

ARCHAEOLOGY AND THE NEW TECHNOLOGICAL FETISHISM

1. A CULTURE OF CHANGE

Over the years, computing has developed into a complex culture complete with institutions, languages, beliefs, values, learned behaviours, negotiations, symbols, and so on. As such, it has become a fertile area for investigation from a social and ethnographic perspective (for example, HINE 2000; MILLER, SLATER 2000). The sub-culture of archaeological computing inherits many of the same characteristics and adds some of its own (for example, institutions such as the international Computer Applications in Archaeology conference with its increasingly widespread national “chapters”, and journals such as «Archeologia e Calcolatori»). However, relatively little attention has been paid by archaeologists to examining this sub-culture or its relationship with the over-arching body of traditions (although see HUGGETT 2000, 2004; LOCK 2003, 253-268 for a commentary).

Looking back over thirty years of archaeological computing we can easily see how far we have travelled, even if we have no clear idea of the destination. In the 1970s and early 1980s, data sets were still entered on punch cards and interactive computing was something of a novelty in a mainframe-dominated world. Since then, of course, the microcomputer revolution has taken place, along with the development of the Internet and the World-Wide Web. A host of hardware and software has come and gone, and still the developments continue – Intel claim that Moore’s Law (that the number of transistors on a chip will double every two years) will hold good at least until 2010, an exponential rate of growth to which we have become accustomed in areas beyond just the computer chip. And nobody is too sure about where life online is going to lead us.

Nostalgia aside, where does this leave archaeology? Compared to, say, 1984, we do indeed live in a foreign country, one in which computers are ubiquitous in what we do, where we have then undreamed of computer power, immense amounts of computer memory and storage, and connection to a vast network of resources. Is it possible that archaeology itself has remained unaltered by these developments? Given that it is generally accepted that technology has changed the way we live our everyday lives, it seems hardly likely that archaeology will have remained immune. But what are those changes, and what might their effects be? And why does this remain a largely unexplored area?

Part of this may be because we see the computer as little more than a tool – an incredibly powerful and flexible one, maybe, but a tool nonetheless. It is also a tool over which we have very little control – as Irwin Schollar commented in his review of 25 years of CAA in 1997, archaeology has been in very

much a “hand-me-down” position as far as technology is concerned (SCHOLLAR 1999, 8). Similarly, Vincente Lull observed at the close of CAA98 in relation to technology: «None of the technological means on display at this meeting were created from within the field of archaeology, a fact which illustrates the scant impact that our science has on society...» (LULL 1999, 381).

However, although we may have little impact on the design of the hardware and software that we use, we are not (or should not be) unknowing, helpless consumers of computer technology – after all, who knows better than archaeologists the power of a technological development to shape history? We seem able to recognise the importance of computers (after all, this is a journal devoted to their application, and there are none devoted to wheelbarrow applications, for example), and we theorise about technological changes in the past (ranging from new flint technologies, bronze and iron working, the evolution of the plough, developments in literacy, and so on), and yet we seem reluctant to address these issues closer to home. Why is this, and what are the implications of continuing to ignore the effects of the information technologies in our midst?

In fact, there is a certain inevitability about this situation. It is always difficult to address a transformation that is ongoing and that one is a part of – there is a tendency to become avowedly utopian or dystopian in outlook depending on one’s perceptions at the time. We are all caught up in the rush of change: the speed and scope of the social and cultural transformations around us make it difficult to pause and take stock, not least because a questioning, cautious attitude to the new technologies can be seen as a 21st century form of luddism. However, I argue that there is a danger in not making the attempt. For example, Gene Rochlin suggests that «the complacent acceptance of the desktop “personal” computer in almost every aspect of modern life is masking the degree to which computerisation and computer networking are transforming not just the activities and instruments of human affairs, but also their structure and practice...» (ROCHLIN 1997, 5).

2. THE FETISH OF THE NEW

One of the notable developments in modern culture is an increasing acceptance of change, and a perception that the speed of that change is increasing, if not exponentially then at least at a greater and greater rate. The seduction of new technology is familiar to all of us, and an important driving force behind Western capitalist economies. The “must-have” urgency of new versions of hardware or software which offer a techno-utopia of unlimited and unknown possibilities, the beguiling promises of a new and better way of doing things – this enchantment of the new is itself a form of technological fetishism into which we are all drawn. It is a common feature of modern

consumerism: we want our personal machines – cars, computers, washing machines – to be endowed with powers far in excess of the use we may make of them. Marshall McLuhan referred to this as the “narcosis of Narcissus”, or, in Derrick de Kerckhove’s words: «as each technology extends one of our faculties and transcends our physical limitations, we are inspired to acquire the very best extension to our own body. When we buy our home video system, we want it to perform every possible editing function, not because we will ever use them, but because we would feel handicapped and inadequate without them» (DE KERCKHOVE 1997, 3).

He sees this as a positive benefit but notes that we are not yet psychologically equipped to deal with the degree of integration of such devices into our identities or even into our bodies (for example, WARWICK 2002). Manufacturers and software developers capitalise on this narcissism, using real or imaginary built-in obsolescence to stimulate sales. Although consumers are becoming increasingly aware that the language of the new often represents “churn” rather than real technological improvement (for instance, McGRATH 2003), nevertheless social rather than technical factors can often make it imperative to upgrade to the latest processor or the latest software version. Consequently, whether or not we agree with de Kerckhove’s ultimate conclusion, the implication is that our acquisition and use of technology may operate at a more primal level than we might care to imagine. The superficial rationality behind computerisation, albeit one coloured by a generally utopian view of the technology, may in reality be a post-hoc rationalisation of fetishistic decision-making.

3. THE FETISH OF DISGUISE

One definition of fetishism is that it is a concern with surface appearances that conceal underlying meanings (HARVEY 1990, 77). A clear example of this is the way in which the language of the computer interface has developed, and the way in which those interfaces have changed the way in which we communicate with the computer. Sherry Turkle, for example, has characterised this change in terms of two aesthetics: a distinction between the modernist computer that is explicitly controlled through the command line (classically the IBM PC and MS-DOS), and the postmodernist computer with its simulations of real world desktops (the Apple Macintosh and now Microsoft Windows) (TURKLE 1997, 36-42).

In the 1970s and early 1980s computers were apparently transparent, with users interacting directly with the devices through machine instructions, perhaps mediated through a programming language. In contrast, the development of graphical user interfaces increasingly hid the bare machine from the user, who now interacted via a surface simulation. As Turkle points out, the concept of “transparency” changed its meaning, from knowing how something works to seeing how something can be made to work.

Much the same point can be made in relation to the use of statistical software packages and Geographical Information Systems, for example: the increasing complexity of the software itself protects the user from – or alternatively, disguises – the complexities of the procedures, and facilitates approaches to archaeological data which may be naïve at best. Turkle goes on to talk about the seduction of simulation – the way in which simulations enable us to think about complex phenomena in a dynamic manner, but also the way in which we become accustomed to manipulating a system whose core assumptions we do not understand, hence leading to the abdication of authority to the simulation. Inserting layers of opacity between the user and the way the tools operate, and between the user and the underlying information in the system has significant implications for archaeology, not least in terms of the quantity and complexity of the information required and the power needed to process it.

A similar point is made by Chris CHESHER (2002) who argues that digital computers have now become “invocational media”, supporting a range of cultural practices (reading, writing, viewing, playing, conversing, controlling etc.). He points to the distance this introduces between the user and the invocational device – it is increasingly impractical to understand the low-level mysteries of computers and software, resulting in the users themselves being used: «Software features... allow users to perform second order invocations... Although they are never quite right for the job at hand, they are usually adequate. When users invoke something, it is not the “original” expression of the intention of the users. Instead, invocations are always articulated through many layers of pre-formed, programmed avocations. Where computers always promised to empower the sovereign user subject, the relationship between users and invocational media is more ambiguous» (CHESHER 2002).

It is this ambiguity that makes IT more than just another piece of black-box technology like a DVD player or hi-fi system – the transformative power of information technologies may be hidden beneath a bland system unit or beguiling interface, but in an archaeological hyperreality, data may be wrenched from context, argument separated from evidence, interpretations transformed into “facts”, explicit knowledge separated from tacit knowledge, push-button solutions substituted for knowledgeable actions.

4. THE FETISH OF MAGIC

The primary “invocators” of these technologies are those in the technological vanguard, riding the leading edge of the technological wave – perhaps best represented in the archaeological world by the attendees at the annual Computer Applications in Archaeology conferences. As RUTSKY (1999, 156) has observed, for example, one of the paradoxes of a technology that is held up by the likes of Bill Gates and Nicholas Negroponte as providing en-

lightenment and empowerment to all, is that it does so by privileging certain individuals as being in advance of the general population, as being already more enlightened and more empowered. Experts are often referred to as computer “wizards” or “gurus”, practising a “black art” with “black boxes”.

This view of the relationship between human and computer has its origins in the earliest media representations of computers as vast machines served by stereotypical little men in white coats, reflecting the mystification of the computer and the mediation of the expert (HUHTAMO 1999, 104-105). Indeed, twenty years ago, Voorrips referred specifically to the “magic” of computers when he described computer archaeologists in terms of high priests before whom the ordinary archaeologist had to kneel in order to get the data processed that they had handed over in a moment of temporary insanity (VOORRIPS 1984, 48).

The white coats may have gone but the roles and the mystification remain, although the commodification of the computer means that their nature has changed. The parallel between passing instructions to a computer (whether through written command or gesture) and incantation or invocation is obvious (COYNE 1999, 38), and the power of invocation is translated into new languages which range from obscure acronyms and terminologies to the many symbolic vocabularies that make up programming languages, knowledge of which mark out the initiates from those without. CHESHER (2003) suggests that through the medium of the computer we are able to call into presence new daemons (a term which itself carries supernatural connotations). These consist of environments which allow us to read, write, store data, draw, and a host of other activities which, having been invoked, provide an often bewildering and mystical range of options. Competency in, and control of, these environments conveys power and authority.

Implicit in all of this is the computer as a fetish object, worshipped on account of its supposed inherent magical powers. Followers may be inducted into the priesthood via a variety of routes (see, for example, TSCHAN, DALEY 2000) and assume positions of authority based upon their knowledge of the mysteries. Whilst many computer archaeologists would disagree with this ghettoisation as a technical high priesthood, nevertheless a resonance still exists. If anything, the perception of the magical mysticism of information and communication technologies is increasing as the number of layers of abstraction between human user and machine multiply. As Erik Davis has put it: «As computers blanket the world... we surround ourselves with an animated webwork of complex, powerful, and unseen forces that even the “experts” can’t totally comprehend. Our technological environment may soon appear to be as strangely sentient as the caves, lakes, and forests in which the first magicians glimpsed the gods» (DAVIS 1995, 6).

The high priesthood becomes resurgent again – and, over the history

of computer applications in general, as well as in archaeology, it has been overwhelmingly a male priesthood.

5. THE FETISH OF THE MALE GAZE

Technological fetishism is generally seen as a particularly masculine characteristic – “boys and their toys”, the addiction to speed, the emphasis on specifications, the solitude of the characteristically male “nerd” or “geek”, and so on. Furthermore, the language used with reference to computers tends to emphasise a privileged, often aggressive and virile, male domain. Computers are “up” or “down”; programs are “executed”, “hang”, “crash”, or are “aborted”; processes are “chained” and “killed”; hackers “penetrate” computer systems; there are “lurkers” on discussion lists – as Turkle and Papert point out, «this is a style of discourse that few women fail to note» (TURKLE, PAPERT 1990, 151, and see also COLE *et al.* 1994, 81-82 for example). Certainly the number of men in the field of archaeological computing is disproportionate – for example, the 2003 CAA conference held in Vienna had the largest attendance in the history of the organisation, but over 90% of attendees were male. More accurate statistics are difficult to come by, but in a recent UK survey of employment in archaeology, 95% of the computing officers recorded were male, compared to 64% of archaeologists from all categories (AITCHISON, EDWARDS 2003, 63,72).

While this takes no account of the presence of expert computer users in other job categories, it does serve to underline that computing archaeology is not immune to the masculine domination observed elsewhere in archaeology (for instance, see GERO 1996; MOSER 1996 in relation to field archaeology). Just what effect has this had on computer applications in archaeology? No one knows, but we can seek parallels for the effect of the “male gaze” in other aspects of archaeology. For example, Julian Thomas talks of the feminisation of landscape and the voyeuristic and androcentric views that result (THOMAS 2001). From the perspective of archaeological computing, he interestingly suggests that «...such a sexualised way of looking is particularly troubling, since we habitually make use of a series of spatial technologies (GIS, satellite imagery, air photography) which seek to lay bare and penetrate the land» (THOMAS 2001, 169).

In a different context, Joan Gero has observed the male bias in stone tool manufacture with its focus on the creation of certain tool types, particular tool-related activities, and so on. As she says, «the point here is not accusatory but expository; male bias is systematically imposed on archaeological interpretations of tool manufacture and use, as constructs of archaeological interpretation interact with modern gender ideology» (GERO 1991, 168).

Drawing from this, we may outline two hypotheses. First, that male bias has been systematically imposed on the use of computers in archaeology, and secondly that, as a consequence, male bias potentially impacts on the

interpretations that arise from the application of computers. The first of these is in some respects easier to demonstrate than the second, in part because it is inherited from the broader world of computing.

It is quite clear that a straightforward binary, male/female, division cannot be assumed – just because computers and technological competency are associated with masculinity (for example, MURRAY 1993; LIE 1995) does not mean that they are exclusively associated with men, or indeed, that to “be” a man, one has to exert control over such technologies. Nevertheless, such binary divisions are often drawn in the literature. For example, Wendy Faulkner highlights three such gendered dichotomies: machine-focussed versus people-focussed; “hard” technology versus “soft” (small-scale, often domestic) technology; and objective rationality, emotional detachment and abstract theoretical (especially mathematical) and reductionist approaches to problem-solving versus subjective rationality, emotional connectedness and concrete empirical and holistic approaches (FAULKNER 2000, 93-94). As she goes on to point out, there are huge mis-matches between these images and practical reality – there are plenty of technically incompetent males and highly competent females (FAULKNER 2000, 95).

Many of the analyses of gender differences in computing focus on attitudes and experiences of computer science students which rather assumes that the pathway into computing is via the academic route, and of course a degree in computer science is not necessary to use computers. Furthermore, the results are somewhat contradictory – for example, one recent study found that female computer science students had less confidence in their skills than male students who were not majoring in computer science (BEYER *et al.* 2003) whereas another study found no significant difference in confidence between the sexes (ROWELL *et al.* 2003). However, aspects such as the perceived excessive “scientism”, the emphasis on engineering and the reliance on mathematics are commonly found across studies and are seen as significant ways in which male domination of computing is maintained (for example, MURRAY 1993; GRUNDY 2000).

Cultural as much as technical aspects appear to be a significant deterrent to female involvement: for example, Turkle and Papert’s examination of gendered approaches to programming concludes that «the computer supports epistemological pluralism, but the computer culture does not» (TURKLE, PAPERT 1990, 132). For instance, informal networks and opaque power structures can significantly disadvantage women in the academic community of computing (ROBERTSON *et al.* 2001). As a supposedly egalitarian organisation based on individual ability, this has distinct parallels with the archaeological world which is often perceived as working through an “old boys network”. The difficulty, of course, is to be able to recognise such cultural issues from within the community given the pressures to conform.

If the world of archaeological computing is indeed dominated by a masculine bias, what might be the result of a more balanced community? In answering

this question the danger is that, as Faulkner argues, underlying the assumption that a higher representation of women would bring greater diversity is a very essentialist and stereotypical viewpoint which holds that women, simply by being women, would bring different approaches and priorities (FAULKNER 2000, 100). Nevertheless, and despite there being no innate differences in technical ability between male and female (FAULKNER 2000, 99), there do appear to be some differences in certain areas, although they are by no means clear-cut. For example, Turkle and Papert found that males tend to adopt a formal linear approach to programming whilst females used a more relational approach, although this was over-ridden by the dominant masculine approach (TURKLE, PAPERT 1990, but MCKENNA 2000, for example, rejects this distinction).

Other research points to differences in working with virtual environments, where males outperform females because of gendered differences in navigational design strategies (for example, CZERWINSKI *et al.* 2002; TAN *et al.* 2003). Similarly, and still associated with navigational strategies, gender differences in hypertext exploration have been identified (for example, BECKER, DWYER 1994). On a different scale altogether, it may be that feminist discourses concerning GIS can help archaeologists move beyond the essentially quantitative approaches by, for example, refocusing on the body (for example, KWAN 2002) and by changing attitudes to criticism of GIS (for example, SHUURMAN, PRATT 2002). Furthermore, it seems reasonable to suppose that given male domination in archaeological computing, it is more than likely that men's interests and priorities are currently promoted, and that a greater gender balance would better serve women's perspectives both as computer archaeologists and as end users. Clearly, a great deal more research needs to be done in this regard.

6. CONCLUSIONS

In this paper the concept of technological fetishism has been employed to drive forward a series of observations about the situation we find ourselves in today. The term is, admittedly, initially useful for its shock value, but it also carries a series of valuable connotations which provide a starting point for thinking around the technologies that are largely taken for granted. For example, there is fetishism in the sense of faster, better, more powerful – McLuhan's "narcosis of Narcissus" – and the way in which state of the art technology becomes the basis for evaluating the significance of outcomes. There is fetishism in the concern with surface appearances disguising what lies beneath, of different degrees of transparency, and in the consequent transformative power of the technology. There is also fetishism in the mystique and mysticism of the technology and the presence of a high priesthood of expert invocators. The fetishistic relationship between men and computer technology raises a host of gender and access issues.

Whether or not as computing archaeologists we accept the view of ourselves as fetishists or as high priests of a mystical and magical technology, we are in a position of responsibility. In his introduction to a book which adopted a global perspective on archaeology in the Information Age, Peter Ucko commented that «the spread of technologies in the context of their archaeological applications is likely to be accompanied by major social upheaval – upheaval which may still develop either for the better or for the worse» (UCKO 1992, VIII).

The challenge for us as expert computer users is that if we do not understand the implications and effects of the technologies employed, who else will? As Jayne Gidlow reminds us, «archaeologists who work with computers are participants in and producers of technoscientific culture in a medium acknowledged... to have a substantial connotation of authority... For the results of archaeological computing to be meaningful... requires a dialogue with the conditions of production...» (GIDLOW 2002, 20).

To fail to have such a dialogue is to allow the technology to become, or perhaps remain, a discrete and reified entity: autonomous, ubiquitous, with its own momentum to which we can only react. And that in itself is a form of technological fetishism (ROBINS, WEBSTER 1999, 51).

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ABSTRACT

Almost everything that is written or said about the use of information technology within archaeology relates to hardware and applications and there is a general poverty of (published) material which considers the implications of the application and use of these tools on the way that the discipline of archaeology is practised. Although we are generally comfortable with the idea that technology has changed the way we live our everyday lives, and the ever-increasing pace of that change, for some reason there appears to be a general reluctance to consider that such changes and the pace of these changes may also impact on archaeology.

This paper proposes that computer-using archaeologists have for too long ignored a critical area of research: the consequences of the new information and communication

technologies we use. Archaeologists point with justifiable pride to the tradition of self-critical analysis of new ideas and methodological changes within the subject. Archaeologists question their data, their methodologies, their theories, their conclusions, the very basis of their subject, yet it appears that archaeology operates within a “bubble”, somehow immune to the consequences of the new technologies that are more and more a part of both the world around us and of archaeology itself. Furthermore, archaeologists are accustomed to theorising about technological changes in the past (ranging from new flint technologies, bronze and iron working, the evolution of the plough, developments in literacy, and so on), and may bring new perspectives to contemporary analysis of the technological world around us.