

## Data and Technology Politics in Archaeology

Digital technologies are becoming increasingly integral to archaeology, transforming not only research subjects but also methodological and theoretical frameworks, documentation practices, fieldwork, and post-excavation workflows. Today, they underpin much of archaeologists' day-to-day work, shaping how archaeological knowledge is produced and disseminated. Substantial efforts continue to advance methods, tools, and infrastructures towards the complete digitalization of archaeological practice.

Yet several questions persist, while new ones continue to emerge. What are the broader implications of adopting digital approaches? To what extent have we harnessed their full potential? How do these innovations affect documentation and interpretation? Despite intentions to make archaeology more inclusive and equitable, have digital technologies instead reinforced existing inequalities or created new ones? Are the socio-technical aspects driving digital transformation adequately discussed, and how are we addressing the ethical concerns that arise from these practices?

To foster critical exploration of the dynamic interplay between digital technologies and archaeological practice and theory, we have launched a four-year structured workshop series titled [\*Exploring the Layers of Digital Archaeological Practice\*](#). This series examines the impact of digital tools in archaeology, from practical implementations to political and ethical considerations, as well as the dynamics shaping archaeological narratives and the lifecycle of data use. Its goal is to reflexively assess digital integration, highlighting both the challenges and opportunities it presents, and to consider the theoretical implications of the convergence between archaeology and technology. Through this, the series aims to contribute to ongoing discourses surrounding methodological innovations and paradigm shifts within the field.

With the proceedings of the [first workshop](#) in preparation for publication, we are pleased to announce the second event in the series, ***Data and Technology Politics in Archaeology***, which will take place on [December 3–4, 2025](#), at the [Norwegian Institute at Athens](#) in a hybrid format. This two-day workshop will examine the socio-political dimensions of data and digital technologies in archaeological practice, critically addressing their influence on research priorities, interpretive frameworks, and professional structures. (Paper titles and abstracts are provided on the following pages.



## Digital Archaeology Workshop Series (2024-2027)

While digital tools, and more recently AI-driven methodologies, are significantly expanding the scope of archaeological inquiry, they also raise complex ethical, epistemological, and institutional challenges. These include questions concerning the production, processing, and interpretation of data, as well as the extent to which technological infrastructures and access to digital tools reinforce or disrupt existing power asymmetries within the discipline. Particular attention will be given to how digital infrastructures and automation mediate access to archaeological knowledge, shape labor conditions, and intersect with broader discourses on decolonization, equity, and sustainability within and beyond the field.

The workshop will cover a range of topics, including, but not limited to:

- o Ethical and Practical Concerns with Digital Tools
- o Digital and Algorithmic Power Dynamics in Archaeological Research
- o Postcolonial Approaches in the Digital Realm
- o Standardization Policies and Agendas
- o Technological Bias, Labor Conditions, and Automation in Archaeology

By addressing these themes, the workshop aims to deepen critical engagement with the politics of digital archaeology, interrogate the frameworks shaping the discipline's digital transformation, and foster dialogue on more equitable and reflexive digital futures.

\* The workshop is **closed to public attendance**. However, it will include an evening public lecture on December 3 at 7:00 p.m. EET, delivered by Dr. **Jeremy Huggett** (Honorary Senior Research Fellow in Archaeology, School of Humanities, University of Glasgow).

### *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 Lund	University of Bergen	University of Oslo



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### Program

#### Wednesday, December 3

11:30 – 12:00: Registration

12:00 – 12:20: Introduction (P. Zafeiriadis and M. Katsianis)

12:30 – 12:50: Tracing the Hidden Lineages of the "Digital" in Archaeology (D. Catapoti and G. Vavouranakis)

13:00 – 13:20: Data Management is People Management: On Abstraction of Data and Labor in Archaeological Projects (Z. Batist)

13:30 – 13:50: Promoting Accessibility with Open Source and FAIR Data in Fieldwork (H. Indgjerd and E. Uleberg)

14:00- 14:15: Coffee Break

14:15 – 14:35: Synthetic Pasts: Critical Perspectives on AI for the Archives, Libraries, and Museum Sector (A. Foka)

14:45 – 15:05: To Automate or Not to Automate: Is That the Question? (T.Kalaycı)

15:15 – 16:00: Discussion

19:00 – 20:00: Open Keynote Lecture: Gone Digital: How has Digitalization Changed Archaeology? (J. Huggett)

#### Thursday, December 4

10:00 – 10:20: Cultural Heritage Management Under Agricultural Pressure in Rogaland County, Norway (T.E.G. Bell)

10:30 – 10:50: Digital Data Collection, Analysis, and Publication in Indigenous Contexts (J. Emmitt and R. Phillipps)

11:00 – 11:20: Digital Archaeological Heritage and Its Material Consequences: Revisiting the Case of the Syrian Arch Copy with the Help of Contemporary Art (M. Stobiecka)

11:30 – 12:30: Discussion

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

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### **Abstracts**

#### ***Tracing the Hidden Lineages of the "Digital" in Archaeology***

[Despoina Catapoti](#) (Assis. Professor, Department of Cultural Technology and Communication, University of the Aegean)

[Giorgos Vavouranakis](#) (Professor, Department of History and Archaeology, National and Kapodistrian University of Athens)

In the 1990s, archaeology's long-standing empirical foundation—where data was treated as objective knowledge and as direct access to the past—came under critical scrutiny. Emerging archaeological theory emphasized that data is inherently interpretive, challenging the discipline's core epistemological assumptions and creating a growing divide between theoretical inquiry and empirical practice. Two distinct trajectories emerged: on one hand, theory dominated archaeological discourse into the early 21st century, effectively deconstructing established narratives and undermining any attempt to construct comprehensive syntheses of the past. However, this approach reached an impasse. Its fragmented, standpoint-driven approaches did not afford new overarching research questions. On the other hand, empirical work continued in relative isolation, increasingly detached from theoretical reflection. Many practitioners in this strand dismissed theory as irrelevant, embracing data collection as archaeology's primary purpose and source of legitimacy. This shift represented not only a methodological turn but also a redefinition of the discipline's epistemological identity.

It is within this fractured landscape that the digital emerged. In field and lab contexts, digital tools reinforced the empirical emphasis, streamlining data processing and accelerating analytical workflows. Yet beyond the confines of academic archaeology, digital technologies, especially in formal and informal heritage management, have enabled new modes of engagement that draw upon theoretical insights. They fostered pluralism, subjectivity, and a multiplicity of narratives often extending beyond those produced by archaeologists. This dual role of the digital has led to a striking division of labor: archaeologists remain the custodians of empirical data, while the task of interpretation and public storytelling is increasingly shared with a broader set of stakeholders. As a result, archaeologists today find their traditional authority reshaped, and in some cases displaced, by digital systems capable of rapid analysis, and by a public sphere eager to participate in shaping the meanings of the past.

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***Data Management is People Management: On Abstraction of Data and Labor in Archaeological Projects***

Zachary Batist (Postdoctoral Researcher, Department of Epidemiology, Biostatistics and Occupational Health, School of Public and Global Health, McGill University)

Archaeological research is inherently collaborative, in that it involves many people coming together to examine a material assemblage of mutual interest by implementing a variety of tools and methods in sequence and in tandem. Independent projects establish organizational structures and information systems to help coordinate labor and pool information derived from it into communal data streams, which can then be applied toward the production and publication of analytical findings. However, these information commons are not egalitarian; project communities establish practical expectations for how people in different positions should engage with archaeological information based on their roles. Contributing to and extracting from the commons is therefore scaffolded by diverse yet converging commitments to a collective enterprise, which are instilled through participation in a community of practice.

Through an abductive qualitative data analysis based on recorded observations, interviews, and documents collected from three cases, this paper highlights how digital systems designed to direct the flow of information do so via the coordination of labor and the strategic arrangement of human and object agency. Specifically, I highlight how the information systems that archaeologists rely on to generate records, internal reports, published papers and integrated datasets reify, reinforce, and sometimes challenge entrenched power structures and divisions of labor. For instance, I observe that each level of documentation effectively communicates local understanding to a broader collective by rendering prior work as a series of formal processes performed by interchangeable agents; recognition of prior creative agency therefore diminishes as narratives about the objects of interest are further developed. At the same time, latent awareness of the practical circumstances, decisions and actions that contributed to records' creation enable them to be recontextualized, as needed. However, this ability to recontextualize data erodes at projects' boundaries, where familiarity with creative circumstances fades.

By characterizing the documentary media that archaeologists use to capture, organize and share knowledge as tools that facilitate controlled communication and govern how certain people may contribute to and access collectively maintained knowledge, this paper re-casts the formation of data commons as a social rather than a technical enterprise. In highlighting some social and relational aspects of data work that are often overlooked when developing local and global research infrastructures, the paper puts forward a theoretical framework that explains the awkwardness of using other people's data, and the underwhelming results of initiatives to integrate data in contexts of reuse.

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### ***Promoting Accessibility with Open Source and FAIR Data in Fieldwork***

[Hallvard Indgjerd](#) (Senior Engineer - Digital Documentation, Department of Collection Management, Museum of Cultural History, University of Oslo)

[Espen Uleberg](#) (Administrative Manager - Digital Documentation, Department of Collection Management, Museum of Cultural History, University of Oslo)

Contrary to the concentration of power and platform availability in the digital realm at large, the proliferation of Free/Open Source Software (F/OSS) and open hardware initiatives means digital technology is more accessible to archaeologists than ever. 'Born Digital' field recording has become a standard practice, with diverse digital recording tools and strategies integrated into archaeological fieldwork. With the democratization of code and hardware, the barrier to utilizing these tools lies in understanding and know-how, rather than economic constraints. While LLM chatbots can bridge knowledge gaps, they cannot substitute for the foundational comprehension of digital platforms.

In tandem with the development of Open Source ideals, the importance of open, accessible, and ethical data has become a focus in the academic community. These values are promoted through the FAIR and CARE principles and the Linked Open Data project. However, the implementation of standards risks restricting and limiting archaeological praxis, and the prevalence of automated data scraping for development of language models raises new concerns around open access to research data.

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 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. As such, the conscious implementation of FAIR and Linked Open Data can serve as a gateway to tackle the potential conflict between standardization and flexibility.

### ***Synthetic Pasts: Critical Perspectives on AI for the Archives, Libraries, and Museum Sector***

[Anna Foka](#) (Professor, Department for Archives, Museums and Libraries (ABM); Director, Centre for Digital Humanities and Social Sciences, Uppsala University)

Artificial Intelligence (AI) is expanding beyond the realm of computer science, significantly impacting various industries and facets of society. AI and Machine Learning are revolutionizing the fields of computer science and engineering, making professionals in these areas highly



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sought after. The future of AI is dynamic, already profoundly influencing education, professions, and society. However, there is a growing awareness of the dangers of over-relying on AI for every challenge. In this context, I advocate for embracing AI with a societal and humanistic sensibility. My focus is on the Archives, Libraries, and Museums (ALM) sector. Traditionally, professional decisions in ALM have been made by educated humans using their best judgment. However, machines are becoming increasingly influential in performing these tasks. The quality of machine decision-making is closely tied to the quality of the data and the parameters selected for classification. Using cultural heritage collections as an example, I discuss how AI offers new opportunities for access and engagement but also risks perpetuating historical biases embedded in these collections. I emphasize the importance of interdisciplinary collaboration among cultural heritage professionals, data scientists, and social scientists to identify and mitigate bias. We need to think together with machines to adopt a holistic approach to bias mitigation, integrating both technical and non-technical solutions to ensure that AI technologies contribute to a more inclusive society. I conclude with recommendations for future education, research, and practice, highlighting the need for ongoing monitoring and interdisciplinary collaboration to address the complexities of bias in AI applications within the cultural and creative industries, as well as in the training of professionals in the ALM.

### ***To Automate or Not to Automate: Is That the Question?***

[Tuna Kalayci](#) (Assis. Professor, Department of Archaeological Sciences, Leiden University)

Contemporary archaeological practice has increasingly incorporated various forms of software automation. These include — but are not limited to — remote sensing workflows for site identification, machine learning tools for object documentation, and computational methods for pattern recognition and prediction. The current surge in published papers and conference presentations testifies to a growing push toward algorithm-assisted archaeology. However, a new form of automation is slowly but persistently setting the stage for a different paradigm: embodied automation. Today, it is becoming genuinely conceivable to augment — or even replace — some of archaeology's "repetitive" tasks with automated machines.

In this talk, I explore the intersections of philosophy and robotic technology within the context of archaeological practice. The primary aim is to examine the conditions of repetitive archaeological tasks and the extent to which these tasks can be detached from bodily performances. To unpack this issue, I treat the robot as a socio-technical object and compare it with on-body computation. Tacking between the embodied and the disembodied, I explore the agencies that may contribute to or hinder the production of archaeological knowledge.

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### ***Gone Digital: How has Digitalization Changed Archaeology?***

[Jeremy Huggett](#) (Honorary Senior Research Fellow in Archaeology, School of Humanities, University of Glasgow)

It is increasingly accepted that archaeology is now digital; archaeology has seen its digital turn and has become ever more reliant on digital data, devices, and infrastructures to support its practice. In many respects, archaeology has itself become digital - from its initial capture, its recording, its processing and analysis, its presentation and publication, its modelling and simulation, and ultimately its perpetuation through digital archives. This transition from a fundamentally analog to digital practice has not been as rapid as is sometimes believed, taking place over the last 75 years though the pace of change has increased as digital tools and facilities have become established. In consequence, archaeology is increasingly mediated and augmented by a growing variety of digital technologies embedded in day-to-day methods and research. These developments have not gone unobserved, but there has been relatively little critical perspective on the nature and extent of the digital changes experienced by both the discipline of archaeology itself and also by archaeologists themselves. These changes raise profound social and political questions for archaeology which are only beginning to be addressed as the digital takes hold. What has changed through digitalization? How does digital mediation influence our practice and our engagement with the past? As the digital increasingly substitutes for the material, how do perceptions of archaeology and its evidence change? How is archaeological thought and understanding affected by a growing reliance on the digital? And what are the implications for the practice of archaeology now and in the future?

### ***Cultural Heritage Management Under Agricultural Pressure in Rogaland County, Norway***

[Theo Eli Gil Bell](#) (Project Manager and Researcher, Cultural Heritage Department, Archaeological Museum, University of Stavanger)

Askeladden, Norway's national register of protected cultural heritage managed by the Directorate for Cultural Heritage (*Riksantikvaren*), holds authoritative spatial records for hundreds of thousands of archaeological heritage sites. Building on this resource, the paper presents a large-scale spatial analysis of archaeological sites in Rogaland County, Norway.

Since sites used in this analysis were first recorded as visible on the surface, changes on their superficial appearance over time can be detected using an ArcGIS Pro spatial analysis workflow combined with comparative aerial photography and LiDAR based remote sensing. The method integrates high-resolution elevation models, aerial imagery with land-use classification data to quantify each site's spatial relationship to intensively cultivated land. Through this process, the study identifies zones of potential physical impact, such as



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mechanical disturbance and landscape alteration—factors increasingly relevant in cultural heritage management under agricultural pressure.

As a result, the sites can be categorized based on risk potential, enabling scalable monitoring across large geographic regions. Sites defined in the higher-risk categories can be further analyzed by cross-referencing multiple LiDAR datasets acquired at different times, allowing for a more defined temporal comparison and the detection of topographic changes.

In addition to outlining the technical process, the paper reflects on the broader implications of integrating remote sensing and automation into heritage workflows. It raises questions about how computational tools mediate both interpretive and administrative decisions, contributing to the ongoing evaluation of digital infrastructures in archaeological heritage policy.

### ***Digital Data Collection, Analysis, and Publication in Indigenous Contexts***

[Josh Emmitt](#) (Tāmaki Paenga Hira Auckland War Memorial Museum)

[Rebecca Phillipps](#) (Assoc. Professor, Department of Anthropology, Waipapa Taumata Rau  
The University of Auckland)

‘Best practice’ in digital data curation is often considered the full publication of data in all its forms, so that it can be accessed, critiqued, and reused—for example as outlined by the well-known FAIR principles. In principle, this is an amiable goal, but in practice, it has some issues, particularly when concerning data from indigenous contexts. The Global Indigenous Data Alliance has developed complementary guidelines for the collection, use, and curation of indigenous data (CARE principles). In addition, there is a growing literature on indigenous data sovereignty. However, there seems to be less discussion in archaeology regarding the tensions that inevitably arise between these different sets of principles. Considering these issues is particularly important in colonial and post-colonial settings like Aotearoa New Zealand, where there is currently little centralized guidance on archaeological digital data management.

To reach such agreements around data collection and publication in Aotearoa, it takes consultation with indigenous descendant groups to ensure mutual understanding, including the full implications of publishing data as open access. Relationships with indigenous descendant groups are, in many cases, developed and fostered over a period of years and are essential to all parts of the research process. This is often incongruent with contemporary ‘fast science’ and funding cycles, which can relegate indigenous consultation to another field in an application or a check box.

In our experience, there is no ‘one-size-fits-all’ model in regard to consultation. In this paper, we discuss several case studies from our own work around the collection, analysis, and use

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of indigenous data from archaeological investigations in Aotearoa New Zealand. In particular, we discuss the use of digital data from the Ahuahu Great Mercury Island Archaeological Project over a period of 13 years and the relationship that has developed with the descendant Māori tribe Ngati Hei ki Wharekaho. We consider the importance of research codesign, research partnerships, and role of developing sustained relationships of trust as decolonizing research practice.

### ***Digital Archaeological Heritage and Its Material Consequences: Revisiting the Case of the Syrian Arch Copy with the Help of Contemporary Art***

[Monika Stobiecka](#) (Assis. Professor, Faculty of Artes Liberales, University of Warsaw)

This year marks the 10th anniversary of the destruction of the Syrian Arch of Triumph in Palmyra. In the face of multiple conflicts around the world, it is the best time to revisit the case of the Syrian Arch's copy. The copy was created in 2016 by the Institute of Digital Archaeology. A reduced-scale and not perfectly accurate replica was showcased in several locations of Global North between 2016 and 2019. During those presentations, the replica was advertised as an artwork standing for solidarity, unity, and as a fruitful marriage of tradition and high technology. At the same time, the Western press described it through military metaphors, claiming, for instance, that technology serves as a weapon to fight heritage destruction. On top of this, the imperfect copy never traveled to Syria, calling into question the political declarations articulated during various showcases and in multiple techno-enthusiastic press releases.

My talk will address the ethical aspects of digital heritage while focusing on the weaponized discourse surrounding the Syrian Arch copy. The story of the Syrian Arch and its digital copy inspires questions related to heritage data collection and future reconstructions. How can digital heritage be used ethically? What are the material consequences of digital heritage? What future lies ahead for digitally created replicas? During my talk, I will seek answers to these questions in related contemporary art projects, in particular in Abbas Akhavan's "*Curtain Call, Variations on a Folly*" (2021).