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Destroying the Tower of Babel?

On the Digital Infrastructuring of Archaeology

Bodil Petersson

After several years of working in digital aspects of archaeology, I am fascinated by the unwavering belief in, and efforts to construct an overarching national, European, even global system for the digital ordering of archaeological data. It is a fully understandable desire to build such a system, but there is also a sense in which it might be seen as striving to build the Tower of Babel. Therefore, it was a personal relief to read Jeremy Huggett's text, which deconstructs this belief by scrutinizing the fundaments of the idea of archaeological infrastructures.

Huggett's deconstruction was not undertaken from an extremely pessimistic perspective, but is instead a sober discussion on the present system and situation, and the related problems, from a position of experience; Huggett has been part of the development of one of the more long-lived archaeological infrastructures in our part of the world, the Archaeology Data Service based in the UK and established in 1996. On its website ADS is described as 'The digital repository for archaeology and heritage, supporting access, innovation, and research' (ADS website). Huggett has also been observing, deeply engaging in and debating archaeology and the digital for many years.

On several occasions I have experienced that digital infrastructures in general, and archaeological digital infrastructures in particular, have some

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similarities with the ambition to create a common language for all archaeologists around the globe. For this purpose, a 'Tower of Babel', a common archaeological infrastructure (or several), is constructed for this specific group of users, and for other possible users as well.

Recently (in 2023), I took part in a PhD defense at Lund University in Sweden where archaeologist Paola Derudas defended her work *Documenting, Interpreting, Publishing, and Reusing – Linking archaeological reports and excavation archives in the virtual space* (2023). The work circles around the possibilities for describing and categorizing archaeological documentation. It moves ahead towards an extensive and ambitious digital 3D documentation and storage infrastructure, ultimately adapted for target users within archaeological documentation, research and communication. This digital 3D infrastructure is aimed at different groups in society who ultimately will be the possible users of the archaeological data. A related intention is also the deeper reflection, reuse and reinterpretation of the archaeological data.

What struck me most about the ambition in Derudas' impressive PhD work, and several other digital documentation projects, is a particular endeavour that many archaeologists embrace today: the wish to create the ultimate digital tool, often an infrastructure. The tool makes it possible to achieve an overview of large quantities of archaeological data, and to share it digitally, and thereby make it readily accessible to the rest of the world.

In general, the target groups that are supposed to use and reuse/reconsider the archaeological data entered into these infrastructures are not very well defined, and this seems also to be the case with the infrastructures that are discussed by Huggett. But the target users are still the argument for why these infrastructures are allowed to consume resources. And, in cases related to the technological systems that we believe in, we seem to accept astonishingly high costs over very long periods of time. There seems to be an endless and unbroken belief that new, constantly better technological solutions are always waiting for us around the next corner.

Huggett observes that there is a fascinatingly weak link between the belief in technical solutions such as systems for data documentation and storage, an infrastructure, and its ability to be the ultimate tool for ordering, structuring and eventually interpreting archaeological data (i.e. the remains of human activities in the past), and the distance that is created between the material and what humans were actually doing in the past. There seems to be a continuous gap between thinking like a machine and thinking like a human. It is difficult to move ahead from documentation and storage into the realm of interpretation, and with time, this becomes even harder, even with a storage place that is a digital infrastructure.

To adapt to the way machines learn, we try to find the smallest part in our documentation of archaeological sites, some kind of 'atoms' of human life in the past, and then we put these atoms into a huge storage system for structuring, restructuring, considering and reconsidering, interpreting and reinterpreting. This might be possible on a *big data* scale of things, as a way to come up with unexpected results that we have not seen before, because archaeologists have traditionally also been trained to take care of one place at a time and primarily interpret it as a singular phenomenon. Comparisons between similar places and phenomena have often occurred later, after the analysis of the single archaeological site that in some cases might have reached a position in peoples' minds as a fascinating archaeological site in itself, completely without comparison. Now, with these new archaeological infrastructures, comparisons on a larger scale might in principle be conducted at the same time that documentation data is registered and entered into the digital infrastructure.

But this is yet a dream.

Archaeological digital infrastructures appear as a serious and expensive investment in our ambition to achieve an overview of ourselves in the past, mostly from a bird's eye view perspective, but with the possibility of zooming into details if we wish to do so. We might envisage the archaeological digital infrastructure as some kind of drone or satellite with a mounted camera on it, providing an overview of the whole of humanity in the past and thereby giving back to us a more comprehensive picture of the past than previous attempts have ever managed, but we can also approach details within this system through the thorough groundwork performed by archaeologists.

What is the *philosophy* behind these infrastructures? Often the openness is referred to as a way to legitimize this kind of thorough and expensive documentation and storage. The FAIR principles are often put forward as an end in themselves.

The whole infrastructuring process of documentation and storage is about mainstreaming the handling of archaeological data, and as a consequence possibly also mainstreaming the future understanding and handling of archaeological remains. This leads to unforeseen consequences for interpretation and re-interpretation of the archaeological record once it has been processed to fit into these infrastructures. It is possible that some information will get lost on the way, while other information will definitely be FAIR. But the whole system will not actually per definition be 'fair' to the archaeological sites they structure in a specific way.

Several digital infrastructures are constructed, not necessarily from actual needs but because today's technology makes the effort possible. With this possibility, we archaeologists can see a possible future that might

lead to a change in perception of the archaeological material that has the potential to change the interpretations of the past. In the best of worlds, the digitized remains can also be reused in new interpretations, a wish that has followed archaeology throughout its documentation efforts, now intensified with the new possibilities that accompany the digital infrastructures. But it is also the case that later generations of archaeologists have often criticized previous generations of archaeologists for their poor documentation work. Documentation standards are shifting.

The universal claims of these infrastructures, to cover both large geographical areas as well as large areas of thought, are as impossible as the ambition to overcome other kinds of language differences in the world. Is it even something to wish for? Might this striving to construct the ultimate digital archaeological tower of data for everyone around the world only be a way to make the remains similar and remove local cultural frameworks? Will big data eventually destroy the regional cultural and historical understanding of sites? That is an aspect that comes to mind as I read Huggett's text.

In a sense, the striving towards a European or even global archaeological infrastructure may be likened to a single language for all the archaeology in the world: a way of putting the archaeological data into a uniform framework understandable to everyone. The data creates this digital infrastructure language that relies on a single cultural context and way of thinking around the data.

In addition, these infrastructures lean towards certain groups in society: the researcher, the archaeology/cultural heritage administrator, and in some cases the general public, but often without defining that general public. It has been shown to be complicated, but probably not impossible, to adapt the digital archaeological infrastructures to a format that works for those groups which are indicated as users, but it takes some effort to implement these adaptations. For example, archaeologist Fredrik Gunnarsson (2022) has researched the possibilities and obstacles through his thorough work on digital archaeology and the storage and use of contract archaeology data in a Swedish context.

The hopes and expectations connected with the idea of digital archaeological infrastructures are related to the hope for revelations of new patterns and insights about ourselves in the past that are as yet hidden from us. In addition, the investment of time and resources in building archaeological infrastructures is also an expression of the hope for archaeology and its remains to be eternally relevant.

When reading Huggett's text, I begin to think that the problem we have today with structuring archaeological data according to specific general rules that apply to Europe, or even the whole world, might now become

obsolete because of the rapid development of AI as a tool for retrieving and analysing different kinds of digital data across the world. If we in the future put the digitized results of all archaeological documentation and archiving from archaeological campaigns across the world in the hands (or whatever …) of AI, the output might be a much more complex interpretation than we would ever imagine possible. Is this something to hope for? Maybe the effort to build the digital archaeological Tower of Babel will become obsolete because of AI, which in the future will be fully able to collect, systematize and interpret different sets of data in ways yet unimaginable. The digital archaeological infrastructures need to be reconsidered from a less technical and more philosophical point of view in the coming years. Maybe it is the development of AI that will cause such a reconsideration?

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