cable, or later in the lab through USB or over wi-fi.

The so-called "digital notebook" emerged from this beta test. The digital notebook would consist of the notes and drawings (either executed in *iDraw*, or on paper until inserted into *Pages* as a digital image [for novices]) of the traditional paper notebook merged within the *Pages* program (fig. 1). Kyo Koo, AAP's database manager, then migrated the project's relational database to the internet (using PHP), so that it could be accessed in the lab, and, if internet was available, in the field via a wireless hotspot. This development permitted the entering of data from traditional field forms directly into the project's database via wi-fi in the lab, 5 kilometers away, bringing AAP one step closer to "paperless" archaeology.

In the 2012 season, the AAP decided to "cross the digital Rubicon" and implement digital data recording in the field as standard policy. Four 32GB iPad 3s were issued to trench supervisors. Our primary goals consisted of introducing the student supervisors to iPad recording, refining and standardizing the project's digital workflows, and not losing any data. In order to familiarize students with iPad use and to standardize data recording within the digital notebook, Gordon wrote a protocol that introduced supervisors to the iPad and discussed how the different apps could work together to incorporate traditional paper-based data. *Pages* would serve as the digital notebook's canvas wherein students could type notes and insert photos and videos, elevations calculated in *Numbers*, sketches completed in *iDraw*, and Harris matrices produced in *Omnigraffle*. Multiple times a day these *Pages* documents would be saved as .pdf files, which were archived on hard drives and in the "cloud" to preserve the day's data. Since there was no internet access in the field, artifact and layer forms still had to be written on paper and uploaded into the live FileMaker database in the lab. Reference documents, like the AAP *Handbook of Excavations*, were accessible as .pdfs in *iBooks* for field use.

Based on the 2012 season, the conversion to digital workflows at AAP proved to be a positive experience. First, our backup regimen and field handling protocols ensured that no data were lost and that the iPads survived the rigorous conditions of a summer dig season. Moreover, data were now stored in multiple locations ensuring their long-term preservation (e.g., on the iPads, a field laptop, in a Gmail account used to transfer .pdfs in the lab, on the lab iMac, and on an external hard drive). Second, students easily acquired the basic skills required for *Pages* and its associated programs in less than two weeks. Third, more data were recorded than ever before given the increased facility of incorporating *iDraw*-annotated photography and text within *Pages* (figs. 2-3). The further addition of trench tour videos provided a novel record of excavation strategies. Third, fewer errors crept into elevation calculations through the use of a standardized *Numbers* spreadsheet. Fourth, precious lab time previously spent recopying paper notes was reallocated to more important tasks, such as artifact analysis or interpretive thought. Fifth, the on-site accessing of reference materials helped supervisors think across seasons and strategize for the best modes of dealing with stratigraphic issues. Lastly, the digitization of most records resulted in less paper to archive.

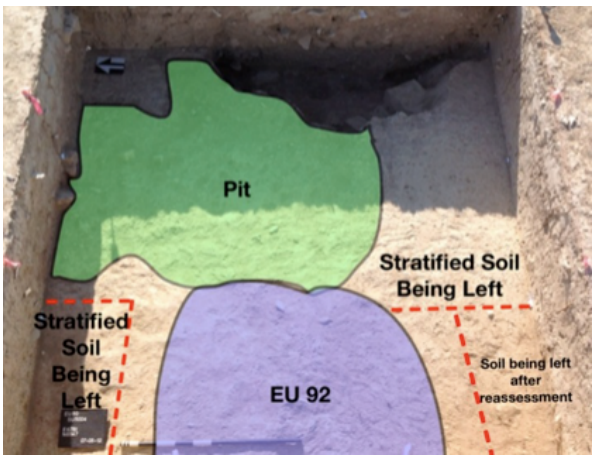

Figure 2 *Sample AAP digital notebook illustration with photo taken with iPad and enhanced with labels in iDraw.*

Yet despite these gains, full digital data recording could not be achieved within a single season because of logistical reasons. Although most aspects of the digital notebook were easy to learn, digital drawing proved too difficult to teach supervisors within a limited timeframe. Thus, sketches of objects continued to be done with pencil and paper and then photographed and inserted into *Pages*. Moreover, the lack of internet access at the site prevented supervisors from uploading their layer and artifact forms in the field, and so this information continued to be recorded on paper forms and then entered into the database in the lab. Additionally, the iPads could overheat when the temperature rarely crested 110° F, rendering them unusable for short periods. Finally, in trench tour videos, it was often difficult to hear supervisors due to the iPad's limited microphone capacity.

The overall success inspired us to continue to follow the 2012 digital protocols in the 2013 season with a goal of addressing the logistical issues. Most significant was our attempt to establish an internet connection in the field so that we could search and upload to our web-based FileMaker database in the

field. Kyo Koo devised a system whereby the iPads could access a battery-powered, 3G, unlocked wireless router (We3G) that provided an internet data connection via a Vodafone SIM card. When this system was tested, however, it failed to provide an effective mode of transferring data because the signal at the rural site of Malloura was a slow 2G signal. Thus, we decided to continue using written layer and artifact forms in the field until an alternative data connection/or data saving app could be utilized.

Figure 3 *AAP trench supervisor using a project iPad to draw an object in situ, 2013.*

In 2013 season, however, we also experienced some digital breakthroughs. Our supervisors improved their drawing skills in *iDraw* and we solved the problem of poor iPad microphone sound by utilizing a Panasonic Bluetooth microphone. Additionally, in cooperation with Brandon Olson of Boston University, we experimented with a new mode of 3D digital imaging for architecture utilizing Agisoft software. This innovation allowed us to take digital photos of the trenches that could be photo-stitched in the lab and then loaded onto the iPads to provide 3D analytical trench images (viewable in the MeshLab app). We plan to continue experimenting with this next excavation season.

On the whole, the conversion to digital workflows has improved AAP's ability to record and interpret the Cypriot archaeological record and should assist us in untangling the fascinating history of the Malloura Valley. Thus, we at AAP remain committed to achieving "paperless" archaeology, and through our proposed workshop we hope to share our experiences, while learning from those of other projects.

APPENDIX IV: Suggested Workshop Readings

A. Weblogs on Digital or Mobile Data Collection and Archaeology:

Caraher, W. 2013. *The Archaeology of the Mediterranean World*. http://mediterraneanworld.wordpress.com.

Center for Digital Archaeology. 2013. *Center for Digital Archaeology Blog*. http://www.codifi.info/blog/

Kansa, E. 2013. *Digging Digitally*. http://www.alexandriaarchive.org/blog/.

Pyla-Koutsopetria Archaeological Project. 2013. Pyla-Koutsopetria Archaeological Project Blog. http://pylakoutsopetria.wordpress.com.

Ross, S. 2013. *Federated Archaeological Information Management Systems Project*. https://www.fedarch.org/wordpress/.

Wallrodt, J. 2013. *Paperless Archaeology*. http://paperlessarchaeology.com.

B. Blog Posts and Web Pages:

Athienou Archaeological Project. 2013. "Data Collection and Digital Archaeology." *Athienou Archaeological Project*. http://sites.davidson.edu/aap/

Caraher, W. 2013, 23 May. "iPads in the Field and Reflections on Archaeology's Digital Future." *The Archaeology of the Mediterranean World*. http://mediterraneanworld.wordpress.com.

Fee, S. 2012. 1 June. "PKapp: An Introduction. *The Pyla-Koutsopetria Archaeological Project Blog*. http://pylakoutsopetria.wordpress.com.

Havlicek, I. and A. Wilson. 2012, 7 November. "Zagora goes digital." *Zagora Dig Blog.* http://www.powerhousemuseum.com/zagora/category/zagora-dig-blog/.

Kansa, E. 2013. *Open Context: Web-based Research Data Publication*. http://opencontext.org

Pettegrew, D. 2012. 3 July. "iPads in Cyprus: Using PKapp." *The Pyla-Koutsopetria Archaeological Project Blog*. http://pylakoutsopetria.wordpress.com.

Piara Archaeological Project. 2013. "iArchaeology." *Piara Archaeological Project*. http://www.piaraperu.org.

Poehler, E. 2013. 23 August. "Technology: Digital Recording." Pompeii Quadriporticus Project. http://www.umass.edu/classics/PQP.htm.

Wallrodt, J. and S. Ellis. 2013. "Methodologies." *Pompeii Archaeological Research Project: Porta Stabia*. http://classics.uc.edu/pompeii/.

Wallrodt, J., K. Dicus, L. Liebermann, G. Tucker. 2013, 25 March. "Beyond Tablet Computers as a Tool for Data Collection: Three Seasons of Processing and Curating Digital Data in a Paperless World." Paperless Archaeology. http://paperlessarchaeology.com.

C. Conference Symposia, Papers, and Posters:

Ashley, M. and R. Tringham. 2013. "Last House on the Hill: An Archaeological "Multigraph" for the Digital Age." Paper delivered at the 78th Annual Meeting of the Society for American Archaeology, 3-7 April, Honolulu.

Butina, E. 2012. "Tablet Computer as a documentation tool for excavating an archaeological site: practical employment in the field and future possibilities." Paper read at the 40th Annual Computer Applications and Quantitative Methods in Archaeology Conference, 27-29 March, Southampton.

Caraher, W., R.S. Moore, D. Pettegrew, and S. Fee. 2013. "Archaeological Data and Small Projects: A Case Study from the Pyla-Koutsopetria Archaeological Project on Cyprus." Paper read at the 114th Annual Meeting of the Archaeological Institute of America, 3-6 January, Seattle.

DeTore, K. and R. Bria. 2013. "Explorations in Digital Data Collection in the Remote Andes in Peru." Paper delivered at the 78th Annual Meeting of the Society for American Archaeology, 3-7 April, Honolulu.

Ellis, S. 2011. "The Paperless Project: The Use of iPads in the Excavations at Pompeii." Paper read at the 39th Annual Computer Applications and Quantitative Methods in Archaeology Conference, 12-16 April, Beijing.

Ellis, S. and J. Wallrodt. 2012. "Pompeii and the iPad: An Update." Paper read at the 40th Annual Computer Applications and Quantitative Methods in Archaeology Conference, 27-29 March, Southampton.

Goodale, N., D. Bailey, A. Naumann, and T. Fondak. 2013. "There's an App for That: Mobile Devices in Archaeological Field Research." Paper delivered at the 78th Annual Meeting of the Society for American Archaeology, 3-7 April, Honolulu.

Gordon, J. 2013. "*Alea Iacta Est*: Crossing the Digital Rubicon or Converting to Digital Workflows at the Athienou Archaeological Project (Cyprus)." Paper read at the Polytechnic Summit 2013, 5-7 June, Boston.

Hughes, R. 2012. "Taking Survey Digital: Implementing a Paperless Workflow on the Eastern Vani [Georgia] Survey." Paper read at the Redford Conference in Archaeology, 25-27 October, Tacoma.

Kansa, E. 2010. "Publishing Archaeological Data from the Field to the Web." Workshop chaired at the Annual Meeting of the American Schools of Oriental Research, 17-20 November, Atlanta.

Kansa, E. and S. Whitcher Kansa. 2011. "Topics in Cyberinfrastructure, Digital Humanities, and Near Eastern Archaeology." Workshop chaired at the Annual Meeting of the American Schools of Oriental Research, 16-19 November, San Francisco.

Koo, K., J. Gordon, and M. Toumazou. 2013. "Paperless Archaeology." EDUCAUSE Learning Initiative Annual Meeting. 6 February, Denver.

Mark, R. and E. Billo. 2013. "Using iPads for Rock Art Documentation." Paper delivered at the 78th Annual Meeting of the Society for American Archaeology, 3-7 April, Honolulu.

Motz, C. and S. Carrier. 2012. "Paperless Recording at the Sangro Valley Project." Paper read at the 40th Annual Computer Applications and Quantitative Methods in Archaeology Conference, 27-29 March, Southampton.

Poehler, E. 2012. Comprehensive Digital Recording and Analysis: iPads, Photogrammetry, Geophysics, and GIS." Paper read at the 40th Annual Computer Applications and Quantitative Methods in Archaeology Conference, 27-29 March, Southampton.

Ross, S. and A. Sobotkova. 2013. "Federated Archaeological Information Management Systems." Roundtable chaired at the 41st Computer Applications and Quantitative Methods in Archaeology Conference, 25-27 March, Perth.

Wallrodt, J. et al. 2010. "Digital Archaeology at Pompeii: Our Contribution to the Historical Record." Roundtable chaired at the 38th Computer Applications and Quantitative Methods in Archaeology Conference, 6-9 March, Granada.

Wernke, S. and Adams, J. 2013. "Views from Above: Using UAVs and Mobile GIS to Map a Colonial Settlement in Highland Peru." Paper delivered at the 78th Annual Meeting of the Society for American Archaeology, 3-7 April, Honolulu.

D. Journal Articles and Book Chapters:

Fee, S., D. Pettegrew, and W. Caraher. 2013. "Taking Mobile Computing to the Field." *NEA* 76.1: 50-55.

Goodale, N, D. Bailey, T. Fondak, and A. Nauman. 2013. "iTrowel: Mobel Devices as Transformative Technology in Archaeological Field Research." *SAA Archaeological Record* 13.3:19-22.

Levy, T., and N. Smith. 2007. "On-Site Digital Archaeology: GIS-Based Excavation Recording in Southern Jordan," in *Crossing Jordan – North American Contributions to the Archaeology of Jordan*, edited by T. Levy, M. Daviau, R. Younker, and M. M. Shaer, 47-58. London: Equinox.

Olson, B., R. Placchetti, J. Quartermaine, and A. Killebrew. 2013."The Tel Akko Total Archaeology Project (Akko, Israel): Assessing the Suitability of Multi Scale 3D Field Recording in Archaeology." *JFA* 38: 244-62.

Poehler E. and S. Ellis. 2013. "The 2012 Season of the Pompeii Quadriporticus Project: The Eastern Side and Colonnade." *Journal of Fasti Online.* http://www.fastionline.org/docs/FOLDER-it-2013-284.pdf.

E. Books:

Daly, P. and T. Evans eds. 2006 *Digital Archaeology: Bridging Method and Theory*. London: Routledge.

Eiteljorg, H. 2008. *Archaeological Computing.* 2nd ed. Bryn Mawr: Center for the Study of Architecture.

Forte, M. ed. 2010. *Cyber-Archaeology*. BAR International Series 2177. Oxford: Archaeopress.

Frischer, B. and A. Dakouri-Hild. 2010. *Beyond Illustration: 2d and 3d Digital Technologies as Tools for Discovery in Archaeology*. BAR International Series 1805. Oxford: Archaeopress.

Kansa, E. S. Whitcher Kansa, and Ethan Watrall eds. 2011. *Archaeology 2.0: New Approaches to Communication and Collaboration*. Cotsen Digital Archaeology 1. Los Angeles: Cotsen Institute of Archaeology Press.