Digital Archaeology Workshop Series (2024-2027)

Digital Impacts on Archaeological Fieldwork: Advantages and Limitations

Digital technologies are reshaping archaeology, transforming research, documentation, and the way knowledge is shared. As archaeologists increasingly integrate digital processes into their work, it's crucial to explore the broader implications. How do digital innovations impact documentation and interpretation? Have they advanced inclusivity, or created new inequalities? Are we fully addressing the ethical concerns tied to this transformation?

Join us for a four-year structured Workshop Series (Series Circular) aimed at exploring the intersection of digital technologies and archaeological practice. The series will cover practical applications, political and ethical considerations, and the evolving narratives of archaeological data. Through discussions on theory and practice, we aim to shed light on the challenges and opportunities of digital integration in the field.

The first workshop, titled **'Digital Impacts on Archaeological Fieldwork: Advantages and Limitations**,' will span over two days from December 4th to 5th, 2024 at the Norwegian Institute at Athens. This two-day event will explore the impact of digital technology on archaeological fieldwork, with a focus on the social contexts in which digital workflows are developed and applied. Presentations will delve into methodologies that study digital practices and ecosystems, offering fresh perspectives on how these tools shape the field. (Paper titles and Abstracts are available on the next page.)

The workshop will cover the following topics:

- Legacies of Fieldwork Conduct
- Socializing Advancements in Digital Methods
- Technical Support and Teamwork Considerations
- Shifts in Fieldwork Recording Foci
- Technological Analyses of Digital Fieldwork Practices

Please note: The workshop is closed to public attendance. However, it will feature an **evening open lecture (4/12, 7 p.m. EST)** by Prof. Emeritus Kostas Kotsakis (Department of History and Archaeology, AUTh).

The Series Organization Board:

Paschalis Zafeiriadis	Markos Katsianis	Nicoló Dell'Unto	Björn Nilsson	Søren Handberg
Norwegian Institute at Athens/University of Bergen	University of Patras	University of Oslo/University of Lund	University of Bergen	University of Oslo

Program

Wednesday, December 4

12:00 – 12:30: Registration / Introduction

12:30 – 12:50: Setting Up the Agenda: From Tools to Transformation (M. Katsianis and P. Zafeiriadis)

13:00 – 13:20: Fantasies and Fallacies of Going Digital at Palloures (V. Klinkenberg)

13:30 – 13:50: Gourimadi Archaeological Project Digital Recording Practices (D. Nenova, P. Zafeiriadis, and Z. Tankosic)

14:00- 14:15: Coffee Break

14:15 – 14:35: Deploying Mobile Digital Tools in Archaeological Field Documentation (P. Chrysafakoglou, K. Sgouropoulos, A. Sarris, and D. Urem-Kotsou)

14:45 – 15:05: Excavation Commons. Sharing Fieldwork Data in the Digital Age (D. Panagiotopoulos)

15:15 – 16:00: Discussion

19:00 – 20:00: Open Keynote Lecture / Title TBD (Kostas Kotsakis)

Thursday, December 5

09:15 – 09:35: What Digital Documentation Can and Cannot (Yet?) Do – The Case of Idai.Field (L. Steinmann, F. Riebschläger, S. Hohl, T. Kleinke, and N. Antunes)

09:45 – 10:05: 'Born FAIR' Recording for Reflexive and Heterarchical Field Praxis (H. Indgjerd and E. Uleberg)

10:15 – 10:35: In Dialogue with The Device. The Social Dimension of Digital Technology in Archaeological Practice (L. Opgenhaffen)

10:45 – 11:05: The Thinking Field: Ring-Fencing Creative Space in Digital Archaeological Practice (J. Taylor)

11:15 – 12:00: Discussion

* Each presentation will last 20 minutes and will be followed by a 5–10-minute Q&A session.

Abstracts

Setting Up the Agenda: From Tools to Transformation

Markos Katsianis (Assis. Professor, Dept. of History - Archaeology, University of Patras)

Paschalis Zafeiriadis (Researcher, The Norwegian Institute at Athens/University of Bergen)

Despite being early adopters of digital technology, archaeologists continue to debate its impact on their practice, indicating that the conversation is far from over. While recent emphasis has been placed on the transformative potential of digital tools — envisioning a complete digital mediation of archaeological processes — a persistent sense of incompleteness remains. This feeling is heightened by the uneven adoption of digital methods across the global archaeological community. Awareness for these issues was the incentive for this four-year workshop series, which aims to assess the influence of digital technologies on archaeological research — at what seems to be a turning-point in digital (r)evolution with the advent of AI — focusing on the theoretical, practical, and broader sociopolitical contexts in which digital workflows are developed and applied.

The central theme of the first workshop is the evolving nature of fieldwork recording. Established and emerging digital tools — such as CAD, GIS-based documentation, and 3D modeling — have reshaped the pace and structure of excavations. However, they have also raised concerns about changes in our interpretative engagement with the archaeological record. The recurring tension between technical efficiency and interpretative flexibility is closely linked to challenges in standardizing and transparently sharing diverse datasets for meaningful comparison. Additionally, technological advancements interact with social dynamics in the field, influencing how team roles and collaborative processes evolve within digitally mediated environments.

This contribution offers a brief review of digital fieldwork methods, highlighting the pace of change, the imaginaries, the successes, the failures, and any enduring constants. As we move along the flux caused by rapid technological advancements and their anticipated possibilities, we must ask: Is it reasonable to expect the digital transformation of archaeological fieldwork to reach completion? If so, how closely will it resemble the fieldwork practices as we currently understand them? By setting the agenda along these lines, we aim to connect digital innovations with the legacies of traditional fieldwork and bridge the technical and practical implications of implementing digital technology in the field with our equally ever-changing theoretical and ethical perspectives on archaeological knowledge making.

Fantasies and Fallacies of Going Digital at Palloures

Victor Klinkenberg (Postdoctoral Researcher, Department of History and Archaeology, University of Cyprus)

This paper reflects on the seemingly innocent assumptions made a decade ago during the design of a digital documentation system for the excavations at Palloures, Cyprus. The incentive behind establishing a 'modern' system was unquestioned: paperless was undeniably the future. We could finally eliminate those outdated, flammable, and inaccessible paper forms. A single database would solve all the problems we never knew we had.

After ten years of using and refining the system to meet our needs, we could present a glaring review of our recording system. Indeed, some aspects function wonderfully. Error tracking and find processing work seamlessly, and the insights gained from 3D recording have been invaluable, revealing details that would be difficult to capture without modern digital technology. However, rather than merely enhancing an existing system, going digital required the introduction of entirely new procedures, which have transformed research priorities, team dynamics, and our interaction with archaeological remains.

A significant drawback of these new fieldwork practices is the substantial time required for continuous recording, processing, backing up, and verifying digital data. The convenience of digitally drawing on georectified orthophotos, as opposed to conventional handmade plan drawings, demands increased effort from the digital team. This division of roles in documentation has led to a disconnect among fieldwork participants, especially students, who often perceive digital processing as an enigmatic, yet unproblematic, black box. Excavating ancient deposits now hinges on whether a feature is ready to be 3D modelled, and drawing the stones of a prehistoric wall has become a GIS-based paint-by-numbers exercise, seemingly devoid of archaeological interpretation. Consequently, there is a diminished sense of ownership and responsibility for documentation and interpretation.

After ten years of excavation and continuous adaptation of our system, this is an opportune moment for reflection and to address questions such as: what constitutes a balanced digital recording system? What is the impact of shifting recording priorities? What were the underappreciated benefits of analogue recording? And, naturally, what is the way forward?

Gourimadi Archaeological Project Digital Recording Practices

Denitsa Nenova (Affiliated Researcher, The Norwegian Institute at Athens)

Paschalis Zafeiriadis (Researcher, The Norwegian Institute at Athens/University of Bergen)

Zarko Tankosic (Project Manager, SapienCE, University of Bergen)

The prehistoric site of Gourimadi in southern Evia has been excavated over the past seven years using a combination of scientific methods and interoperable approaches. The site's complex stratigraphy and architectural composition necessitate the use of diverse tools and techniques to minimize information loss and enhance understanding of site-specific features. The excavation methodology, based on single-context excavation, allows for the excavation of sub-contextual units, which are later integrated within a single context during post-excavation processing. Accurate recording of these units is supported by a relational database that accommodates the live recording of metadata relevant to the spatial entities. Field recording is conducted using a total station, complemented by software enabling real-time metadata input related to spatial entities. Photogrammetric data collected via drones, iPads, and DSLR cameras further enrich the spatial and contextual understanding of past events. Georeferenced orthophotos are used to produce architectural drawings, while digital terrain models (DTMs) of single or multiple contexts aid in querying artifact locations and extents. Photographs and drawings of all recorded entities are linked to the database, with annotation potential.

Ongoing work includes the automation of media import and association using QR-coding, as well as live synchronization of fieldwork and post-processing data. A significant future step involves mapping the dataset to a formal ontological framework, enhancing interoperability and sustainability. This nearly paperless system improves time efficiency and ensures the production of a widely queryable and reusable dataset.

In Dialogue with The Device. The Social Dimension of Digital Technology in Archaeological Practice

Loes Opgenhaffen (Visiting Postdoc Researcher, University of York; Research Associate, University of Amsterdam; Lecturer, Saxion, University of Applied Sciences)

This workshop explores digital archaeological practices with the aim to assess the implications of adopting digital innovations and how this impacts knowledge creation and its subsequent transfer. In order to assess the state of the art of a particular archaeological practice and its supposed transformation caused by the introduction of a new technology, the multitude and disparate ways of doing archaeology digitally should be recorded in similar fashion, which would increase comparability between technical traditions. The Tradition in Transition-methodology allows to do so, as it has been designed to trace, record and assess archaeological practice. The methodology combines the chaîne opératoire and reflexivity

approaches with praxis theory, in order to deconstruct or break down the chain of creation, including the tools, gestures and techniques. Central in the methodology are concepts as choice and learning, indicating the inherent social nature of technological development and the transmission of innovations. The applicability of this methodology will be demonstrated in this paper, in which the technical tradition of archaeological visualization in (post-) excavation projects shall be analysed and assessed to what extent this has changed.

Special attention goes out to understanding the multiple actants involved when documenting 'traditionally' and digitally at the excavation of the ancient town of Satricum (Italy), and how the actants interact with each other, the devices and tools, and the archaeological record. Interaction with digital devices is further explored while creating data in the lab (in previous projects and in Satricum during find processing). What stage in the practice has been replaced by digital equivalents, and which stages are completely new ways of visually recording archaeological material? And who is operating the machine? It seems that visualization practice in the field and lab has added complexity to the technical execution, and shifted the social configuration of an excavation team, in which, depending on the location (field or lab), the visualizer has become isolated from the social dynamics of fieldwork, while on the other hand more involved in post-excavation research. Practice captured in comprehensive charts produced along the Tradition in Tradition methodology, will illustrate these processes.

Deploying Mobile Digital Tools in Archaeological Field Documentation

Periklis Chrysafakoglou (Postgraduate Researcher, Department of History and Ethnology, Democritus University of Thrace)

Kyriakos Sgouropoulos (Professor, Department of History and Ethnology, Democritus University of Thrace)

Apostolos Sarris (Professor, Department of History and Archaeology, University of Cyprus)

Dushanka-Christina Urem Kotsou (Professor, Department of History and Ethnology, Democritus University of Thrace)

This presentation explores the use of mobile digital tools in archaeological field documentation, focusing on the management of geophysical, excavation, and surface survey data. Specifically, it examines the ODK Collect/ODK framework and QField/QGIS for surface surveys, as well as iDig and QField for excavation documentation. The comparison highlights these tools' effectiveness in recording, functionality, user interface, interoperability, and ultimately in managing and analyzing data.

For surface surveys, ODK Collect/ODK framework and QField/QGIS are assessed in terms of their ability to handle base maps, speed and simplicity of recording, metadata models, and adaptability during surveys. The analysis includes their capabilities for real-time monitoring and immediate data analysis.

In the excavation research process, the focus shifts to comparing iDig and QField, particularly regarding the use of orthophotos as digital backgrounds, the data model and the adaptability. The tools' real-time monitoring and direct analysis capabilities are also evaluated. Additionally, the comparison examines the interaction and collaboration with surveying instruments (total station, RTK) and the potential of their data for creating 3D models.

In contrast, most of the geophysical prospection measurements are going through batch processing, avoiding the real-time treatment as they need more complicated and multiple processing stages in order to be compatible with the results of the surface survey and for guiding the excavation approaches.

The parallel application of the above methodologies is discussed in detail, demonstrating their combined effectiveness in archaeological research.

What Digital Documentation Can and Cannot (Yet?) Do – The Case of idai.Field

Lisa Steinmann (Head of Software Technology, Archaeoinformatics Department, German Archaeological Institute)

Fabian Riebschläger (Head of Research Data Management, German Archaeological Institute)

Simon Hohl (Developer, German Archaeological Institute)

Thomas Kleinke (Developer, Head Office of the GBV Common Library Network, (VZG) German Archaeological Institute)

Nicolas Antunes (Developer, German Archaeological Institute)

In the last decade(s), archaeologists have increasingly moved from documenting their findings on paper to utilizing databases and other digital solutions. Often, analogue methods have merely been transferred into their digital equivalents without implementing ‘born digital’ methods and workflows. Still, this shift and its potential for computational data analysis together with the promises of Linked Open Data have led to a tentative transition from purely qualitative data collection in archaeological field work towards some more quantitative approaches. Currently, we see a curious dichotomy of databases that may well be classified as traditional notebooks alongside sometimes ill-conceived efforts of standardization represented by overly particularized valuelists or needlessly subjective classifications.

The benefits of standardization seem obvious: different datasets are linked through shared valuelists, interoperability leads to innovative research questions, structured data enables enhanced data analysis, and the possibilities for publications are endless. However, these lofty promises may turn out to be an illusion: most research projects are not truly comparable. Archaeologists work on heterogeneous genres of objects, in diverse locations, spanning wide chronological and geographical ranges. This diversity has historically led to the development

of varied methodologies and terminologies, greatly complicating current efforts to standardize and share data.

Knowledge of these methods and their associated limitations is indispensable for an understanding of the interpretation of archaeological field – or any – research. At its base, it is an issue as old as our discipline, that this is often not part of archaeological documentation, be it digital or otherwise. But without precise methodological specifications and seemingly unachievable uniformity in field work, how could we ever compare our data?

We would like to use the data recording ecosystem iDAI.field developed by the German Archaeological Institute (DAI) as a case study to discuss these topics. iDAI.field offers a flexible data model that allows the very heterogeneous archaeological research at the DAI to be mapped. At the same time, a minimal core data model is intended to ensure a certain degree of comparability. In practice, however, the flexible data model is often abused to a degree where the desired comparability cannot be ensured anymore. In addition, any native implementation for documenting the methods used is lacking. We hope the discussions during this workshop can help us find truly digital approaches to facilitate good practice and easy documentation in a form that projects will actually be willing to utilize.

'Born FAIR' Recording for Reflexive and Heterarchical Field Praxis

Hallvard Indgjerd (Senior Engineer - Digital Documentation, Museum of Cultural History, University of Oslo)

Espen Uleberg (Administrative Manager - Digital Documentation, Museum of Cultural History, University of Oslo)

Born Digital field recording is by now a thoroughly established standard, and over the past couple of decades a broad range of digital recording tools and strategies have been implemented in field archaeology. With the retrospect of these experiences the community is well positioned to discuss how field work has moved (or will move) beyond using digital platforms as technological skeuomorphs of paper forms and dumpy-levels.

The authors look at a 'Born FAIR' approach to data recording as a framework to highlight good practices in systems development. FAIR data have obvious advantages for sharing and archiving of research data, but the principles are also important internally in project data flows. The digital revolution created new, and in part yet untapped, possibilities for interlinking data and deconstructing information silos. This ought to have wide ranging effects on field work methodologies and change the structures of knowledge production.

Excavation Commons. Sharing Fieldwork Data in the Digital Age

Diamantis Panagiotopoulos (Professor, Institute of Classical Archaeology and Byzantine Archaeology, University of Heidelberg)

While currently archaeology evolves at a rapid pace by reinventing itself as a discipline for the study of cultural heritage and by expanding its methods, fields of interests, and aims, the way in which archaeologists are treating excavation data still defies any effort of conceptual rethinking, thus clinging to standards of scientific practice that have become long obsolete. This is quite paradoxical, since new digital tools and – more important still – new social and scientific priorities urge us to overcome the traditional divide between published and unpublished data and to enhance the character of modern archaeology as a collaborative discipline. The present paper seeks to problematize these current challenges by addressing three major aspects of modern excavation projects: a) archaeological ethics of transparency, b) theoretical discussions on archaeological knowledge production and c) purely practical issues of archaeological data management systems. The main objective of this approach will be to demonstrate not only the pressing necessity but also the feasibility of a ‘transparent’ excavation and furthermore to discuss some digital concepts and tools that can transform archaeological fieldwork to a genuine field of cultural commons.

The Thinking Field: Ring-Fencing Creative Space in Digital Archaeological Practice

James Taylor (Lecturer in Archaeology and Digital Methods, Department of Archaeology University of York)

Digital practices have become integral to archaeological fieldwork, yet they often replicate traditional methods without fully leveraging the transformative potential of digital technologies. This paper argues that as best practices in digital archaeology evolve—driven by disciplinary research agendas, infrastructure development, and data standards—we must move beyond mere emulation of analog approaches. By socializing technology and embracing innovative digital tools, we can fundamentally transform our workflows. Crucially, as we do so, we must ringfence space for creative and playful interpretation within these workflows, ensuring they are protected from exploitation in the name of economic efficiency. Prioritizing this "space to think" is essential for fostering deeper and more meaningful insights into the past and advancing the value of digital methods upon the discipline.