

BE INFORMED OF YOUR INFORMATION

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My reading of Professor Kristiansen's essay is necessarily an act of balancing between different possible perspectives. As an information science scholar of archaeology, my interest is obviously in making observations on how archaeologists and archaeology works with information: how different things are documented, how they will be documented in the future and have been documented in the past and how these documents and various other types of sources of information are used to inform research and public ideas of past human undertakings. Further, I am interested in developing ideas on how to improve information work, how to make it "better" and fit for various individual and collective purposes. At the same time, from my other perspective as a trained professional historian with an admittedly strong interest in ancient (material) culture, I cannot help sharing Kristiansen's enthusiasm about the new possibilities offered by the emerging scientific methods and the huge leap in our capability to process unprecedented amounts of digital data in our quest to better understand the human past.

I agree that there is indeed a "general feeling that some fundamental changes are underway" in archaeology. However, changing back to my hat as an information scholar, it is necessary to raise a question about the locus of the fundamental change. Kristiansen sees the current revolution in the continuum with earlier paradigm shifts from (in his words) biblical to scientific to cultural-historical to processual to post-proces-

sual as a precedence of models of explanation. Another slightly different way of looking at the paradigmatic evolution in archaeology is to see it (in parallel) as an alteration of (primarily) information-oriented and interpretative approaches to practising archaeology. The formation of archaeology as a scientific discipline (i.e. *Wissenschaft*) can be seen as a shift of focus to new sources and ways of working with information about the past in a more systematic manner than before. In contrast, the cultural-historical archaeology of the early 20th century can be seen as an attempt to put more focus on interpretation and understanding of the remains of the past with all of its ideological consequences. Similarly, the two major intellectual movements of the second half of the 20th century, the processual and post-processual paradigms, may be seen as respectively information-first and meaning-first projects for advancing archaeological scholarship. In contrast to meaning-oriented post-processualism, the current data- and methods-driven shift seems to be propelled by a promise of the emergence of new sources and methods for extracting new information about the past. This particular type of reading of the paradigmatic evolution does not need to substitute other models or imply that the information-oriented paradigms would have come without theorizing and meaning-oriented arrangements without new methods or sources of information, but I am still somehow inclined to believe that this type of framing can be helpful in understanding the some of the real (sic!) opportunities (and limitations) of the emerging research approaches.

The principal implication of this reading is, in rough terms, that in archaeology the emphasis of new methods and the discovery of new sources of information has been followed by a new paradigm that focuses on pointing out that (mere) data or information is not enough. Genetics, isotope analysis and big data analytics, among other methods, have a capability to make a difference in what and how many things can be known in archaeology. At the same time, as an information scholar I am deeply concerned with the limits of information (and data) and the complexity of how it translates to knowledge. Even if I see much promise in network analysis, ecological theorizing, ANT and related theories like Pickering's mangle of practice (Pickering 1995) and have relied on them to a significant extent in my own research, I probably cannot stress enough the importance of being explicit about what a particular constellation of data and theory can possibly imply, what are their premises and what is left unexplained. It is undoubtedly possible to perforate the previously impenetrable boundary between the local and the global, but not without carefully considering how different types of datasets and observations scale with and are comparable with each

other. In some cases, especially when observations are simple, easily quantifiable and verifiable, the problems can be small. When the steps of producing data are complex, the information is more dependent on interpretations, local situations and practices, making it more difficult to compare with other data sets.

Even if there is a fast-increasing number of easily accessible archaeologically relevant datasets and new research infrastructures that together collect these data from different sources around the world, there is much work to do, and much of that work is going to be difficult. Harmonizing information that has been compiled by a large number of individuals with slightly different perspectives, skills and practical possibilities to conduct their work is onerous. Data are not always easily accessible and are currently held by a large number of organizations with limited resources to preserve and keep track of them and make them available. This applies especially to the huge and largely unexploited corpus of material from contract archaeology, but applies also to many research data archives. A recently conducted study in the context of the Archaeological Information in the Digital Society (ARKDIS) research project has explicated the current situation of archaeological archiving in Sweden, showing that there are many gaps in the continuum of information from the field to researchers' desks and further to the societal and public uses of archaeological knowledge. There is a major gap between contract archaeology and academic archaeology. Even if they share a similar ethos of knowledge production, they have different practical premises for conducting fieldwork and research, which influences their predominant modes of knowledge production. Creating infrastructures is possible and necessary for working with data-intensive methods and research questions. Much of the data processing in the integration of resources can be automated or it can be significantly facilitated by a clever use of tools, but it is obvious that both automatic and semi-automatic approaches need to be based on a firm understanding of what is being processed. Archaeology needs tools and infrastructures, but in order to be useful, they both require insights into the human processes by which the data have been created, selected, organized, managed and preserved in practice by individual scientists, field archaeologists and collection managers. Much valuable information can be extracted from the existing and forthcoming archaeological collections using new methods and approaches, but there is still a threshold between the possible and impossible that cannot be passed by mere quantity and clever methods, even if they both are highly useful for sure. Good and detailed guidelines for working with data and conducting fieldwork are helpful if they exist, but as studies of scientific work and archaeological reporting prac-

tices show, they do not replace the need to account for the limits of the data. Even in the context of data-intensive research it is important to keep enthusiastically drilling deeper into the data but with considerable analytical thoughtfulness about the positive and negative consequences and limits of the information and knowledge obtained.

It is possible that at least for a time archaeology might be past the “theoretical hegemonies in the humanities” and will see a positive “heavier reliance on large datasets” as Kristiansen describes his view of the current paradigmatic state of evolution of archaeology. From the perspective of the evolution of the archaeological understanding of the past this posited shift could undoubtedly be seen as a favourable turn as long as the “theoretical hegemonies” are not replaced by an atheoretical and non-analytical hegemony of claiming that a huge pile of data and a nice algorithm or method (which all have implicit, even if only seldom explicitly articulated theoretical premises and implications) would automatically make us know relevant things. It takes an effort to avoid getting a perfect, simple and comprehensive answer like Douglas Adams’s 42 to a question no one really knows or is capable of defining. Failing to do so might lead us to witness a perhaps eventually necessary but from a paradigmatic point of view a “premature” raise of a new post-paradigm as a reaction to the mechanistic assumptions of the explanatory power of datasets.

There are at least two different remedies to avoid this particular pitfall, one directly and the other somewhat more indirectly addressed by Kristiansen in his text. The first one, firmly stressed by Kristiansen, is to see that the new empirical openings are properly theorized. The second is to keep in mind that critical theorizing and awareness of the political nature of information and knowledge is not only needed in the context of the use of the past but also as a part of the practices and premises of how researchers pursue their studies. Even if the methodological apparatus of the research efforts were based on genetics and big data analysis rather than discourse analysis, the outlook of the understanding of the past is reminiscent of and a product of the methods applied. Archaeologists and all other producers of scientific knowledge of the past are a part of a methodological-political debate about the subject of their study, not only in the public arena but also with their colleagues in academia. Even if there is a definite, albeit often fine, line between the paradigmatic origins of archaeological knowing and the (state) political claims of their implications, the high quality of each critical research programme, its premises and outcomes need to be articulated to the public and the peers alike to avoid (or at least work against) unwanted infiltrations of societal and academic ideologies. For an information scholar, it

is a question of understanding the implications of how researchers and non-researchers inform and become informed, and of information as a basis for how and on what premises we happen to know the things we know. In very simple terms it is a question of knowing your data and information and their consequences irrespective of whether you are an archaeologist or a politician.

REFERENCES

Pickering, A. 1995. *The Mangle of Practice: Time, Agency, and Science*. Chicago: University of Chicago Press.