A Push Button Archaeology

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Buttons figure large in the world around us. Just in the last year we've seen everything from presidents boasting about the size of their nuclear buttons to Apple being faced with a class action over the failure of their new 'improved' butterfly keys to Amazon's Dash buttons being barred in Germany for not providing information about price prior to being pressed. In archaeology, we've become accustomed to buttons and button-presses generating data, performing analyses, and presenting results, ranging across the digital instruments we employ and the software tools we rely on. So, to pick a random example, "researchers will be able to compare ceramics across thousands of sites with a click of the button." (Smith *et al* 2014, 245).

Rachel Plotnick has recently discussed the place of buttons in our cultural imaginary:

> … push a button and something magical begins. A sound erupts that seems never to have existed before. A bomb explodes. A vote registers. A machine animates, whirling and processing. A trivial touch of the finger sets these forces in motion. The user is all powerful, sending the signal that turns on a television, a mobile phone, a microwave. She makes everything go. Whether or not she understands how the machine works, she determines the fate of the universe. (Plotnick 2018, xiv).

In a similar fashion Sandy Isenstadt characterises the button or switch as a highly charged interface between individuals and technological systems (Isenstadt 2018).

For something that can appear so simple – a binary action, press and release – the button conceals considerable complexity. Its design can employ different kinds of mechanisms to achieve the same physical function (as seen in keyboards using membranes, dome switches, scissor switches, butterfly switches, capacitive switches and touch-screen buttons that simulate the physical click by vibrating or making a sound, for example). Beyond the physical, its function may be a simple single operation (*'start'*, *'stop'*, *'on'*, *'off'*) or a dual action toggle (*'start/stop'*, *'on/off'*); it may close a sequence of actions (e.g. *'Enter'* to terminate a data or text stream or infamously *'Start'* to close down a computer) or modify them (*'Delete'*, *'Insert'*); it may have multiple functions assigned to it triggered either by pressing another button in tandem or through software control; and its function may be completely redefined (the use of the *'WASD'* keys for movement, for example). The act of pressing a button with a digit (finger) has become a means of digital command (Plotnick 2018, xvi), potentially kicking off a host of complex sequences and actions. As a device, the button or switch imparts agency to its users. But this comes at a cost. The fact that my trust in this key is confirmed by an *'a'* appearing on screen makes me vulnerable to key loggers, for instance, because I know nothing of the intervening actions between keypress and its expected consequence. My belief that pressing the *'record'* key will accurately capture a target's coordinates is reliant on more than simply the sequence of actions and calculations triggered by the keypress, but unless the instrument detects a significant displacement I will not necessarily know there is a problem. Discussing the development of the electric light switch, Isenstadt points to how

> Confidence regarding the switch's operation allowed individuals to accept the infiltration of technological systems into the built environment and agree to the asymmetry between operating them and understanding them. The switch made unknowing routine. (Isenstadt 2018).

Philosophers from Marx to Baudrillard have criticised the deskilling, alienation, distancing effects of button-pushing, although Plotnick (2019) suggests that buttons do not inherently have these effects, pointing to complex interfaces in aircraft cockpits or manufacturing facilities which demonstrate that "button-pushing quite often necessitates an intimate knowledge and cultivated bodily practice". While true, her 'quite often' qualification is noticeable: equally one can argue that becoming skilled in using a push-button interface can entail deskilling – or simply not becoming skilled in the first place – in the underlying functions that are hidden by the interface. Just because you know which buttons to press and in which order so as to conduct a total station survey, for example, doesn't mean the principles of how the device is operating or performing the calculations are understood. Indeed, pushing buttons can be reduced to rote – memorised sequences of actions responding to screen stimuli, without necessarily understanding the basic reasons behind them. The drawback of this kind of strategy has been well-known for years; devolving a task's cognitive load in this way can give rise to an over-reliance on the technology leading to an inability to recognise or correct instrumental errors (e.g. Huggett 2017a) with disastrous fatal effects in the case of several aircraft incidents in recent years (to extend Plotnick's example). So this does matter.

Pushing buttons can change the way we think or approach a problem. For example,

> Critical spatial thinking is in sharp contrast to rote button-pushing, and implies that the processes of data manipulation, analysis, data mining, and modeling provoke and require

> critical thinking, about such comparatively profound issues as scale, accuracy, uncertainty, ontology, representation, complexity, projection, and ethics. (Goodchilde and Janelle 2010, 9).

In a similar way, we press the buttons on our digital cameras or mobile phones to capture images that substitute for memory, in that act distracting ourselves from the situation in hand by taking a photo rather than immersing ourselves in the experience (Mazzoni 2019). Colleen Morgan and Holly Wright argue that digital field drawing needs to preserve the material encounter with the archaeological deposit (2018, 146), while Bill Caraher writes of the transformation of the documentation process – contrasting a detailed engagement with archaeological deposits against an understanding of a digital camera and software, emphasising the importance of the former rather than the latter to the archaeological process (Caraher 2016, 436). Fred Limp has pointed to an inversion within the recording process as a consequence of the digital: from a process of observation, interpretation and abstraction, measurement, recording and analysis to one where measurement and recording take place prior to interpretation and abstraction (Limp 2016, 350). Button-pushing precedes interpretation, the automation of data capture pays less attention to what is being recorded until that recording is completed. So push button approaches and designs don't just emphasize concealment, drawing attention away from the underlying mechanism itself, providing a supposedly foolproof device which can be used with little or no technical knowledge. They also affect our modes of thought and practice. As I've argued before, the affordances of the digital interfaces we employ covertly limit while they appear to offer opportunities for innovation and knowledge creation (Huggett 2017b).

A key feature of push buttons is the extent to which we become accustomed to them: the way the agency or control they provide with us becomes normalised, and in the process the button and what it represents disappears unconsidered into the background. Isenstadt points to this effect in relation to the history of the light switch:

> As the novelty wore off, the switch's annihilation of space — instantly and at a distance — quickly became unthinking habit. Light switches became banal and the enchantment of visual transformation became routine. Thus the 'technological sublime' — the pleasing stupefaction felt when one is faced with vast industrial plants or enormous turbines, unprecedented speeds, immense machines, titanic structures — gives way to what we might call the 'technological mundane'. The technological mundane is the residue of the technological sublime, something that was a wonder to earlier generations or even to oneself in an initial encounter but that comes to be commonplace. (Isenstadt 2018).

This banality and routinisation is something to be resisted: the consideration of push buttons should be a constant and necessary feature of a properly critical approach to archaeological practice. As Gareth Beale *et al* (2018) have recently shown in their archaeological study of the computer mouse, even the most basic of digital devices carry affordances which affect the experience of the user, but of course this can be taken further since a mouse carries buttons which are infinitely flexible in function depending on where the mouse is pointing at the time. I've argued elsewhere that the digital sublime can give rise to technology assuming a mythical status, fetishized, unquestioned and unquestionable, and that digital archaeology should provide a provocative friction against it (Huggett 2017c). This is equally so when we deal with the digital mundane: the commonplace,

habitual and routine, equally unquestioned and unquestionable because of the way it has become ingrained in practice, whether it is a computer mouse or a (not so) simple push button.

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