Ghosts in the machine

written by Jeremy Huggett | 29/01/2017



We're accustomed to the fact that much archaeology is collaborative in nature: we work with and rely on the work of others all the time to achieve our archaeological ends. However, what we overlook is the way in which much of what we do as archaeologists is dependent upon invisible collaborators – people who are absent, distanced, even disinterested. And these aren't archaeologists working remotely and accessing the same virtual research environment as us in real time, although some of them may be archaeologists who developed the specialist software we have chosen to use. The majority of these are people we will never know, cannot know, who themselves will be ignorant of the context in which we have chosen to apply their products, and indeed, to compound things, will generally be unaware of each other. They are, quite literally, the ghosts in the machine.

Some will be software engineers and programmers, others industrial designers, product engineers, and so on. The person working on the implementation of a particular algorithm will have little or no control as to the product it ends up in; equally the product designer may have little or no appreciation of the kinds of assumptions made by the designer of the algorithm. Effectively, therefore, there's an exponential network of relationships, aware or unaware, actual or notional, real or virtual, known or unknown, that sit behind the basic tools we use in our work and which we are almost entirely dependent upon and at the same time removed from.

That's perhaps stating the obvious in some respects, even if it isn't something that we regularly consider. It also operates at a scale that makes it seem impossible to do anything meaningful about. Indeed, is it something we should even be concerned about? I think it is important, and that we should make the attempt to at least understand the implications this might have for us and our work.

There are two levels at which we might approach this.

First would be to consider an archaeology of the device in question, investigating its origins, design, and the set of human agents behind it in order to appreciate its influences. This is not a straightforward task, and rapidly runs into the issue of exponential scale though the sheer number and variety of participants and perspectives. However, it would be more feasible in some instances. For example, we could conceive of a study of LP Archaeology's Archaeological Recording Kit because we know who the members of the team are and could construct a history of its development and an account of its theoretical constructs and influences through a combination of interview and published outputs by the team members. This would take us a long way in understanding the development of the software and the design decisions taken at different stages –

for instance, those associated with its incorporation of multivocality and reflexive methodologies within its structure. It would also be theoretically possible to drill down beyond this as it is built on open source software – certainly more feasible than had it been developed in a closed, proprietary system. Indeed, Andrew Dufton has recently discussed the early conception of the ARK package (2016), while Ben Ducke has written about Oxford Archaeology's contribution to the open source GIS software *gvSIG* (2015). Similarly, Colleen Morgan's work on photography (for example, Morgan 2016) goes some way to providing a similar overview, though to extend this into the workings of the camera and its associated software would run into comparable problems with proprietary hardware and software.

The second approach, to some extent sidestepping the problems of scale and the proprietary nature of many of the digital devices we rely on, would instead be to consider the device as a cognitive artefact: something that we employ as a means of assisting us in performing a cognitive task and which is capable of representing, storing, retrieving and manipulating information on our behalf (Norman 1992; 1993). David Berry calls these *compactants* – computational actants – which operate silently, surreptitiously, or, where we are aware of them, offer us perceived value and benefits that lead to them disappearing into the background again (Berry 2012, 391). Essentially, this approach recognises the way in which these devices extend or complement what we do by examining how they scaffold or support our archaeological cognition. Any digital device we employ takes upon itself a host of cognitive actions that we would otherwise undertake, that would entail us using a variety of basic mental and physical tools requiring a clear knowledge of underlying principles, and it replaces these with a comparatively simple push-button activity. In the process, the cognitive cost we would otherwise need to expend is offloaded onto the device, simplifying the task in hand. Considering digital devices as cognitive artefacts or compactants reminds us of the agency they exercise in supporting our actions, and emphasises the importance of recognising their contribution and effects (Huggett, ~~forthcoming~~ 2017).

So when we apply digital devices we should be more mindful of the full range of the collaborations we engage with and their influences on our work. We are increasingly aware of digital assistants such as Siri, Alexa, and Cortana listening in to our conversations and acting on our behalf (how many of us have turned them off to retain privacy?), but we should be equally – if not more – aware of those devices that intervene in less obvious and hence more surreptitious ways as well.

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