

Institute for European and Mediterranean Archaeology



6-7 April 2019 | Buffalo NY

Greiner Hall - Ellicott Complex, UB North Campus

Critical Archaeology in the Critical Age

Organized by Dr. Kevin Garstki



University at Buffalo The State University of New York

North Campus



LEGEND

Stampede Stop Campus Shuttle Stop **Bike Share Hub**

BUILDING DIRECTORY

Alfiero Center	8
Alumni Arena	1
Baird Hall	4
Baird Research Park	53
Baker Chilled Water Plant	41
Baldy Hall	7
Beane Service Center	37

Bissell Hall

Bonner Hall

Anderson Gallery: 1 Martha Jackson Pl., Buffalo, NY 14214

42	Stadium	45
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с	Fargo Quadrangle	A
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19	Red Jacket Quadrangle	с
34	Richmond Quadrangle	D
39	Spaulding Quadrangle	E
36	Wilkerson Quadrangle	F
12	Millard Fillmore Academic Center	G
9	Katharine Cornell Theatre	н
26	Albert P. Sy Lecture Hall	1
24	C3 Crossroads Culinary Center	J

MOBILE MAP

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31 Bookstore Campus Mail Center 43 Capen Hall 20 Center for the Arts 2 Center for Tomorrow 40 Child Care Center 47 5 **Clemens Hall** Commons 30 **Computing Center** 17 13 Cooke Hall 51 Creekside Village Crofts Hall 35 Davis Hall 25 14 Dorsheimer Laboratory/Greenhouse 50 Ellicott Complex Flickinger Court 52

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O'Brian Hall	11
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Flint Village

Fronczak Hall

Governors Residence Halls

Lehman Hall

Clinton Hall

Dewey Hall

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Roosevelt Hall

Furnas Hall

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A

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Institute for European and Mediterranean Archaeology University at Buffalo – The State University of New York

12th IEMA Visiting Scholar Conference

Critical Archaeology in the Digital Age

6-7 April 2019

Greiner Hall, North Campus University at Buffalo

www.iema.buffalo.edu
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CONFERENCE SCHEDULE

Saturday, 6 April 2019

8:00-9:00 Registration

9:00-9:30 **WELCOME:**

Peter F. Biehl – Director of the IEMA, Professor of Anthropology and Associate Dean for International Education and Enrollment Stephen L. Dyson – Associate Director of the IEMA, SUNY Distinguished Professor and Park Professor of Classics

9:30-10:00 **INTRODUCTION:** *Disruptive Technologies and Challenging Futures* Kevin Garstki – IEMA Postdoctoral Scholar and Conference Organizer

SESSION ONE: IMPACTFUL TECHNOLOGIES

 10:00-10:30 3D Thinking in Archaeology: From Critical Interaction to Effective Evaluation
 Fabrizio Galaezzi, University of East Anglia, Centre for Archaeology and Heritage (SISJAC); University of York, Department of Archaeology

10:30-11:00 3D Reconstructions as Tools for Scientific Discovery: The Example of Rome Reborn Bernard Frisher, Indiana University-Bloomington, Department of Informatics

- 11:00-11:30 Coffee Break
- 11:30-12:00 *Cyberarchaeology and Digital Redundancy* Maurizio Forte and Nevio Danelon, Dig@Lab, Duke University



- 12:00-12:30 Modeling Archaeological Potential in SW Anatolia: Three Decades of Landscape Research in the Territory of Ancient Sagalassos Patrick Willett, University at Buffalo, SUNY, Department of Anthropology/University of Leuven; Chris Carleton, Simon Fraser University, Department of Archaeology; and Ralf Vandam, University of Leuven, Department of Archaeology
- 12:30-1:00 Sensing and Feeling: Experiencing Museum Objects through Digifacts Paola Di Giuseppantonio Di Franco, University of Essex, School of Philosophy and Art History
- 1:00-2:00 Lunch

SESSION TWO: DIGITAL FUTURES

- 2:00-2:30 Is Less More? Slow Data and Datafication in Archaeology Jeremy Huggett, University of Glasgow, Archaeology, School of Humanities
- 2:30-3:00 Some Thoughts on the Digital and Analog Afterlives of Archaeological Projects
 Ruth Tringham, University of California at Berkeley, Department of Anthropology
- 3:00-3:30 Coffee Break
- 3:30-4:00 Where's it All Going? Critically Assessing Preservation and Access of 3D Archaeological Data Heather Richards-Rissetto, University of Nebraska-Lincoln, Department of Anthropology



- 4:00-4:30 Research Challenges and Methodological Pitfalls: Social Media as a Source for Understanding Public Perceptions of Archaeology Lorna-Jane Richardson, University of East Anglia, Interdisciplinary Institute for the Humanities
- 4:30-5:00 Imagining the Archive: How Current Digital Archaeological Practice Might Affect Future Archaeological Research Adam Rabinowitz, University of Texas at Austin, Department of Classics
- 5:00-5:30 **DISCUSSION**

7:00-10:00 WELCOME RECEPTION AND BUFFET

Totem Pole Room, UB Department of Anthropology, Ellicott Complex





Sunday, 9 April 2019

8:30-9:30 Breakfast

SESSION THREE: DISSEMINATION THROUGH TECHNOLOGY

- 9:30-10:00 Collaborative Digital Publishing in Archaeology: Data, Workflows, and Books in the Age of Logistics
 William Caraher, University of North Dakota, Department of History and Indian Studies
- 10:00-10:30 Publication of Archaeological Interpretation of Airborne LiDAR Data. A Decade of Experience and Future Development Benjamin Štular, ZRC SAZU, Slovenia
- 10:30-11:00 Coffee Break

SESSION FOUR: ARCHAEOLOGY AND THE CONTEMPORARY

- 11:00-11:30 Collaborative Photogrammetry and Interactive Storytelling: Demystifying and Democratizing the Production of Knowledge Through Digital Archaeology in Community-based Fieldwork and Education Rebecca Bria, University of Minnesota, Department of Anthropology; Erick Casanova Vasquez, Universidad Nacional Mayor de San Marcos
- 11:30-12:00 At-Risk Archaeological Heritage and the Public: Local and Global Perspectives
 Laura Harrison, University of South Florida, Access 3D Lab
- 12:00-1:00 Lunch
- 1:00-1:30 On Accountability and Governance in Digital Archaeology Eric Kansa, Open Context



- 1:30-2:00 Is Ownership Part of Computational Archaeology? Sebastian Heath, New York University, Institute for the Study of the Ancient World
- 2:00-2:30 *The Case for an Affective Archaeology* Sara Perry, University of York, Department of Archaeology
- 2:30-3:00 Coffee Break
- 3:00-4:00 FINAL DISCUSSION
- 4:00-4:15 CLOSING REMARKS
- 6:00-9:00 FAREWELL DINNER

Atrium, UB Anderson Gallery (near South Campus)





PRESENTERS AND ABSTRACTS

Saturday, 6 April 2019

INTRODUCTION TO THE CONFERENCE

Disruptive Technologies and Challenging Futures **Kevin Garstki** – IEMA, University at Buffalo, SUNY

How are digital technologies impacting the way archaeologists come to know the past? How are methodologies of documentation, analysis, and dissemination altered through the use of new technologies? These questions are not solely about the development of a *digital archaeology* but also questions about the nature of archaeology as a discipline and the futures that we see for ourselves. At a time when a variety of digital methods are being adopted at every stage of archaeological practice, we are well situated to really think through the direction of archaeology and its place in a broader society. As the amount of archaeological data grows exponentially, we can either act as passive recipients of information or we can ask: what are the most appropriate ways to create, use, share, curate, and store archaeological data so that we develop the most informative and ethical futures for the archaeological record? This introductory paper outlines the challenges archaeologists face as we grapple with the full impact of digital technology on the practices of archaeology. It will outline the framework for the papers in this conference by highlighting the tangible impacts of these technologies on the discipline, while at the same time envisioning the futures of archaeological research.

SESSION ONE: IMPACTFUL TECHNOLOGIES

3D Thinking in Archaeology: From Critical Interaction to Effective Evaluation **Fabrizio Galaezzi**, University of East Anglia, Centre for Archaeology and Heritage (SISJAC); University of York, Department of Archaeology

Digital Archaeology as a unique field of the archaeological endeavour is a phenomenon that has been rapidly crystallized in the past decade. However, the role that 3D archaeology plays in the development of the field is not very clear. 3D archaeology is beginning to evolve unique archaeological methodologies, forms of interaction and formal content, but the understanding of the impact of 3D technologies in archaeology and the definition of an intellectual domain of 3D archaeology culture is a difficult mandate. To date, several attempts have been made to test and integrate 3D methodologies on-site. Nonetheless, 3D has not become a standard technology for archaeologists working on-site both in academic and commercial contexts.

Starting from the results of a study conducted at the Roman Forum and Palatino in the UNESCO World Heritage Historic Centre of Rome, this paper explores if it is



possible to assign to 3D archaeology its own body of theoretical sources and culture of discourse, and the production of unique classes of archaeological contents. After discussing limitations and potential of using 3D on-site, this research aims at evaluating: (i) if and how visualization and virtual manipulation of 3D replicas of archaeological stratigraphy during excavation might change thinking and interpretation processes in archaeology; (ii) if web interactive infrastructures can be cutting-edge instruments to enhance the sharing of knowledge, engagement and reflection within the community working on-site, and between specialists that do not participate into fieldwork.

The preliminary results of this work show how new evaluation strategies, which blend ethnographic methods with methods and concepts from Wenger's Communities of Practice, can clarify if it is possible to consider 3D archaeology as a new form of archaeology. It also reveals the potential of using 3D web working environments (which make the data available as soon as acquired and immediately integrated to support online study, analysis and the verification of hypotheses) to overcome current limitations for the effective integration of 3D in archaeology.

3D Reconstructions as Tools for Scientific Discovery: The Example of Rome Reborn Bernard Frisher, Indiana University-Bloomington, Department of Informatics

The Rome Reborn project is an international initiative, launched in 1996, to create a 3D reconstruction of ancient Rome in AD 320, shortly before the capital of the empire was moved to Constantinople. This year was chosen because it represents the peak of the urban development of the ancient city. The model took 22 years to complete. In August 2018, it was finally made available to scholars and to the general public through the VR publisher Flyover Zone Productions (see: www.romereborn.org).

The Rome Reborn model has the potential to enrich K-16 curricula, making it possible for newcomers to the subject of Roman topography and urban history to obtain a quick visualization of the monuments in their context in the city. The purpose of this talk is not to explore these instructional applications of the model but to draw out its scientific uses as a tool of discovery. The point of departure is the claim that a reconstruction of a complex city like ancient Rome (with ca. 7,000 buildings covering 14 sq. km. of space within the late-antique walls) is a case in point of Aristotle's famous idea (Met. 1045a8-10) that "the whole is not a heap but something other than the sum of the parts." Until now, Roman topographers have approached the imperial city by concentrating on a specific monument or on the prestige building projects of an individual emperor of dynasty. Now, thanks to the availability of the interactive city model, we can look at the city in a more holistic, synchronic and dynamic way. Like all new scientific instruments, Rome Reborn allows us to make observations and to run experiments—experiments and observations that in the case of a historical discipline such as Roman archaeology would have been impossible without true time travel.

This talk will illustrate the validity of the claim with three case studies at different scales and from three different perspectives or vantage points: the alignment of two monuments seen from a fixed position (the relationship of the Montecitorio Obelisk to the Ara Pacis); the dynamically changing viewsheds available to the visitor in the



densely-packed Roman Forum (the visit of Constantius II to Rome in AD 357); and, as noticeable in a series of bird's eye views, the application of organic, as opposed to geometric, urban planning and land use in the entire cityscape.

Cyberarchaeology and Digital Redundancy Maurizio Forte and Nevio Danelon, Dig@Lab, Duke University

Cyber-Archaeology is a branch of archaeological research concerned with the digital simulation of the past. In that sense, the past is seen as generated by the interaction with multiple scenarios and simulations and by the creation of different digital embodiments. The term recalls also the ecological cybernetics approach based on the informative modeling of the organism-environment relationships. In fact, Cyber-Archaeology aims to investigate the past through the interaction with multimodal simulation models of archaeological datasets in different areas of knowledge. The cognitive-interpretive process is accomplished through an interaction-feedback loop in digital environments. The authors hypothesize that a multimodal digital interaction of the same content is able to foster and accelerate the learning process and this theory was applied to the case study of the Basilica Ulpia in Rome, in the Trajan's Puzzle Project (https://trajanspuzzle.trinity.duke.edu/). In 2018, the Duke-Dig@Lab produced different digital and haptic installations for the archaeological exhibition "Traiano. Costruire l'impero, creare l'Europa (Trajan's Market Museum): an interactive haptic table, an augmented reality application, a 3D printed model, a VR Oculus Go app and a hologram dedicated to the virtual reconstruction of the Basilica Ulpia. The redundancy of the content, spread out in different platform/interactions, stimulate new views and cognitive interactions with the topic, possibly enhancing the spatial learning and the digital embodiment.

Modeling Archaeological Potential in SW Anatolia: Three Decades of Landscape Research in the Territory of Ancient Sagalassos

Patrick Willett, University at Buffalo, SUNY, Department of Anthropology/University of Leuven; Chris Carleton, Simon Fraser University, Department of Archaeology; and Ralf Vandam, University of Leuven, Department of Archaeology

The Sagalassos Archaeological Research Project has conducted numerous extensive and intensive field survey campaigns throughout the 1200 km2 territory of the ancient settlement over the past nearly three decades. Much of the region remains underresearched, though, due to its size and extreme ruggedness, and other barriers to accessibility including lack of roadway infrastructure and current land usages. Recently, an effort has been made to utilize the already extant and substantial archive of data on the history of settlement and land use to further our understanding of unexplored areas within the territory and the motivations behind land use practices there, as well as to help fill gaps in the archaeological record during particular periods in certain landscape settings. This paper will discuss the incorporation of the results of all past and current



survey initiatives at Sagalassos into a Locally Adaptive Model of Archaeological Potential (LAMAP) and its preliminary validation. This geospatial strategy has allowed the project to target lacunae in our knowledge of certain periods and land usages, which have otherwise eluded detection using more tradition means, and will deliver guidance for future pedestrian survey and excavation efforts.

Sensing and Feeling: Experiencing Museum Objects through Digifacts Paola Di Giuseppantonio Di Franco, University of Essex, School of Philosophy and Art History

Museum objects are usually 'framed' by glass cases; this is the way we encounter them. As we move around the cases we learn rules of interaction with the objects, which give priority to sight over the other senses. Traditionally, we experience artefacts mainly looking at the objects in the case and reading textual information.

Simon Knell has argued that museum objects tell stories only because they are "authentic" and made to come alive through curatorial expertise conveyed on labels. This dominant assumption has been critiqued in recent years, since it underestimates the possibilities inherent in objects' material and sensorially perceptible characteristics (i.e., affordances) for engaging with ancient material culture at a cognitive as well as emotional level.

In this paper, I discuss how 3D digital and printed replicas of artefacts (i.e., digifacts) can provide new ways of understanding of ancient objects and engagement with museological forms, as well as meaning-making and narrative formation inside museums. I draw on the findings from my recent Marie Skłodowska Curie project, titled Digital artefacts: How People Perceive Tangible Cultural Heritage through Different Media (DIGIFACT), developed at the Cambridge Museum of Anthropology and Archaeology (MAA). This project was aimed at understanding how differential media (i.e. visual examination of original artefacts inside cases; virtual manipulation of 3D digital replicas; tactile experience with 3D prints) affect perception of and interaction with artefacts inside museums. Some of the results suggest that, while the glass-case represents a 'psychological frame' that limits our sensorial experience with the artefacts, digital and especially 3D printed replicas embody the original objects in the case, offering unprecedented mimetic and performative possibilities with the material remnants of our past.

SESSION TWO: DIGITAL FUTURES

Is Less More? Slow Data and Datafication in Archaeology **Jeremy Huggett**, University of Glasgow, Archaeology, School of Humanities

Eric Kansa (2016) was perhaps the first to use the term 'slow data' in an archaeological context, defining it as the digitized aspects of Bill Caraher's (2013; 2016) 'slow archaeology', and as "thoughtful digital curation". Caraher himself defines 'slow data' as



"the dynamic and profoundly human character of archaeological datasets as an element of added value rather than distracting complexity" (2016, 423). Since then, however, there has been no sustained attempt to examine the characteristics of slow data more closely, or to place it more clearly within the context of a data-intensive archaeology. This paper will explore the concept of slow data, and consider its value in moderating the claims of some proponents of 'big data' that data quantity trumps quality.

Some Thoughts on the Digital and Analog Afterlives of Archaeological Projects **Ruth Tringham**, University of California at Berkeley, Department of Anthropology

When we publish the final report of an archeological project, we tend to think of it as the culmination of its life journey through time, but it seems to me to be "rather the point of departure from which a new journey begins" as Karin Sanders has pointed out - an afterlife. This is certainly true of my research at the Neolithic settlements of Selevac and Opovo in Serbia, and Çatalhöyük, in Turkey with their afterlives in my adventures in remediating, recontextualizing, and milking the documentation of the original events of excavation, analysis and interpretation (the primary research data of the project).

The medium that is used – whether analog, digital, or combination - does make a difference to both the nature of the afterlife object itself as well as the nature of its living (or not-living). Analog objects such as those printed on physical materials have different challenges to their modification and sustainability in life from those objects that were created digitally for an afterlife in the ether of the Cloud. The concept of afterlives is not new in creative projects, but it has rarely been expressed explicitly as such. As far back as first century BC, the poet Gaius Helvius Cinna likens a published poem to a corpse; composers throughout history, defying the limitations of the printed text, have created and performed different versions of the same piece. George Saunders has praised the idea of versioning in the creative process as becoming ever more intimate, specific, and passionate with its content. Versioning is another way of thinking about the afterlives of projects.

In this paper I will consider in detail how versioning and afterlives come together whether practiced through analog or digital media (or both). This will lead into a discussion of the important differences in these practices between the use of analog and digital media, using examples from our archaeological project at Çatalhöyük, as well as some earlier projects. Such practices have broader implications for the longevity of what are considered primary data documents of archaeological research in both digital and analog media, and the long-term sustainable preservation of their afterlives. What (if anything) can we afford to let go to the vast graveyard of the lost Internet?



Where's it All Going? Critically Assessing Preservation and Access of 3D Archaeological Data Heather Richards-Rissetto, University of Nebraska-Lincoln, Department of Anthropology

Digital technologies are revolutionizing archaeological practice. Digital data acquisition allows archaeologists to collect an overwhelming amount of 3D data, but where's all this 3D data going? Preservation and access of 3D archaeological data is complex and multi-layered involving standards, guidelines, open-source vs. proprietary software, and much more. As new 3D technologies and formats emerge, we are becoming increasingly aware of the technological and ethical issues to 3D data preservation and access. 3D survey data from terrestrial photogrammetry and laser scanning, airborne LiDAR, and UAVs capture extant archaeological features and landscapes. In contrast, researchers create born 3D data through data fusion of multiple data sources using Computer Aided Drawing (CAD), procedural modeling, Virtual Reality, and 3DGIS. The two types are not mutually exclusive and experience similar challenges for preservation and access in relation to versioning, metadata, and paradata.

3D survey data comprise raw (unstructured) data, but to translate 3D point data into 3D models requires decision-making about resolution, software, file formats, and more, based on research or management purposes. We convert 3D points into faces (mesh) to generate textured surfaces, and then we decimate them for online viewing and analysis--which data do we preserve or make accessible? These data sets are large and expensive to store.

Additionally, 3D data are not easily made accessible for reuse. Standard metadata conceptual models such as Dublin Core fail to capture the nuances of 3D archaeological data. While cultural heritage metadata models such as CIDOC Conceptual Reference Model (CRM) and the Europeana Data Model (EDM) exist, integrating them with standard repositories is not straightforward. In regard to paradata, which describes modeling process and data sources, the challenges are even greater as we investigate how to capture and store paradata with 3D models. In this talk, I will critically assess the challenges and some potential "solutions" to the preservation and access of 3D archaeological data.

Research Challenges and Methodological Pitfalls: Social Media as a Source for Understanding Public Perceptions of Archaeology

Lorna-Jane Richardson, University of East Anglia, Interdisciplinary Institute for the Humanities

The avalanche of public opinion and commentary that can be found in online social spaces, when collated and analysed, offer diverse possibilities to the social science researcher. The ability to gather data from social media domains, and the results of the ubiquitous use of digital devices in the West to record everyday life offers potentially transformative supra-geographic and non-temporal, highly-detailed written and visual information about people's lives and attitudes. The potential for social research in



archaeology on individual opinions and interactions, audiences, public engagement, reception studies and opinion tracking is vast. However, the use of such data and tools for social and cultural analysis is in it's infancy in the field of archaeology.

To elaborate further on these debates, this paper will discuss some of the recent changes in our specifically archaeological data environment that have been brought about through the internet and social media. It will consider some of the methodological and ethical considerations that must be assessed and implemented when undertaking this type of work in our field. Thirdly, the paper will outline some key areas of research in archaeology that might be done using digital social research methods, and discuss the potential uses and methodological pitfalls of these digital techniques and interpretation frameworks from the perspective of a specifically 'public' archaeology. This will focus on a small number of examples of work drawn from the 'Archaeological Audiences' project at Umeå University, which took place from 2015-2017.

Imagining the Archive: How Current Digital Archaeological Practice Might Affect Future Archaeological Research

Adam Rabinowitz, University of Texas at Austin, Department of Classics

Most archaeologists working today have consulted an archive containing analogue documentation of previous research. Such archives have a predictable form: they contain handwritten or typed text on paper, photographic images on glass plates or film or prints, and drawings, sections, and plans in pencil or pen on paper or mylar. The paper might be yellowed, the film emulsion degraded, the plans water-stained; but as long as the archive has not burned or flooded, the media are legible without special equipment and the underlying organizational principles are probably familiar. On the other hand, any given analogue archive contains less data than it started with: associations are lost, the meaning of notations is forgotten, crucial documents are discarded.

Most archaeologists working today have also consulted a digital archive. These encode the same types of information, and at least the more recent ones seem equally intuitive and familiar. Even better, they offer the advantage of the integration of different forms of documentation, and many of us are hopeful that the long-term degradation of paper archives will become a thing of the past as rich digital systems take over. At the same time, we are aware that it is difficult to keep track of the continuous flow of individual files in various formats generated by a field project of any significant size. The description of these items is often lowest on our priority list, especially if we rely on an integrated database platform to manage information on the fly. Yet data management and visualization platforms are the most fragile parts of the digital archive. Files in stable open formats have been shown to survive reasonably well in the medium term, but the same is not true for proprietary database platforms - and if contextual information disappears, individual files suddenly become much less useful. Assuming files in stable open formats can be preserved over the 50 or 100-year timeframe that characterizes our current use of archaeological archives, what will the 2020 archive look like to the 2120 archaeologist?



This paper is a thought experiment that imagines different versions of that archive under various creation and preservation circumstances. With reference to the current state of digital archaeological archives created 20-25 years ago, it explores the effects that our choices now may have on the ability of future scholars to reuse our archives. It will explore visual expectations, expectations of accuracy and precision, and questions of size, scale, and contextualization, and it will address unanticipated analytical possibilities that may arise from data that we do not consider "archival".

Sunday, 7 April 2019

SESSION THREE: DISSEMINATION THROUGH TECHNOLOGY

Collaborative Digital Publishing in Archaeology: Data, Workflows, and Books in the Age of Logistics

William Caraher, University of North Dakota, Department of History and Indian Studies

Historically, the culmination of archaeological work was a final report or definitive monograph. In fact, publication has become an ethical imperative for our discipline and major excavations became known as much by their neatly arranged series of publications as monumental remains. For most of the 20th century, the expertise, care, and funds necessary to produce these publications represented a separate phase of knowledge making shaped by its own technical, economic, and practical limits.

In the 21st century, digital practices are transforming both archaeological practices in the field and the concept publication. The fragmentation of archaeological knowledge as digital data produces portable, sharable, remixable, and transformable publications that are less stable and less definitive than their predecessors in print. As a result, while final publications continue to appear, they are joined by published data of various kinds - from GPS and total station coordinates to digitally generated point clouds, photographs and videos, and XRF results. Project are also more invested than ever in creating unique ways to understand, interpret, and engage their site. These collaborations have eroded the conceptual and disciplinary barriers between field work, analysis and publication. It is possible, for example, to publish from the trenchside or survey unit and to create definitive digital publications that are modular and open to revision. The growing permeability between the processes of field work, analysis, and publishing, has both the potential to transform the concept of publication in archaeology (as well as across the humanities) and marks the rise of a new intellectual model for the production of knowledge. If 20th century archaeology followed the linear logic of the assembly line and culminated in the final publication, 21st century archaeology draws on the disperse efficiency sought in the contemporary focus on logistics. Logistics, with its emphasis on streamlining the movement of goods, data, and people, offers a useful, if problematic paradigm, for a discipline increasingly committed to finding new ways to make archaeological knowledge accessible and usable to a broader constituency.



Publication of Archaeological Interpretation of Airborne LiDAR Data. A Decade of Experience and Future Development Benjamin Štular, ZRC SAZU, Slovenia

NASA archaeologist Stan Sever is responsible for the first attempt at using airborne LiDAR data in archaeology in 1988. But at the time not even NASA had the hardware power to make use of the data. Airborne LiDAR drew wider attention of archaeologists in 2004 and by the end of the decade it was established as a "new" tool in remote sensing archaeology's toolbox. In the second decade of the new millennia the potential for the method grows exponentially pending the availability of free or cheap datasets with nation- or statewide coverage. Up to a tenfold increase in the quantity of archaeological data is the norm for projects employing archaeological interpretation of airborne-LiDAR-derived high-resolution digital elevation models, especially in heavily forested areas. Successful examples include an entire cityscape in a Mesoamerican jungle, tens of thousands of prehistoric features in a Mediterranean landscape and more than 100.000 potential archaeological sites in a single state in Germany.

However, after several years of reports in scientific journals on "revolutionary" discoveries, the truly profound paradigm-changing impact of airborne LiDAR data in archaeology is mysteriously absent. At first it seemed that it is just a matter of time for the projects to be published. But after conversing with many of the leading European specialists a common theme emerged: the sheer quantity of the data prevents timely publication (i.e. scientific publication that includes ground truthing, chronology and archaeological interpretation); at the same time the resources already invested in data processing and mapping necessitates scientific recognition thus prohibiting the release of raw data. The outcome is more often than not hoarding of the data in the hope that the funding for final publication is just around the corner. Corners don't turn, years pass. In this presentation a brief overview of the past decade of scientific publication of LiDAR derived data in archaeology will be presented to set the stage for the future agenda that will enable the full potential of LiDAR derived data in archaeology to be developed.

SESSION FOUR: ARCHAEOLOGY AND THE CONTEMPORARY

Collaborative Photogrammetry and Interactive Storytelling: Demystifying and Democratizing the Production of Knowledge Through Digital Archaeology in Community-based Fieldwork and Education **Rebecca Bria**, University of Minnesota, Department of Anthropology; **Erick Casanova Vasquez**, Universidad Nacional Mayor de San Marcos

Community-engaged archaeological projects are more commonplace than ever before, reflecting a paradigm shift toward a study of the past that includes local people as collaborators (McAnany and Rowe 2015). At the same time, digital methodologies have reconfigured how archaeologists collect and interpret their data, as well as how they present it to the public. This paper considers how archaeologists can interweave these increasingly essential approaches by bringing digital technology to the center of



community collaborations. We present a case from our research in rural Peru where we have worked with indigenous youth to produce photogrammetry models of their local landscape, its archaeological ruins, and its artifacts using drones, cameras, digital forms, and computer software. We then use interactive storytelling activities, including the production of visual art, to explore these digital data and produce narratives of ancient community life. We suggest that such work harnesses the excitement and unique analytical potential of digital archaeology, bringing meaning to the past while demystifying and democratizing archaeological knowledge production. Ultimately, we contend that extending the tools of digital archaeology to community stakeholders—rather than restricting them to the domain of the academic specialist—is essential to any collaborative project in the 21st century.

At-Risk Archaeological Heritage and the Public: Local and Global Perspectives Laura Harrison, University of South Florida, Access 3D Lab

Endangered heritage requires that archaeologists working in the digital realm critically examine their role in mediating the interaction between contemporary societies and the past. One such example of threatened heritage is the Bronze Age archaeological site of Seyitömer Höyük in western Anatolia, which faces imminent destruction due to its location within an active coal mine. Paradoxically, mining around the site poses both a threat and an opportunity: while industrialization imperils site preservation, it has provided funding for an intensive excavation. This paper details a digital heritage project that incorporates low-cost digital documentation techniques, open data and public outreach. This approach emphasizes the democratization of scientific communication by means of inclusive, participatory, multivocal media such as linked open data, social media, and virtual models. Such endeavors further scientific inquiry and public understanding on a local level, and raise awareness of broader issues surrounding atrisk archaeological heritage on a global scale.

On Accountability and Governance in Digital Archaeology Eric Kansa, Open Context

The revolution in information and communications technologies, which had so much promise for broadening access and participation in scholarship, seems darker and more ominous in recent years. "Big Data" powered analytics, mined from billions of user interactions with social media platforms, have targeted millions with individually-tailored lies and disinformation. These same social media platforms seem impervious to any social accountability or oversight. Clearly, digital communications platforms can be incredibly powerful and can have profound impacts in shaping our views of reality. However, debates about open access and authenticity in digital archaeology typically focus on access rights and intellectual property issues for digital content. Openness can both combat commodification, or if imposed arbitrarily, digital openness can be seen as a new form of colonial appropriation. While content matters, recent experiences have



highlighted that the commodification of user interactions may be more dangerous than the commodification of content alone. Platforms and services develop in a complex technological, media and financial ecosystem that help shape their governance structures, technical architecture, and business models. This presentation will explore how accountability and governance of digital infrastructure shape privacy issues and dynamics of centralization and "lock-in". In doing so, it will highlight the need for decentralized and community-controlled communications platforms.

Is Ownership Part of Computational Archaeology? **Sebastian Heath**, New York University, Institute for the Study of the Ancient World

Ownership is a powerful, contested, sometimes positive, and often destructive concept in computational archaeology, which I broadly define as any purposeful transformation of archaeological data or digital content by automated means. In 2019, these various perspectives on the term can be approached by reference to specific digital behaviors and in the context of various communities of practice. Starting outside strictly archaeological practice, "taking ownership" of one's online identity and presence is a step that early career digital humanists are encouraged to take. Tools such as Reclaim Hosting build their own brands in part on making this easier to do. Additionally, recognizing the ownership interest of various stakeholders in both material culture, as found in archaeological fieldwork or as now stored in museums, and the data derived from it is increasingly important in archaeological practice. Within academic digital practice, however, one route to establishing professional identity - a concept that is easy to recognize as a cultural concept - is to undermine de facto ownership of one's own research output. The main mechanism for doing this is the sharing of research data and other outputs under licenses that allow redistribution by third parties, with the suite of Creative Commons licenses and the Open Database License (ODbL) being common options for achieving this goal. The combination of open data with pervasive and effectively free, meaning no cost, computational resources has created the possibility of an exceedingly productive immediate future for computational archaeology. Among the tools allowing open-licensed data to be productively used in ways that are themselves open are iPython notebooks hosted by the Binder project and lightweight web apps hosted by the commercial firm Heroku. These are extreme examples of the general lowering of computational costs, a long-term trend that is contributing to the development of best practices such as "reproducible research" and of communities of archaeological practice that promote such computational approaches. It is in this research-oriented context that ownership of data can be most destructive. Processes implemented in programming languages such as Python and shared on the public internet either do or do not have access to the data that allows them to be effective components of research workflows. And any recognition of the impact of ownership happens not inherently in the combination of hardware and software, but in the people who instantiate that combination. Accordingly, recognizing and working towards reconciliation of the tensions within the concept of ownership is an aspect of computational archaeology that requires sustained effort and critique.



The Case for an Affective Archaeology Sara Perry, University of York, Department of Archaeology

In recent years, the so-called 'affective turn' has manifested itself in different forms across the humanities and social sciences. Yet arguably owing to the variegations and frailties in affect theory itself, its applications to archaeology are still quite narrow. My concern with this predicament is not that we must necessarily embrace every new theoretical 'turn' that comes along (see critique by Lucas 2017), but that an affective approach to archaeology - grounded specifically in Margaret Wetherell's affective practices model (e.g., Wetherell et al. 2018) - is imperative for addressing the discipline's persistent methodological weaknesses. Herein archaeologists continue to rely on flawed procedures for gathering, interpreting and archiving the archaeological record which perpetuate and further concretise masculinist and colonialist biases and related systemic power imbalances (after Canning 2018). However, an affective practices approach, as I conceive of it, offers a contextual and dynamic model for doing, recording, publicising and archiving archaeology. I outline here the components of such an approach and the essential role that digital media have in its success. Currently these media are heavily implicated in the discipline's structural divides, yet they also offer means to break free in order to design more responsive and responsible archaeological practices.



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Critical Archaeology in the Digital Age

Archaeologists have made significant advances in the application of digital technologies in the last few decades. These projects have paved the way for an evolution of data collection, analysis, and publication. However, the epistemological and methodological impacts of digital technologies on the reconstruction of the past are only just beginning to be considered. As all archaeologists now make use of digital tools in some, if not most, aspects of their work, we have the responsibility to critically interact with these tools and their potential impact on the way we do archaeology.

This conference will facilitate a dialogue that addresses the concerns of moving to an increasingly digital field. As we transition beyond the experimental period of digital technologies in archaeology, it is incumbent upon those creating and using digital archaeological data to engage with the effects on archaeological practice and knowledge creation. Knowledge is created at every stage of archaeological practice: data are created during an excavation and during artifact analysis; the choice of what platform to publish data significantly impacts the availability and usability of knowledge; the way archaeology is presented to the public impacts the way the past is negotiated in everyday life. At present, significant attention has been paid to the productive aspect of digital data, especially with regards to digital recording in the field. These techniques have been used to supplement traditional recording practices, while also challenging some traditional aspects of archaeological practice. At the same time, the down-the-line impact of these data on publication, public outreach, and claims of ownership has only recently been considered. This conference will contend with the impact of digital technologies on these broader aspects of archaeological inquiry and data dissemination.

The conference will provide a space to consider how these tools are impacting our work as archaeologists and to critically discuss the ways to move forward in the discipline. This conference will bring together scholars working at different scales to implement digital tools, and whose research focuses on the impact of these tools on different aspects of archaeological practice.

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