

# Shaping Education and Transforming Practices

Nicolò Dell'Unto 

In recent years the investment in digital research infrastructures has been exponential, bringing various institutes and research centres to engage with massive digitization processes and quickly establishing digital archives and repositories for making these data available. This trend gained momentum after the pandemic, and the results of this accelerated pace are clearly visible in the significant amount of web infrastructures available worldwide. Jeremy Huggett's engaging keynote centres on the unique and delicate role of these infrastructures in present and future archaeological practice. It emphasizes the immediate and crucial need to initiate a critical discourse on the underlying factors that determine the success or failure of such technological frameworks. The discussion is timely and serves as a warning to researchers and institutions involved in building or using digital infrastructures. It encourages them to look beyond the technical aspects, and examines the political, cultural and social significance of these infrastructures within the wider society.

Importantly, the keynote paper stresses that digital infrastructures should be understood as complex socio-technical frameworks involving different interrelated actors. My impression is that, so far, the limited consideration of the social aspects guiding the development and diffusion of these digital infrastructures has contributed to hindering their diffusion

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Department of Archaeology and Ancient History, Lund University  
nicolo.dellunto@ark.lu.se

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within a wider community of practitioners. Jeremy Huggett's contribution references a recent paper by Hacıgüzeller, Taylor and Perry (2021) and highlights how this opens up an important discussion about the constraints inherent in today's digital infrastructures and structured data when it comes to representing data.

In my view, an effective way to address the challenges of data representation requires a comprehensive approach that includes rethinking recording methods as well as the social dynamics that characterize any investigation. This process requires great focus and should be guided by experimentation that incorporates a wider range of heritage practitioners.

Encouragingly, the very same authors of the article are among the promoters of a recently funded project, TETRARCHs (Telling Stories with Archaeological Data), supported by the European Union's Horizon 2020 research and innovation programme, which aims to explore different methods of collecting archaeological data to support different forms of storytelling. The project aims to reach out to different audiences and establish innovative workflows for the collection and management of archaeological and cultural heritage data (<https://www.tetrarchs.org/index.php/about/>).

Another interesting initiative that takes a broader view of digital infrastructure is the Potter's Wheel Tracing Project. This collaborative research effort focuses on bringing together specialised expertise to address the challenge of tracing the diffusion of technology across different communities in the Bronze Age Aegean. The data generated by the project are archived and distributed through a digital framework, the TPW Knowledge Hub (Hilditch et al. 2021). This framework includes not only the data itself but also videos demonstrating the data generation process. This set-up allows users to not only revisit or reuse the stored information but also to gain insight (directly from the creators of the records) into how the data was originally generated. This approach encourages reuse and data reproducibility involving the community of users at a deeper level.

Examples such as these illustrate an encouraging trend in which researchers are increasingly recognizing digital infrastructures as central components of future research frameworks and as focal points for their analysis, not just as providers of data. Such thinking and strategies have the potential to transform digital systems into something other than skeuomorphic representations of traditional archives.

While there is still much to be done, the emergence of these positive approaches represents a notable shift in perspective. Their trajectories, driven by a genuine engagement with existing digital systems, suggest that a transformative journey is underway.

## Empowering archaeology education in the digital age

An essential (and rather underestimated) issue to consider in this ongoing debate is how we facilitate new practices and who should be responsible for doing so.

When I was a student at university, visits to archives were a fundamental part of my education. We were trained to retrieve and manage data and learned how to manage and check the information we found. Navigating an archive was a key experience in becoming an archaeologist. The archive was a place to learn best-practices in documentation, re-use and (most importantly) gain a clear and deep understanding of how to organize our records. Of course, these infrastructures were much less adaptable in terms of the variety of information they could provide, and during their establishment and development our society did not experience so many technological changes (at least not like today). And so, just thinking about this experience as an archaeology teacher, I am wondering if we are adequately equipping our students to effectively use the digital archives that are available today. Are we including specific training modules in our courses to develop critical skills in this area? Are we adequately preparing our students for the digital age? And, are we adapting our pedagogical approach to the evolving digital landscape?

This is certainly not an easy task, especially because most of us do not possess direct experience in digital resources. Understanding the process of engagement with digital infrastructure is crucial to understanding its true capabilities and to adopting a critical developmental approach. The construction of an infrastructure requires a thorough consideration of its practical use and its impact on scholarly exchange. Recognizing instances where researchers organically shift from ongoing tasks to using the infrastructure, and learning to recognize when they find their interactions satisfactory before moving on, holds significance. Unravelling these dynamics can provide a comprehensive view of the collective impact of these infrastructures and their role within the broader archaeological process. Tracing the design and testing of these new blended practices — combining digital and physical elements for specific tasks — can provide valuable insights into the real affordances of digital archives and, in particular, the ways in which they affect our practice and challenge relationships and hierarchies.

Together with my colleagues at Lund University and the National Research Council of Italy-CNR, I have been experiencing this process within the framework activities of the Dynamic Collections project, a (small) 3D web infrastructure designed to support higher education and research in archaeology (Ekengren et al. 2021). The ongoing development

of the platform is primarily driven by its use by both teachers and students; rather than focusing solely on the technological development of the platform, one of the main challenges so far has been to identify and establish routines that encourage the use of data in a way that supports critical engagement and active participation within the learning process.

On a larger scale, a similar phenomenon can be observed with Swedigarch, the Swedish National Infrastructure for Digital Archaeology (<https://swedigarch.se/>). This relatively new infrastructure is supported by the Swedish National Research Council (*Vetenskapsrådet*) and includes several Swedish universities and cultural heritage institutions working in the field of digital archaeology. Among its various objectives, Swedigarch has the task of formulating and implementing national strategies for the integration and dissemination of the wide range of digital data and information produced by and used in archaeology. Such implementation has a significant impact on the cultural and social aspects of how archaeology is (or will be) conducted in the future, and for this reason, the involvement of various stakeholders is an essential part of the process.

As an active member of Swedigarch I see the key challenge as creating a system in which databases tailored to different scholarly communities can work together effectively. The aim is to establish practices that help users to integrate different perspectives and methods into their work.

While this process may initially appear risky, as it may lead to the inadvertent exclusion of small but crucial elements of particular practices, it also provides scholars with the means to develop methodologies that can be applied to large datasets. In order to mitigate the potential loss of valuable information, a significant focus on the socio-technological aspects of this development process is imperative.

In general terms, this transition requires careful consideration, with a focus on developing critical skills and adapting pedagogical approaches. Understanding how researchers can and may engage with digital infrastructures is key to understanding how these will influence future practice.

## References

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