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A Political Economy of Visual Media in Archaeology

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Archaeology abounds in visual media, both media artifacts from the past, as well as means of documenting and studying those artifacts. Classic and long-established approaches to visual media include iconography and iconology (semantics and the identification of visual content), semiotics (the systems and structures of communication, signification and meaning), as well as graphics, cartography, planning and charting (communicative efficacy, the geometry of 2D to 3D translation, and information compression).

We shift emphasis in this paper away from communication, iconology, and visuality per se, the content and structure of imagery, toward the way visuality works in archaeology, from visual media as material forms (graphics, maps, photographs) to the work that visual media perform in archaeology. Along the way we present a criticism of the stress placed in much discussion of visual media on their representational qualities, that is, their fidelity to what they are taken to represent, to their mimetic qualities and their degree of correspondence to what is represented.

It is not that we consider such inquiry to be wrong, but rather that communication and meaning are often secondary functions of media. Ironically, what often matters most about visual media, we would claim, is not what they represent, but the way they fit into archaeological work on the remains of the past. In this development of McLuhan's old adage that it is the medium that matters, we focus attention on practice and discourse, drawing particularly on the field of science and technology studies (STS).

This emphasis upon the way images work is why we term our interest one in the political economy of visual media—recovering the work done by visual media in archaeology through networks of production, distribution and consumption. This leads us to identify some of the implications of new digital

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media, not for more spectacular summations of data about the past or photorealistic simulations, but as open fora for the co-production of pasts that matter now and for visions of future community.

The Importance of Media in Archaeology

We should start with the basic premise of all archaeology: that archaeologists need to record and publish what they find, otherwise the past is lost. Archaeology is based upon the unrepeatable (and "quantum") experiment where intervention in the present, through collecting, excavating, conserving, or even just visiting, fundamentally affects and changes what archaeologists are interested in—the remains of the past.

In the archaeological relationship between past and present that lies behind this idea of the unrepeatable experiment is a distinctive experience of immediacy—a notion of *discovering* the past in its material remains. This is the time of connection or engagement, the *relationship* between past and present. Two terms which describe this temporality are "actuality," the juxtaposition of two presents, that of the past "as it was" back then, and that of the present, as we turn with interest to the past, and "kairos," the time of connection, between past and present (and that key opportune moment when the past appears to us).

The "kairotic" time of the unrepeatable experiment drives an archaeological ethic. The notion of the loss of the past, whether through natural processes of decay or through human intervention, is a component of a broader anxiety that compels preservation, conservation and documentation or publication. A conservation ethic drives the global heritage industry—that the past should be looked after as a legacy of cultural property, with such a past often even considered a human right, according to which people deserve a genuine past of their own, not one made up for them, but properly documented and fairly represented to them or by them. A democratic heritage for all.

The archaeological nature of the relationship between past and present is not often explicitly recognized: we are referring to the material relationship of decay/loss and rescue/restitution at the core of this contemporary historicity and the anxiety just outlined. Such an archaeological sensibility refers to matters of presence and absence, of genuine representation and fake replication, of trust and authenticity in documentation. It reaches far beyond the discipline (Shanks 2009).

So while archaeology may rest upon sites and artifacts, visual media are indispensable in this process of documentation, of turning the past into manageable and manipulable forms. From reconnaissance survey, to excavation of features, to laboratory analyses and interpretation of glyphs, the work archaeologists perform could not be accomplished without proxies of our vision of the past. This holds from research methodology and project planning all the way to

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information design and presentation of results. Understanding the past, making knowledge, is primarily about the process of making and using media.

Archaeology is about working on what's left of the past; archaeologists do not simply discover the past. Taking it up, sorting, classifying, counting, drawing and measuring so that we might distill relationships, patterns, quantities and changes are what archaeologists spend much of their time doing. This is an especially important part of designing quantitative information (Tufte 1997, 2001). But it is no less an integral part of engaging with the past through more affective means; the theme of the ruined past in the present, for example, has been a consistently prominent component of landscape imagery in the west since the seventeenth century (Andrews 1999, Makarius 2004).

effective?

The archaeological process can be described as moving through a continuity of material worlds that run from ruins and remains to the materiality of media "proxies," the world of our media. It is less about "discovering" the past and more about crafting what remains of the past into "deliverables" (Shanks and McGuire 1996). Into text, graph, map, drawing and photograph: this is the work of visual media in archaeology. We all too often sell ourselves short. Much effort is required to produce these deliverables. It ought to be recognized as a highly skilled process akin to (reverse) engineering. Yet archaeologists tend to truncate this long sequence of workings on the past, these "serial orders of representations" that get us from the archaeological ruin, feature and artifact to the monograph, article, report and website (Lynch and Woolgar 1990:5). Archaeologists focus on the final products, particularly those that summarize and argue for a particular point of view or interpretation. We elide the process of transformative steps linking different media. We "black box" the archaeological process as if there were only "inputs" and "outputs" with little inspection of the messy middle (Latour 1999:304). For example, we now acknowledge the skilled and unskilled laborers who rarely appear in authoritative archaeological publications that instead highlight the unified voice of the project director or principal investigator (Berggren and Hodder 2003). Archaeologists, skilled and unskilled laborers, technicians, consultants, curators and the many other specialists involved in archaeological engineering never act alone, however. Archaeology's productive forces involve the actions of a complex host of characters. A political economy of media would recover the work done by our mundane media.

This elision is, of course, most often a practical necessity. Research cannot return every time to raw data sets, to first principles, to the minutiae of every project archive. We do have to rely on media architectures that gather and articulate dispersed sites, collections and archives. Our point is that unpacking the work done in these architectures has profound implications for our archaeological research.

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Archaeology's Commitment to Mimetic Media

The actuality of archaeological work, its "kairos" is, we maintain, connected to an ethical imperative to record authentically, with fidelity. Because archaeologists change the past in their work, even discard and destroy the contexts, they most often give epistemological primacy to the material remains: a drawing or photograph is considered secondary or supplemental to the actual materiality of the past, even though we could not construct knowledge of the past without such media. This makes visual media supplemental in a Derridean sense (Derrida 1976). The archaeological image is like a prosthesis—an artificial substitution to replace a loss or absence. But it has a double significance: the image supplements a deficiency, the loss of context, while signaling also a deficiency in the past itself. The past cannot be known without media. Archaeology works in this charged middle ground—a fundamental point that lies behind our elucidation of the political economy of archaeological media.

The epistemological deferment to the "original" past accompanies a strong commitment in archaeology to a particular kind of representational accuracy, one that is technologically enabled and based upon a correspondence theory of fidelity. The translation of experience of archaeological remains, with all their complex qualities, into media proxies frequently relies upon certain technologies (such as remote sensing and photography), instruments, and upon reproducible procedures and standards (such as cartography and architectural survey, or even finds drawing) that are taken to guarantee fidelity. There is thus a distinctive technophilia in archaeology, exemplified in early adoption of media technologies, whether it was the printed illustrated book, or systematic cartography, aerial photography, remote sensing, and, more recently, architectural and virtual reality (VR) software. An example was the hope placed upon the "pattern recognition work" of technology to remove, bearing the caveat of "junk in, junk out" in mind, the subjective archaeological observer ("first order observation") (e.g. Binford 1989:35; see Galison 1997 on "noninterventionist objectivity"). Media artifacts produced with the aid of technology are most often evaluated in archaeology according to their degree of correspondence with what they represent, their mimetic qualities.

Critiques of Mimetic Media

We will take a contemporary theme in archaeological visualization in order to examine the features of this commitment to mimetic fidelity. Since the 1980s archaeologists have taken up with enthusiasm software that allows 3D modeling and rendering. Coming out of professional architectural and engi-

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neering practice (computer-aided design) and the media industry (computer-generated imagery), increasingly affordable systems allow the creation of photorealistic simulations of ancient buildings and landscapes on the basis of archaeologically generated data. And not just on a computer screen; wearable media devices offer the possibility of more immersive simulations: Pompeii regenerated on a visor display, in the ruins themselves (Raskin 2002; Siewiorek, Smailagic and Starner 2008; and see Witmore 2004). Fidelity can certainly and appropriately be correlated with photorealistic accuracy, because photography effectively mimics the external appearance of things. If the past is decaying and being lost, the attraction of a photorealistic record is evident.

But this fidelity is precisely superficial. David Lowenthal (1996) has criticized the contemporary heritage industry for its reliance upon voyeuristic recreations that offer eye candy rather than insight. Nevertheless, the desire for sophisticated visualizations is increasing. Is this visual fetishism? We will investigate this point.

VR experiences, typical of gaming and entertainment software, are making their way rapidly into archaeology and cognate fields (Forte and Sillotti 1997; Frischer and Dakouri-Hild 2008). In the last quarter of 2008, for example, Google offered 3D modeling of Ancient Rome, superimposed upon their topographic and satellite imagery in Google Earth and based upon archaeological research and data processed at the University of Virginia. Visit Rome on your computer and you can fly through the ancient city of 320 AD. The visuality of such projects is highly complementary to CAD simulations. Second Life, an online world, has grown rapidly since its launch in 2003 to become one of the Internet's most discussed manifestations of VR. It has several archaeological and "recreational" sites of antiquity. To explore the issues of VR in archaeology, in 2006 the Metamedia Lab in the Stanford Archaeology Center, in affiliation with Stanford Humanities Lab, undertook an experiment in constructing an archival facility in Second Life.

Life Squared, built on an island in the online world Second Life, is an archaeology of an artwork made by Lynn Hershman Leeson and Eleanor Coppola in 1972. In the Dante Hotel in San Francisco Lynn created an installation of artifacts, traces and remnants, posing questions of who had been there and what had happened. In 2005 Stanford University Special Collections acquired the artist's archive which included what was left of the installation—texts, photos, artifacts. As part of the Presence Project (Gianacchi, Kaye and Shanks 2010), an international interdisciplinary collaboration researching the archaeology of presence, the Daniel Langlois Foundation funded the reconstruction of the 1972 art installation at the Dante Hotel in 2006 in Second Life. This "animated archive" has since appeared at the Museum of Fine Art Montreal and San Francisco Museum of Modern Art (Frieling 2008).

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Life Squared thus addressed questions of how to treat archaeological or archival sources as the basis for the reconstruction, replication, or simulation of an "original" experience and event: questions of how we might revisit the "presence" of an experience or event, in a "kairotic" connection, as defined above. A context is the future of the art museum in the absence of a self-contained artwork (how to curate "an experience"). Conspicuously, Life Squared is an experiment about modeling and simulation—those core epistemological practices in archaeology.

An obvious option was to photorealistically simulate the hotel of 1972 so that avatars might re-walk the corridors as if they were there back then. Most of the VR experiences in Second Life aspire to photorealism. But we chose another option. In order to remain faithful to the fragmented remains, and in order to open up the 2006 experience to new associations (the actuality of the past), we created an ichnography. We traced out the surviving floor plan of the building and located the archived images and documents of the 1972 installation in a skeletal wireframe that was reconstructed only to the extent attested by the sources. The fidelity to the original hotel of 1972 is highly selective; the hotel of 2006 in Second Life does not look anything like the original, yet it is empirically sound and contains nothing that cannot be verified. The result is something of a dissonance with the sunny photographs we have of the San Francisco street of 1972. Instead, it shares the ghostly light of Second Life of 2006 filtering through the digital ruins of a building hardly witnessed now in any record or archive.

With respect to visualization, rather than a stand-for, substitute or replica of the original, we chose to treat the "virtuality" of this online world as an opportunity for re-iterative engagement, for people to come to a fresh participatory experience (Frieling 2008), connecting then and now. The intention was to open up the past to new interests and involvement, with avatars in Second Life revisiting and reworking the past on the basis of the surviving traces. The implicit proposal is that photorealistic simulation is actually not particularly faithful to the past and closes off opportunities for such engagement, because such simulation appears to be finished, the past—if that is what it is—over and done with.

A broader argument concerns the transitive character of information. Life Squared is based upon the premise that the information rooted in archival sources needs to be worked upon if it is even simply to survive. Left in museum boxes, sources will molder and decay. Information requires circulation, engagement and articulation with the questions and interests of a researcher. Information, as active data, is a verb. Life Squared was explicitly treated as an experiment in "animating the archive."

Second Life, like an archaeological excavation, is a space for performance,

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Figure 1. Building the Dante Hotel in Second Life as part of the Presence Project's Life Squared.

as well as being indebted to certain visual media. We treated the space not as a representational medium, an animated 3D image, but as a prosthesis, as we defined above, a cognitive instrument for probing this particular connection with the past. This shifts attention from visuality per se, the experience of forms and textures and the quality of the photorealism (aspiring to the response that "it surely did look like that"), to the specifics of how the traces of the past connect with the present, the avatar visiting the "hotel" of 2006 in a particular encounter located in the expectations and experiences of that avatar and their owner. This is to treat such a 3D world as a mediating space, and the construction of an archive as a co-productive project involving curator, the artifacts and the visitors or users.

Another context for this project is the genre of theatre/archaeology, defined by Pearson and Shanks (2001) as the re-articulation of fragments of the past as real time place/event, and sharing an interest in memory practices as part of a distinctive trend in contemporary fine and performing arts (Enwezor 2008; Giannacchi, Kaye and Shanks 2010; Kaye 2000).

Tri Bywyd ("Three Lives"), for example, a work in 1995 by performance company Brith Gof, was an ambitious work of such a theatre/archaeology (Kaye 2000:125-138). It was an assemblage of three portfolios of evidence relating to three deaths in west Wales—Sarah Jacob, the "Fasting Girl of

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Wales", Lynette White, murdered in Cardiff in 1988, and an anonymous farmer's suicide. These portfolios were mediated through five performers, three architectures, an amplified sound track, various props including flares, buckets of milk, a bible, a revolver, and a dead sheep. Tri Bywyd was set in the archaeological remains of a farmstead deep in a forest plantation.

The explicit purpose of the work was to visualize and make manifest the subtleties of these archaeological/forensic narratives, but not to simulate or represent, nor indeed to explain. The work's aesthetic, in common with much contemporary art, was not at all mimetic. "Three Rooms" (Shanks 2004) was another experiment in the documentary articulation of three forensic portfolios that eschewed any mimetic visuality, plot or character, but hinged on performance and the burden of work carried by memories and traces, albeit set in the long tension between urban and rural experience.

We needn't look only to the contemporary visual and performing arts for a critique of photorealistic mimesis. The impact of Foucauldian notions of discourse and the growth of the interdisciplinary field of media studies has resulted in a substantial body of critical reflection upon representations in archaeology (Clack and Brittain 2007; Joyce 2002; Molyneaux 1997; Smiles and Moser 2005). For instance, Moser (2001) has brought discourse analysis to the visual conventions or visual language of archaeology. Clack and Brit-

Figure 2. Tri Bywyd (Three Lives) – site specific theatre/archaeology.

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Figure 3. Tri Bywyd – image and document.

tain (2007) have taken a cultural studies approach, highlighting the manner in which popular appropriations of archaeological information have a "dumbing down" effect on representations. (On the other hand, they equally emphasize that archaeological representations must be communicable to an increasingly interested public). This critical examination of archaeological representation is important. Indeed, a self-critical orientation steers us away

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from historical and cultural biases—such as the portrayal of Pleistocene "man the hunter" or other conceptions based upon patriarchal, sexist values (Gero and Root 1990).

Such appraisals generally end with separating off "popular" and "pedagogical" representations from "inter- and intra-specialist" representations (Clack and Brittain 2007:31). This seems to imply that certain representations remain closer to the data while others, geared toward popular communication, inevitably stray from certainty. But perhaps a broader question would simply ask: just what are we representing with our visual media in archaeology? Of course it will depend upon the image or graphic, but ultimately we can ask whether there is a datum that can be taken as the origin of a representation? We will come back to this question.

Correspondence and Evaluation

Certainty and assurance also motivate archaeology's desire for photorealism. The belief in representing the past with fidelity, as it was, is coupled with the need to discriminate between different renderings. Expressions of archaeological epistemology have variously revolved around the notion of epistemic fit to the material past (Wylie 2002). In a concern to achieve more accurate or nuanced representations of the past, archaeology has moved in a historical trajectory in the development of its theory and methodology along with other natural and social sciences. Driven by ocular analogies, the pursuit of the "mirror of nature" (Rorty 1979) has involved the sciences in perennial questions of "representation and reality" (Putnam 1988). Philosophers of science have characterized such inquiry as the *summum bonum* of modernist epistemology. The reasoning and motivation is not misplaced: such a principle of representation grants evaluative capacity to knowledge claims. Better representations are judged to match, hook onto or mirror, to correspond to, an external reality. Therefore, better representations may be evaluated by peers as superior according to how they fit with the past.

There have risen a complex host of problems associated with such a one-to-one notion of representation, as well with how to achieve consensus in the judgment of such representation—through predictive success, instrumental efficacy, coherence to other representations and so on (Hacking 1983). We mention here the interesting history of modernist notions of vision as representation (Berger 1984; Foucault 1990; Gombrich 1960). This notion is a legacy owing much to the scientific canonization of Galileo and his ocular amplification, and to Leon Battista Alberti and his rendering of the world in two-dimensional "windows" through single-point perspective. The critical issue in terms of epistemic solidarity, of building alliances around knowledge,

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has been the idea that settling disputes in knowledge claims hinges upon "seeing-it-as-it-really-is." Indeed, this was the beginning of Boyle's experimental method for science and the importance of demonstrations in early modern science (Shapin 1984). Unblemished and cleansed of distortions, either on the part of theoretical conception or methodological apparatus, Nagel's (1986:9) climb to an unpolluted "view from nowhere" might enable us to represent the world with fidelity.

Such a conception of knowledge is very difficult to get to work. Or, more specifically, knowledge claims do work; they just don't work by demonstrating any epistemologically privileged relationship with an external and removed reality. We would sidestep the problems by refusing the radical distinction between the past and our claims to know it. This is not to question the reality of the past by asserting that we construct it. It is simply to question a modernist epistemological tradition that presumes an ontological rift between people and things, between internal minds and external reality, between the past and the present, between what we do (as archaeologists) and how we represent this practice. And if we sidestep such a deeply rooted epistemology, we avoid a theory of correspondence that bolsters a faith in representational proxies. As Hilary Putnam puts it, "the idea that truth is a passive-copy of what is 'really' (mind-independently, discourse-independently) 'there' has collapsed under the critiques of Kant, Wittgenstein, and other philosophers, even if it continues to have a deep hold on our thinking" (1981:128).

In this shift away from questions of epistemology the answer to the question of whether there is a datum, an origin to archaeological "mediawork" and representation, is clear. The idea of a "record" waiting to be passively recovered and represented is too simple. It begs the "Pompeii Premise," an assumption that there is an inert "past" to be represented free from distortion (Binford 1981; Schiffer 1976). Thoughtful archaeologists have been long aware that the archaeological record is something created through the work of making media. Transforming the dynamic and materially complex ruins in the landscape into media artifacts releases them into mobility as "immutable mobiles" that may be taken back to our laboratories and archives (Latour 1990; see also Lucas 2001; Witmore 2006).

Several discussions are relevant here regarding the complexity of archaeological science: Shanks and Tilley (1987) introduced the notion of archaeology's "fourfold hermeneutic" to capture these transformations; Binford (1977, 1989) and Schiffer (1988) debated the character of the "middle-range theory" required to articulate remains that had been subject to processes of transformation of natural and social origin with past socio-cultural process; Patrik (1985) and Barrett (1988) contested even the reality of an "archaeological record." The ethics of heritage interests and their impact upon what

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is left of the past are in the forefront of concern in archaeology's professional sector today. Visual media and representations occur throughout this manifold of operations performed upon the past.

Asking whether there is something that ultimately we are representing in our archaeological work, questioning the nature and origin of the archaeological record and determining our epistemic relationship to it certainly provokes us. The particularity of archaeological work centers upon the "kairotic" temporality we have outlined above, upon the relationship of artifacts and sites to social, cultural and historical change, and upon the processes of decay and entropy that remains of the past undergo.

This transformative power of visual media is amplified through the algorithmic alchemy of digitization. And the extraordinary power of digital media is perhaps encapsulated in Geographical Information System (GIS) and VR software. Software which offer the potential of connecting data to spatial coordinates, fleshing out site and landscape, and rendering simulated pasts in photographic detail, all on the scale of world building—as complete a model of the past as can be possible; a "digital heritage" (Webmoor 2008). We might become enthralled with the "cool factor" and get caught up in a technological optimism that would aim at such simulation and accept mimetic correspondence as achievable, at least in some circumstances. But the epistemological conundrums remain, and we suggest it is better to think of archaeological work in a different way, not as mimesis, modeling, simulating, or representing, but as a fundamentally transforming mediation or translation, work done in the spaces between past and present.

Force for this view of representation in archaeology comes from a range of work in science studies and cognitive science. Early modern experimental science was wrapped up in "natural magic." Pre-scientific instruments were frequently popular parlor tricks. Magic lanterns, the camera obscura and Robert Boyle's vacuum pump were employed for entertainment and edification. Francis Bacon and John Locke were distrustful of these instruments and the visual rhetoric that they produced (Hankins and Silverman 1995). Nevertheless, such popular technologies came to be valued for their capacity to augment the human senses and inscribe what they registered at the boundaries of human perception. Early demonstrations to gatherings of peers were intended to show, through viewing and witnessing the instruments themselves, the matters of fact under consideration. These ocular demonstrations relied upon common and shared experience for the settling of disputes concerning hypothesized entities and natural philosophy.

As considerations of nature became more abstract, delving into matters of cause and effect, instruments had to increasingly produce visual outputs. By the end of the eighteenth century, demonstrations gave way to record-

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ing instruments that mechanically translated relationships into visual media that were not modeled upon ocular perception. An example was James Watt's indicator diagram of 1796. A gauge attached to a locomotive engine physically translated the pressure in a cylinder into an inscriptional graph of volume versus pressure. These instruments translated a world not visible by the unaided senses into "self illustrating phenomena." They produced visual media that were abstractions of physical processes. And ever-increasing amounts of background knowledge and assumptions were required to "read off" the invisible processes. They "showed" results, but through non-mimetic transformation.

Developing from William Playfair and Johann Lambert's earliest diagrams, graphs, charts and other visualizations so common now to scientific endeavor retain little physiognomic or iconic relationship to their subject matter. Instead, these visual media enable cognitive work to be performed. They have become cognitive prostheses rather than visual analogs for the world around us (Hankins and Silverman 1995; Tversky 1999). Visual media help us think and work as tools. They only "represent" in a very loose and often highly abstract manner. In step with the increased sophistication of instrumentation, our capacity for "intervention" comes to be the epistemic guarantor of our results. Ian Hacking, a prominent advocate of scientific realism, states the matter this way: "experimental work provides the strongest evidence for scientific realism … because entities that in principle cannot be 'observed' are regularly manipulated to produce a new phenomenon and to investigate other aspects of nature." (1983:262). Fidelity may be futile, whereas pragmatic criteria, the ability to get work done and accomplish specific tasks in research, are what count.

Consequently, visual media are valued for their indispensable role in making modern science work (Latour 1999; Lynch and Woolgar 1990). Emphasis has shifted away from debating whether information conveyed visually corresponds to the world toward information design, toward effectively expressing research with specific modes of engaging that information in mind (Tufte 1997, 2001). We reiterate that correspondence is a difficult road to take with archaeology's visual media. It robs media of their active role, begs wearisome epistemological questions, and encourages a passive "past voyeurism" on the part of the public. Media are far from copies.

Walter Scott and the Anxiety of Mediation

We will continue with another more archaeological illustration of the active role of media. Let's indeed put to one side the epistemological conundrums and return to the early nineteenth century and the antiquarian tradition.

Walter Scott was a magistrate, antiquarian, musicologist, novelist, essayist, collector, landowner, poet, bestselling author in the book trade of the early

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nineteenth century, inventor of the historical novel. His focus was a borderland between Scotland and England, between past and present. In 1814 was published his "Border Antiquities of England and Scotland." The two volumes, profusely and wonderfully illustrated with engravings in classic picturesque style, are subtitled Border Antiquities—"Comprising Specimens of Architecture and Sculpture, and other vestiges of former ages, accompanied by descriptions. Together with Illustrations of remarkable incidents in Border History and tradition, and Original Poetry." It is a gazetteer of archaeological interests.

A long introduction takes the reader through an historical narrative of the borders. On pages xviii–xix Scott is dealing with the Roman border and Hadrian's Wall: "The most entire part of this celebrated monument, which is now, owing to the progress of improvement and enclosure, subjected to constant dilapidation, is to be found at a place called Glenwhelt, in the neighbourhood of Gilsland Spaw."

He adds a footnote:

> Its height may be guessed from the following characteristic anecdote of the late Mr. Joseph Ritson, whose zeal for accuracy was so marked a feature in his investigations. That eminent antiquary, upon an excursion to Scotland, favoured the author with a visit. The wall was mentioned; and Mr. Ritson, who had been misinformed by some ignorant person at Hexham, was disposed strongly to dispute that any reliques of it yet remained. The author mentioned the place in the text, and said that there was as much of it standing as would break the neck of Mr. Ritson's informer were he to fall from it. Of this careless and metaphorical expression Mr. Ritson failed not to make a memorandum, and afterwards wrote to the author, that he had visited the place with the express purpose of jumping down from the wall in order to confute what he supposed a hyperbole. But he added, that, though not yet satisfied that it was quite high enough to break a man's neck, it was of elevation sufficient to render the experiment very dangerous.
>
> (Scott 1814:xviii–xix).

Was it that Ritson, a noted literary antiquarian, hadn't read the many accounts of the Wall published since the sixteenth century in that fascinating lost genre—chorography? Unlikely. Had he forgotten? Or was it rather, as Scott suggests, that his "zeal for accuracy" meant he had to visit and witness the very structure in order to authenticate the written accounts of the remains? He clearly assumes that there was or had been a Wall: ancient authors and sources document it. What he disputes is that there was anything left. This tension between text and monument is very characteristic of antiquarian debate, and Ritson was renowned for his skepticism regarding claims

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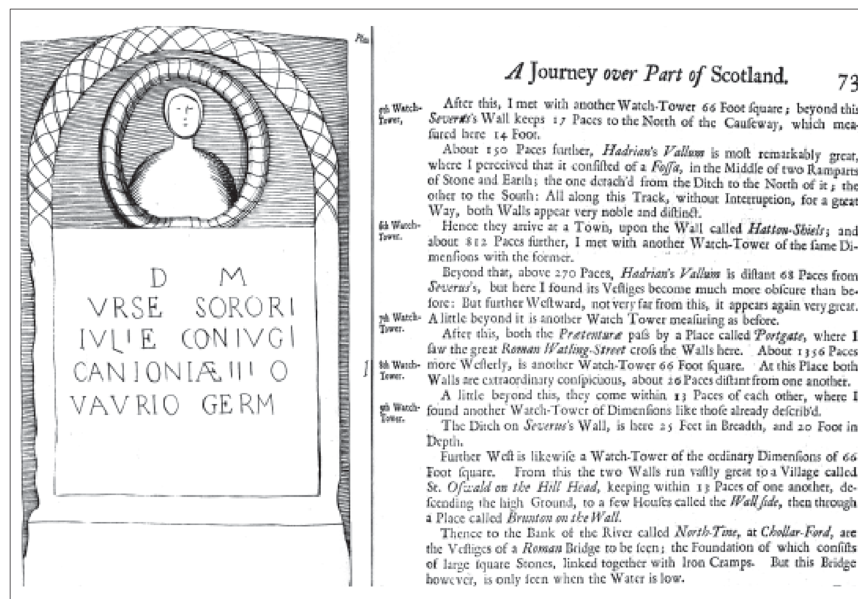
for the authenticity of ancient manuscripts and historical documents.

Alexander Gordon's *Itinerarium Septentrionale* was published through private subscription in 1726. It deals with Roman remains in the north and goes into great detailed description of the surviving remains of Hadrian's Wall. Ritson may not have read it. He may have known it, but still doubted the description of Hadrian's Wall. We may assume that Scott had read it: his copy is still in his library at Abbotsford. Figure 4 shows part of a page from this account of "A Journey thro' most of the Counties of Scotland and those in the North of England."

Gordon literally paces out and records every boot-marked trace of the Wall in his itinerary. He might not have jumped off the Wall, but you can almost hear every crunch of his boots through the pages of his expensive folio.

The book sets the "northern journey" in the context of accounts in ancient texts of the Romans in the north. Gordon knows his classical authors. The engravings are revealing. He illustrates many rectangular monuments in their various relationships with straight Roman roads. The monuments are all unexcavated and comprise simply earthen features—tumbled down overgrown ramparts. Gordon's illustrations mark out nothing except rectangles and lines; though they have, significantly, been paced-out. The engravings of sculpture show only sketched-in figures, focusing instead on the transcription of the inscribed text.



A Journey *over Part of* Scotland. 73

5th Watch-Tower. After this, I met with another Watch-Tower 66 Foot ſquare; beyond this *Severus*'s Wall keeps 17 Paces to the North of the Cauſeway, which meaſured here 14 Foot.

About 150 Paces further, *Hadrian's Vallum* is moſt remarkably great, where I perceived that it conſiſted of a *Foſſa*, in the Middle of two Ramparts of Stone and Earth; the one detach'd from the Ditch to the North of it; the other to the South: All along this Track, without Interruption, for a great Way, both Walls appear very noble and diſtinct.

6th Watch-Tower. Hence they arrive at a Town, upon the Wall called *Hatton-Shiels*; and about 812 Paces further, I met with another Watch-Tower of the ſame Dimenſions with the former.

Beyond that, above 270 Paces, *Hadrian's Vallum* is diſtant 68 Paces from *Severus*'s, but here I found its Veſtiges become much more obſcure than before: But further Weſtward, not very far from this, it appears again very great.

7th Watch-Tower. A little beyond it is another Watch Tower meaſuring as before.

After this, both the *Prætenturæ* paſs by a Place called *Portgate*, where I ſaw the great *Roman Watling-Street* croſs the Walls here. About 1356 Paces

8th Watch-Tower. more Weſterly, is another Watch-Tower 66 Foot ſquare. At this Place both Walls are extraordinary conſpicuous, about 26 Paces diſtant from one another.

9th Watch-Tower. A little beyond this, they come within 13 Paces of each other, where I found another Watch-Tower of Dimenſions like thoſe already deſcrib'd.

The Ditch on *Severus*'s Wall, is here 25 Feet in Breadth, and 20 Foot in Depth.

Further Weſt is likewiſe a Watch-Tower of the ordinary Dimenſions of 66 Foot ſquare. From this the two Walls run vaſtly great to a Village called St. *Oſwald on the Hill Head*, keeping within 13 Paces of one another, deſcending the high Ground, to a few Houſes called the *Wall ſide*, then through a Place called *Brunton on the Wall*.

Thence to the Bank of the River called *North-Tine*, at *Chollar-Ford*, are the Veſtiges of a *Roman* Bridge to be ſeen; the Foundation of which conſiſts of large ſquare Stones, linked together with Iron Cramps. But this Bridge however, is only ſeen when the Water is low.

Figure 4. Alexander Gordon - Itinerarium Septentrionale.

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Ancient authors, epigraphy and the antiquarian's boot—the topic here is the fidelity and authenticity of different kinds of witnessing of antiquity and its relics. This witnessing, representation if you like, is in an indeterminate and debatable relationship to voice, text, image and figure.

Scott's own writing represents a miscellany of voices articulating past and present. His bibliography includes: ethnomusicological collection of medieval bardic epic poetry; his own poetry; medieval historical novels (most notably Ivanhoe); the antiquarian gazetteer; historical novels dealing with Scottish themes in recent memory (such as Waverley and Guy Mannering); essays and non-fiction in various genres. Many of these were illustrated with the latest in steel engravings.

Scott consistently elides fact and fiction in his examination of traces in the present of the past (archaeological, memory, textual, placenames, landscapes). We should note here a recurrent theme in literary antiquarianism in the eighteenth century—establishing the authentic voice of the past—from Thomas Percy's "Reliques of Ancient English Poetry," an edited edition of antiquarian manuscript sources, through to Macpherson's Ossian, the wholly fictitious creation of a medieval bard (see Stewart 1994 for a fascinating treatment of this issue). A related interest is the transition from voice (oral poetry, verbal account, memory) to text (a new version of the old song, the annotated transcription/edition, the historical novel, historical narrative). This is inseparable from address to the transition from the land to the illustrated book—how the witnessing pace of the antiquarian, how sites and their names, how place-events become itinerary, chorography, cartography, or travelogue.

Conventional notions of media (as material modes of communication—print, painting, engraving, or as organizational/institutional forms—the media industries) are of limited help in understanding what Scott and his contemporaries were up to in mediating authorial voice and authentic traces of the past. We can consider the rise of cheaper engraved illustration, the popularity of the historical novel in the growth of the publishing industry, developments in cartographic techniques and instruments. But in order to understand how all this and more came to be archaeology—the field, social and laboratory science—we need to rethink the concept of medium.

Scott, Ritson, Gordon and their like are making manifest the past (or, crucially, are aiming to allow the past to manifest itself), in its traces, through practices and performances (writing, corresponding, visiting, touring, mapping, pacing, debating), artifacts (letter, notebook, manuscript, printed book, pamphlet, map, plan, plaster cast, model), instruments (pen, paint brushes, rule, Claude Glass, camera lucida, surveying instruments, boots, wheeled transport, spades, shovels, buckets), systems and standards (taxonomy, itinerary, grid), authorized algorithms (the new philology, legal witnessing),

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dreams and design (of an old Scotland, of a nation's identity, of personal achievement). Making manifest came through manifold articulations. And "manifestation" was a complement to epistemological and ontological interest—getting to know the past "as it was, and is."

Visual media, in the conventional sense (print, engravings, maps), are involved, but also much more that challenges the premises of communication and representation underlying the concept of medium. What we are seeing, we suggest, is a reworking of ways of engaging with place, memory (forever lost, still in mind, to be recalled), history and time (historiography, decay, narrative), and artifacts (found and collected) when the author's voice was undergoing question and challenge (Who wrote the border ballads?—Is this our history?—Whom do you trust in their accounting for the past?), when ownership of land and property, and the traditional qualities of the land were being altered under rational agricultural improvement, when property was being reinvented as landscape, when the status of manufactured goods was changing rapidly in an industrialized northern Europe. That dinner with Ritson and the visit to Gilsland are establishing what constitutes an appropriate way of engaging with the past. It is only later on that Scott gets called a historical novelist, Ritson is marginalized as an irascible literary antiquarian, largely forgotten, and archaeology becomes the rationalized engagement with site and artifact through controlled observation, "fieldwork" and publication in standardized media and genres.

In this debate over appropriate ways of engaging with the past, medium is better thought of as mode of engagement—a way of articulating people and artifacts, senses and aspirations, and all the associative chains and genealogical tracks that mistakenly get treated as historical and sociopolitical context. Scott presents us with a fascinating laboratory of such modes of engagement, one that runs from field science to romantic fiction through to what was to be formalized as altertumswissenschaft by German classical philology.

By the mid nineteenth century the debate about mediating the past had quietened into an orthodoxy of modes of engagement that came with standardization of practice and publication—an orthodoxy of measurement, inscription and illustration with which we are now very familiar.

Maps as a Cognitive Tool

Spatial tracing and the notion of information as a verb bring up the map: a touchstone medium for archaeology. Indeed the map directs most other methodologies at archaeological sites. Maps have become an organizing informational framework—much like a Microsoft Windows Operating System—within which information must be rendered compatible. Considerable

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investment has been made in the digital evolution of the map into GIS, maps combined with databases.

The map is a very indirect compression of certain qualities of the material world. This "information" is selected from the total synaesthetic possibilities of experiencing place. So, far from simply a mimetic model or objective simulation of an archaeological location, a map augments certain visual relationships while minimizing or not registering others. It reduces out the noise of background phenomena. This is, of course, suited to many purposes. And maps work well in being purpose-driven.

Work by one of us at Teotihuacan, Mexico—an incredibly complex and monumental site—underscores why maps should be treated as cognitive and perceptual prostheses. Along the lines of visual information as a verb, they should not be regarded as stand-alone representations of archaeological features and landscapes. Let us illustrate again the contrast between visual representation and mediation.

The Teotihuacan Mapping Project (TMP) is an exemplary case of archaeological surface survey and mapping (Figure 5). It was begun in the early 1960s and completed in 1973 with the publication of a two volume, four-part compendium, replete with pockets and a total of 147 pull-out maps at a scale of 1:2,000 covering an area of over 20 square km (Millon, Drewitt and Cowgill 1973). The smaller scale, overview map ("map 1") has become a rock star poster of mapping in archaeology more generally and working at Teotihuacan specifically. So let's ask: when does a map become a great map? And what makes the TMP map a great map?

We can compare the TMP with the unique history of mapping at Teotihuacan over the course of five centuries—a media cascade—and begin to identify important qualities. As early as 1560 we have the so-called "Mazapan Map," a copy from a lost original, which formed part of sixteenth century Spanish records of farmlands and land ownership in New Spain (see Arreola 1922). A "map" complementary to the Mazapan was published two decades later in 1580 as part of the relación geográfica de San Juan Teotihuacán. This "map," rather than landholdings, emphasizes imperial infrastructure: that of the Spanish grafted upon that of the Aztec. By the time of Ramón Almaraz's 1865 work we can confidently remove the quotes from around map. There is a standardized, consistent quality that is facilitated by the "view from nowhere." There is also a selective fidelity going on: what to visualize and what to leave blank. Gone are the personages found on the Mazapan depiction, the stylized church façades of the relación geográfica and the individual maguey cactus and other rich particularities of nineteenth century "maps" (such as those of Brantz Mayer in 1844 and Désiré Charnay in 1887).

What has been gained and what has been sieved away through mediation?

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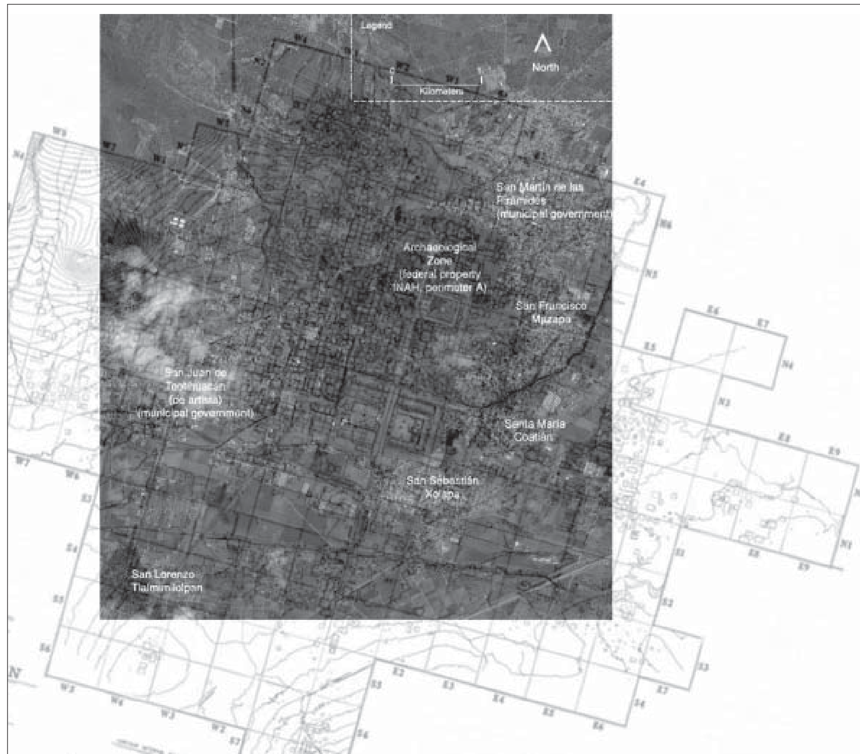

Figure 5. Teotihuacan Mapping Project's "map 1" mixed with satellite imagery of Teotihuacan (adapted from Millon, Drewitt and Cowgill 1973).

Over the course of five centuries of mapping the same ruins we arrive at some key goals or vectors in making maps: compression of data; micro-macro combination; optical consistency; fungibility/combinability; extensibility; light-dark contrast/presentation. Its superlative attention to these qualities make the TMP a paragon of archaeological mapping.

The precision and detail of putting on paper what was there in the 1960s at Teotihuacan is no doubt part of this. The team found and mapped the boundaries of the site—a monumental undertaking in surface survey. But it is how the map serves the goals of the future, how it creates affordances for future research projects, that makes it great. All subsequent depictions of the site, from 3D "fly throughs" of a virtual La Ventilla apartment compound to stratigraphic profiles from a trench in the ciudadela, may be inserted to "hang" on the scaffolding of the TMP map. Like a house, it is a media architecture built for future generations. The map is also, contrary to the crisscrossed appearance of its analog and static lines, fluid. Extensible, it can infinitely expand its grid outward to cover macro features; conversely, it

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can fold the micro details of burial offerings deep within the pyramid of the moon into its sliding scale. It is mercurial media at its best.

The TMP map also works as a prosthetic device (Webmoor 2005). Maps work through the inextricable relation between perception and schematic visualization (Figure 6). Maps convey information as visual short-hands. But in practice maps only work, only allow navigation and way-finding, via linking this abstracted information beyond the immediate perceptual and cognitive capacity of a map-reader to what is available perceptually on-the-ground—an analog version of "wetware" (Gell 1985; Muehrcke and Muehrcke 1998). The perceiving map-reader becomes a conduit for coordinating information offered directly through perception—of features, plazas or pyramids—and indirectly through the schemata that are maps. One cannot operate effectively without the other. This is cyborg ontology—the articulation of "naturecultures" with device and human body engaging in purpose-driven practice (Haraway 2003; Manovich 2006). In this sense, maps are indeed better understood as prostheses. Restoring, supplementing and augmenting human perceptual and cognitive capabilities; engagements with media that far outstrip the overburdened notion of "representation." We reiterate that mediation is less what we do with information—to convey, condense or distribute—and more how we intimately function through visual media.

Certain visual qualities are, to be sure, carried from the material world and inscribed on maps. But thinking in terms of correspondence doesn't get at

Figure 6. Mapwork at Teotihuacan—photograph and map.

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why the TMP map is an excellent map. It may be accurate with respect to what it depicts. More importantly it is useful. Corresponding to the world may afford utility. But, as students and historians of science have learned and we have noted above, judging visual media by correspondence holds us spellbound by the modernist epistemological conundrum (Webmoor 2007). We must be more pragmatic with our media.

Mediation not Representation

In directing attention away from the communicative and representational function of media we are arguing for a more performative appreciation of archaeology as work done on the past, productive labor directed often toward building knowledge of the past, where such knowledge is an achievement, not a discovery.

That the "archaeological record" of sites and remains is an outcome of archaeological practice rather than a datum seems now well-established (Hodder 1999; Lucas 2001; Patrik 1985). The past, in its archaeological traces, is assembled through engagements with it, operations performed, through instruments, archives, networks of institutions, and, of course, visual media. In this archaeological work, representation and "accuracy" come second to the critical need to move back and forth, to retrace the connections between the material remains, the evidence, and their stand-ins or proxies, the texts and visuals. The measure of media is their ability to afford such movement, such engagement, and to what extent they afford the possibility of future action upon and engagement with the past. One way that media may do this, somewhat ironically, is that representation can provide closure upon a piece of research. A convincing rhetoric (Gross 1990) of text and image, a marshalling of evidence and study can "blackbox" research such that it can be taken as given, work can move on, at least until the matter is reopened (Latour 1987). One aspect of such rhetoric involves visual media being treated as illustration, that is they may act primarily as visual support for statements made in a text (Webmoor 2005); photographs of an excavation, for example, may affirm the statements made about the structure of the site, rather than provide evidence for debate (Shanks 1997).

As corollary to this appreciation of active media(tion), the way media work with archaeologists, the paradigm of the archaeologist as custodian or steward of the past is under serious challenge. As in the eighteenth century, this challenge is to do with shifting definitions (legal included) of cultural property. Archaeologists are again having to address the political matter of re-presentation—that is, advocacy and witnessing, who is representing (in a constitutional as well as communicative sense) the past, for whom, and on what basis.

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That the past is there as a datum to be represented is under question; though, of course, the traces remain, conspicuously prompting these questions. What one of us has elsewhere (Shanks 1999:9–36) called the "expressive fallacy" (that archaeological texts somehow "express" or represent the past) is being recognized and accepted, as archaeology moves towards a paradigm not of stewardship, but of co-production. We are all archaeologists, working, in different ways, on what is left of the past, sharing a modernist archaeological sensibility attuned to materialities and temporalities (Schnapp, Shanks and Tiews 2004). The critical reflexivity so apparent even in that anecdote from Scott has been, of course, a feature of theoretically informed disciplines for several decades. The history of archaeology is becoming an extended disciplinary memory that recognizes negotiation and multivocality in situated knowledges. Archaeologists work with others in constructing pasts. We are indeed back with the eighteenth century in this awareness of the political economy of archaeological work on what remains of the past in the present.

The Potential of New Digital Media

This evolution of archaeology is connecting with deep changes associated with digital media, with the increasing ubiquity of media, their fungibility, and their own changing political economy (Webmoor 2008). Archaeology must find its value in a growing economy wherein the inherited roles of "producer" and "consumer" are beginning to merge with that of the participatory "user."

We can take a photo on our phones, send it as an email, post it on a blog, share it on a social web network, print it out, display it in a gallery in Second Life, add it to a lecture slideshow, add it to a home movie. This fungibility is part of an increasingly diverse political economy (you might call it a cultural ecology) of media. No longer is it quite such a regularized process of painting a landscape, publishing a site report, printing a museum catalog. The same "content" can lie behind very diverse media manifestations, different contexts of manipulation and consumption. We are very aware of contested property rights in relation to cultural creativity (Lessig 2008). There is considerable effort being made now to pin down cultural resources, imposing restrictions. Issues of access (who gets to produce and consume) however, now have less to do with ownership of the means of production (owning the printing press). In this new political economy, the notion of medium as mode of engagement prompts us to look beyond product (the image, the text), to the conditions of conception, manufacture, distribution, consumption and curation or discard. These are internal to the media object. A picture is such a distributed field, as well as a material artifact. Second Life is not a "virtual world", but a

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prosthesis, an extension of sociality into another synthetic and commoditized mode of engagement, usually alone in one's home, with screen, currency, server network, graphical objects, other residents, company managers.

Two key and contemporary concerns in this diversity of media and information are noise (spam) and trust (think of Wikipedia and Google searches). The issue of noise refers us to the sorting of value, to hearing the voice in the crowd, finding the archaeological artifact in the debris of history. The issue of trust is clear in the question of whether the voice or image we have found on the web is as authentic as we might wish it to be. These are constitutional issues of re-presentation, with constitution defined as the political settlement surrounding who can give voice, where and for whom, and who can listen and reply. These are also classic concerns of collegiality in the academy which has traditionally valued the open pursuit and sharing of knowledge.

This is the intimacy to us now of those eighteenth century concerns with the authenticity of ancient and modern texts, the voice of the author, concepts of community (region and nation), authentic pasts (whose pasts?), visiting remains, reanimating them in the present.

On the basis of these current changes, let us conclude by forecasting the future of visual media in archaeology.

There is a powerful trend towards high fidelity photorealistic simulation. This will continue in archaeology simply because of the spectacle it offers. But a counter to this celebration of surface texture is the realization that a user's commitment to a "virtual reality" may depend little upon such fidelity—the most advanced 3D military simulations funded by the US Department of Defense's DARPA (Defense Advanced Research Projects Agency) identified a "threshold of commitment" to photorealism (see, for example, Lenoir and Lowood 2005; Lowood 2009 discussing military simulation). We have outlined some of the features of this non-mimetic mediawork. The importance of narrative is considerable, and different kinds of selective fidelity, imaginative dissonance and low resolution may be more important principles for visualization than would be expected, because they often engage the maker and viewer, listener or user more intensely and work effectively in community building and reinforcement.

This is particularly so given the trend towards sociality, narrative and networking, as much as technological wizardry, in new web-based media. We might contrast the remarkable achievements of the digital worlds in Hollywood movies and their offshoots in architectural graphics, such as the layer of ancient buildings on Google Earth's terrain map of Rome, with the island of Roma in the online world of Second Life. Roma, a kind of recreation of ancient Rome, exists through and for its community of enthusiasts; events and sociality are foremost in the life of this community.

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The past is more than ever a collaborative project in social networking systems like Flickr and Facebook. Web 2.0 media satisfy a suite of functionalities quite different to mimetic fidelity, such as user-generated content, mixing and mashups, database proliferation, customization and collaborative architectures. We can expect these to fuel the rethinking of archaeology as the steward of the past, as the discipline moves further toward a mediating role in cocreative acts of heritage, just as memory practices are altering with the proliferation of web-based information. And this future of memory has a double sense: digital media can facilitate the collation of an enormous range of interests, including those living intimately with archaeological sites and finds, in addition to enabling a publishing platform for more orthodox professional and academic archaeological expertise. Museums are regularly seen now as in educational partnership with communities as well as repositories of rare goods and expertise. Trends toward the democratization of information (consider the debates around Google's scanning of academic libraries) promise to raise awkward issues concerning expertise and the ownership of intellectual property. So digital technology has certainly amplified capture (the amount of data now kept from an excavation, for example). But it seems that storage, retrieval, distribution, and, we should add, the creative re-mixing or fungibility allowed by digital media, are all magnified with new media.

The politics of this participatory heritage involve questions of access and control, of intellectual property and stakeholder interest, as well as questions of authenticity and expertise. We do not consider it an eaggeration to connect the profound changes associated with the emergence of the modern public sphere in the eighteenth century with these contemporary challenge to our archaeological desire to represent the past.

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