

Opening up Open Archaeology

written by Jeremy Huggett | 17/10/2017

Recent years have seen a flurry of publications and statements concerning the importance and value of the open science movement in archaeology. Examples include the collection of papers published in 2012 in *World Archaeology* (see Lake 2012), the volume on *Open Source Archaeology* edited by Andrew Wilson and Ben Edwards (2015), and, most recently, a series of papers by Ben Marwick (2016; Marwick *et al* 2017). The idea that publications, data, and methods (including code) should be freely accessible in order to make archaeological research more reproducible is evidently a 'good thing' and very much in vogue.



As Tom Brughmans has recently written:

“Our very diverse work ranging from excavation, over lab tests, to interpretations is often only made available through a summarising publication that is rarely accessible to anyone other than institutions paying huge amounts of money. This is just not the way science works anymore. In such a system, how can we find out all the details of excavation results? How can we reproduce lab tests? How can we evaluate the empirical and historical background to a published interpretation in exhaustive detail? The answer is: we can't.”

Rob Barrett has recently said something similar specifically in relation to 3D reconstruction. The value of opening up archaeological research seems undeniable, and the set of practices outlined by the new Open Science Interest Group (Marwick *et al* 2017, 12-13) put forward make a great deal of sense and are highly desirable. But there are some implicit underlying assumptions behind all this which don't seem to have been addressed. They don't detract from the importance of pursuing a truly open archaeology, but not recognising them risks not learning from past experience.

It seems generally agreed that open science requires a culture change in terms of archaeological practice, one in which open practices are incentivised, ethically demanded, and increasingly habituated (for example, Marwick *et al* 2017, 13). Good practice aside, the intent is that this will facilitate future reworking of existing data, with accessible, reusable data enabling reproducibility of research. The idea of reproducibility is not new – after all, it lies behind the whole concept of 'preservation by record': the idea that we can record our encounters with the past and that these records can subsequently be used to reconstruct what was originally found. However, one of the lessons of 'preservation by record' is that those records are frequently incapable of withstanding the burden of expectation laid upon them, subject as they are to the limitations of recognition,

categorisation, and recording priorities etc. at the time, discouraging extensive, in-depth reuse. There's no reason to suppose digital data are any different. But reproducibility of practice is only one aspect of reuse: data may be remixed, recycled, repurposed and recontextualised, as well as used to reproduce a piece of work to confirm or deny its results, and each of these presents a different set of challenges (Huggett 2017).

In this respect, the drive to open science needs to learn from the experience of digital archives (themselves a crucial part of the open science movement) which have only recently begun to address the challenge that their accessible resources are, for whatever reason, often not reused. Indeed, as Isto Huvila (2016) has observed, much archaeological research is predicated on collecting new data, rather than reusing old data. This is not a new problem: archaeological approaches to the reproducibility of research frequently employ comparative data rather than re-evaluating the original data. In part, this can be seen to be associated with the difficulty of access and availability of data, and hence, presumably, capable of resolution through embracing digital open access. However, there may be more to it than this. A compulsion for data novelty seems to be embedded in the archaeological psyche: archaeology as the unrepeatably experiment, excavation as destruction, and similar analogies are standard archaeological tropes which perhaps colour our approaches more than we might think, surreptitiously coercing us into methods which prioritise primary data collection above secondary reuse. And then there's the perception, at least in the academic research environment, that the requirements of novelty, innovation, originality, and excellence demanded of us are easier to demonstrate through the analysis of new data, rather than the reuse of old.

While the digital didn't pre-empt this already-existing problem, in many respects it exacerbates it. In theory the digital enhances the ease with which data and methods can be copied, duplicated, transposed, and hence practices reproduced. But these remain largely unrealised benefits at present, not least because it can be quite difficult and complex to make use of the data and associated methods that are made available. Accessibility does not equate to usability, nor does it equate to reuse. Data frequently require to be wrangled while open source code isn't necessarily as transparent as might be expected. In any case, quite significant digital skills are often required to capitalise on this kind of openness. In recent years we might have shrugged this off in the expectation that people are increasingly digital natives, but the growing evidence is that students are frequently not as digitally savvy as we might have expected. So what is missing from the set of practices promoted by the Open Science Interest Group is the need for training and developing expertise in reuse: simply teaching people to work reproducibly is akin to archives sharing their data – it prioritises availability (obviously a prerequisite) but unless steps are taken to encourage those data and methods to be taken up and reused, the process ends there and they sit waiting for some undefined moment in the future when their value might be appreciated.

The experience of digital archives is that sharing is not the same as reuse, although the focus of the past twenty years has been on the former rather than the latter. Correspondingly, making our publications, data, and methods freely available through open science is not the same thing as facilitating reuse – it cracks the door open, it makes it possible, but does not ensure it happens. For that, we need a still greater degree of culture change, one that goes beyond ensuring that our publications, data, and methods are accessible, and which provides an environment which supports and encourages us to use them. Otherwise, the research cycle continues to stall at the point when we have made our data and methods accessible and we find that, lip service aside, there's no great

desire or incentive to reuse them. The takeaway lesson of all this is that we can build as many knowledge infrastructures as we like, containing as much data, methods, publications as we could possibly want, but they will not be used to any extent unless we provide the means and the inspiration to do so. For this to happen, reuse needs to become part of mainstream archaeological culture and practice just as much as openness and accessibility.

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