Media Archaeologies*

Media-Archaeologies: An Invitation

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When members of the Committee for Audio-Visual Scholarship and Practice in Archaeology (CASPAR) decided to participate in a conference on media archaeology held in Bradford, UK in September 2014, they saw this as an opportunity to dispel familiar stories about what archaeology *does* and to demonstrate the diverse ways in which archaeology investigates media technologies, assemblages, and material-discursive networks (cf. Kittler 1990). As Wolfgang Ernst (this volume) sets out, media archaeologists differentiate their work from archaeology-as-such in that media archaeology "unfolds techno-mathematical sub-strata of current interface culture". Although media archaeology shares with archaeology-as-such a focus on material temporalities, it is less about historicized concepts of time than it is about the processuality of technological devices and operative media signals (Ernst, this volume). However, it is the challenge of understanding this time-critical processuality that is of precise interest both to those working on archaeologies of the contemporary world and to media scholars with interests in the material.

The Bradford conference was an opportunity to discuss how archaeology has always been a practice of investigating what Bernhard Siegert describes as "cultural techniques"; it is an investigation that decentres the "distinction between human and non-human by insisting on the radical technicity of this distinction" (Siegart 2015, 8; cf. Parikka 2013). Media technologies form part of the material-discursive assemblage that produces distinctions between human and non-human. Or, as Greg Bailey (this volume) puts it, following Karen Barad (2007), media technologies are the proper domain of the archaeologist because they operate within systems of observation and measurement that produce agential cuts

* Editor's note: We received more responses to this Forum topic than we have been able to include in the print issue of the journal, and have published a number of additional, online-only articles on the journal's website at www.equinoxpub.com/JCA

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that world the world. What emerges through reading the interdisciplinary contributions to this Forum is that media archaeology is much like archaeology-as-such in so far as strict definitions and agreements about what it *is* and is *not* are hard to come by.

The archaeologists assembled here practice careful excavation, yet they also argue for the value of fieldwalking, archival attention, and buildings recording. The special forms of archaeological practice that create excitement for, and gain traction with, media archaeologists are just as important a question for archaeologists as they are for media scholars. Although some of the participants in this Forum, which we believe is the first publication to bring archaeologists of the contemporary world and media scholars together to discuss their various uses of the methods, metaphors, and gestures of media archaeology, may call for a normative approach—a best way of doing media archaeology that conforms to international archaeological standards of practice—others wonder whether this might be one of those opportunities that invite archaeologists to develop new ways of attending to contemporary assemblages that produce space and time in ways that are profoundly different from the spatio-temporalities of, say, structured deposition. Promiscuous methods, zombie technologies, struggles over claims to rigour and proper naming can get in the way of work; the contributors to this Forum instead position those questions as important features of the cultural techniques that enact this field.

Archaeology continues to struggle with its relationship to media. The dominant practice of critiquing narrative and representation fails to engage with the very technicity with which archaeology concerns itself. Towards the end of 1975, Thomas Wight Beale and Paul F. Healy took to the pages of *American Anthropologist* to lament the lack of scholarship on archaeological films. They noted that while archaeologists were writing scripts and presenting to camera, they were not actually filming and editing. Reading early attempts to think about media and archaeology makes clear that connections were not recognized between the use of 16-mm cameras and Steenbeck flatbed film-editing suites and the use of trowels, theodolites, graph paper, etc. in the production of archaeology. The *camera stylo*, the idea of the camera as writing implement that produces ways of being in the world specific to its technicity (Astruc 1992 [1948]), needed to find expression through a consideration of the *camera truelle*, or trowel. Instead, nascent media archaeology remained focused on critiquing exposition and no link was made between the ways in which both camera and trowel produce the cuts in the world that shape what is sayable and doable.

I, too, failed to see this link in my own PhD research in the 1990s (Piccini 1999). While it began as an attempt to deconstruct media messages produced on television, in museums, and in heritage centres, two things quickly struck me. One was the way in which the material culture of heritage—from the "actual" archaeological record to their various media (re)enactments—participated in the ongoing enactment of community. That is, I was struck by the agentive transmediality of the material. The second thing that struck me was the durable, persistent materiality of heritage media. The precise forms that these media took led me to undertake spatial analyses of museum displays, to photograph the weighty presence of the TV in my living room, and to consider the bodily movements that people made while using clunky infrared audio kits at heritage

centres. In other words, I found myself using the techniques of anthropological archaeology to understand media as material-discursive practice. Yet, that attention to material-technicity remained implicit. I did not attend carefully enough to changes in photography and print technologies associated with postcard production, nor did I investigate rapidly shifting infrared technologies used in hand-held audio tours as specific techniques that produced new worldings.

However, it was clear that archaeology could think about media in archaeological ways, which seemed necessary at a time when the discourse around "new media" emphasized digitality and networked subjectivity (Hayles 1999). Utopian new media studies suggested that we might be freed from the fetters of actual flesh and labour. Of course, even then, it was not quite like that. Writers such as N. Katherine Hayles argued against a sense of postmodernity's fetishization of the dematerialized body and a virtualized reality: "The body's dematerialization, in other words, depends in complex and highly specific ways upon the material and *embodied* circumstances that the ideology of dematerialization would obscure" (Hayles 1993, 147; italics in the original). As Hayles observed, "one belief from the present likely to stupefy future generations is the postmodern orthodoxy that the body is primarily, if not entirely, a linguistic and discursive construction" (Hayles 1993, 147; see also Penrose 2013 on the archaeology of the postindustrial body). Critiques of the digital as immaterial gathered energy after the first Gulf War began to "take place" (cf. Baudrillard 1993) in a way that Euro-North American scholarship could *really feel*. Looking back now, it is easy to see a gathering storm of things in the material "turn", a turn that has itself now been carefully archaeo-historicized using "the taphonomic processes of residuality, durability and sedimentation of the remains of past events" (Hicks 2010, 27). At the tail end of "new media" textbook publication, scholars were explicitly acknowledging the materiality of digital media (Lister *et al*. 2009, 19–22). However, while recent texts, such as Johanna Drucker's (2013) detailed taxonomy of digital materialities and "performative materiality" (cf. Kirschenbaum 2005, 2008), and while graduate seminar courses on media and materiality, such as Shannon Mattern and Sepand Ansari's at the New School, take readers and students on rich and diverse tours of thing theory, material culture studies, non-representational theory, ecologies, textuality, and technologies,[1] there is a discipline missing. Archaeology appears to have made little impact on attempts to understand media's circulations through, and enactment of, the world.

Despite the absence of archaeology-as-such from media scholarship's concerns with the material, media and archaeology have quietly engaged in a tentative conversation across multiple sites for some time; a conversation that must acknowledge, but cannot be reduced to, the influence of Walter Benjamin and Michel Foucault. In the limited space in this introduction-as-provocation, I might point to a highly partial selection of different events, in (deliberately) fragmentary order. In 1985, Friedrich Kittler wrote what came to be translated, five years later, as *Discourse Networks, 1800/1900* (Kittler 1990), which gave an account of the materiality of hermeneutics. Around the same time, Siegfried Zielinski wrote his history and cultural technique of the video recorder (Zielinski 1986). In 2002,

1. The syllabus for the course at the New School can be seen here: www.wordsinspace.net/media-materiality/2012-spring/?page_id=15

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Bristol University launched its Masters programme in archaeology for screen media (unfortunately cancelled in 2014, just as media archaeology is gaining disciplinary recognition). Although set up through a partnership with the UK's Channel 4 and designed to teach young archaeologists how to be better producers and presenters, it sought to explore with students the critical potential for media practices that expressed, rather than represented, archaeological dispositions, and the programme encouraged students to consider the materialities of media technologies. In 2004, a film scholar, Thomas Elsaesser, wrote what was to become a highly influential essay on the new film history as media archaeology (Elsaesser 2004). That same year, an archaeologist, Cassie Newland, wrote a dissertation for an MA in Historical Archaeology on the archaeology of mobile phones (Newland 2004).

In 2005, Wolfgang Ernst, a classically trained archaeologist and early media archaeologist, wrote that

> antiquarianism acknowledges the past as artefactual hardware, so to speak, upon which historical discourse operates like a software. In a digital culture of apparent, virtual, immaterial realities, a reminder of the insistence and resistance of material worlds is indispensable, and all the more so from a media-theoretical point of view. (Ernst 2005, 589)

In a similar vein, Jussi Parikka argued that

> media archaeology needs to insist both on the material nature of its enterprise—that media are always articulated in material, also in non-narrative frameworks whether technical media such as phonographs, or algorithmic such as databases and software networks—and that the work of assembling temporal mediations takes place in an increasingly varied and distributed network of institutions, practices and technological platforms. (Parikka 2010)

In practice, according to Erkki Huhtamo, this media archaeology might be an enterprise that involves researchers "'excavating' forgotten media-cultural phenomena that have been left outside the canonized narratives about media culture and history" (2011, 203). As such, media archaeology focuses on the "nondiscursive infrastructure and (hidden) programs of media" (Ernst 2013, 59). The non-discursive and hidden programs of media might be, as Cornelia Vismann has argued (Vismann 2008), the material operations by which the state, subject, and law are enacted through practices of record-keeping and the production and organization of files. Difference—of approach, material, and scale—is therefore central to what has become formalized as media archaeology. Parikka's long-term collaboration with Erkki Huhtamo was published in 2011 as part of an attempt to synthesize media archaeology's diversity, a project crystallized in Parikka's *What is Media Archaeology?* (2012). Media archaeologists themselves acknowledge the productive paradox entailed in the ways in which these recursions produce media archaeology as a field in the first place (Parikka, pers. comm.).

And what of archaeology-as-such? From Silicon Valley to Atari dumps, from the mobile phone to the media technologies of post-war astronomy, and from telegraphy to the material-discursive actions of media as sensory prostheses, the global archaeological

community has produced a large number of important studies of media techno-assemblages that both map specifically archaeological approaches and push at the limits of archaeology as a discipline. What are the archaeological specificities that mark out a distinct disciplinary approach to understanding media? Much like the archaeologists investigating media, the media archaeologists are also interested in scalar change, material-discursive assemblages, and deep-time relations as they pertain to media technologies and networks. How, then, might the practices of media archaeologists challenge assumptions that archaeologists located within the discipline might have about their methodological and conceptual specificities? And how might the practices of archaeologists, that extend far beyond the trench, contribute to the work of media archaeologists? In short, where are the boundaries between media archaeologies and archaeologies of media? How are those boundaries drawn, performed, and maintained? And how might we work together to ask new questions of media technologies and their relations?

As the editors write in their Introduction to the *Oxford Handbook of the Archaeology of the Contemporary World*:

> Archaeology is, by very definition, the study of "old" or archaic things. Its etymological origin lies in the ancient Greek ἀρχαιολογία (or archaiologia)—ἀρχαῖος (arkhaios) meaning "ancient" and -λογία (-logia) meaning "-logy" or "science of". But contained within the name itself is an important sleight of hand, for we would argue that it is impossible to study the "past" as if it were somehow separate and external to the "present".
>
> (Graves-Brown *et al.* 2013, 1)

This sleight of hand invites archaeological investigation of all events and effects (Hicks 2010). Considering media archaeologically as material-discursive techno-assemblages is by far more productive than an Anglo-North American media studies' tendency to reduce media solely to ideology, power, and meaning. Media technologies are significant intensities that enact the administrative structures, minerals, regulatory frameworks, humans, frames, fossil-fuel-based energy, notions of love, hate, justice, and so on that "world the world", in the words of Karen Barad (2007, 160). Archaeological attention to the scalar material traces of these over time and space contributes to this process, too.

In bringing together this Forum the contributors acknowledge the importance of subtle differences and similarities performed across the scholarship. It is in part through difference that we point to our shared concerns as they make their matter. The aim of this Forum is not to set out a manifesto for a unified media archaeology that insists on a particular, if always contingent and provisional, set of archaeological "best practices". If anything, the contributions to this Forum highlight the diversity of method, site, scale, and ethos that we all use, and highlight the generative lack of any singular definitions of our disciplinary affiliations. Those differences are themselves contingent upon the media assemblages through which we work and are worked. Media archaeology and archaeology-as-such share concerns with dismantling and reconstructing media technologies in order to reveal secret histories and lost lineages. They also share an understanding that it is through the acts and apparatuses of observation and measurement—not just excavation—that archaeology produces itself. It is this interest in practice, what Dan Hicks outlined in

his important discussion of the material "turn" in his invitation to "look at archaeological practices—how archaeology enacts things—to understand what archaeology is" (Hicks 2010, 87), that shapes our activities. As Michael Shanks has argued, it is the messy mix of memory and collection practices characterizing modernity that are manifested as "archaeology" via academic and professional disciplinary discourse (Shanks 2012, 32).

And what kinds of archaeology are we *doing* here in this Forum (cf. Clarke 1973, 6)? Archaeologists-as-such practise landscape archaeology, field archaeology, field walking, rescue archaeology, desk-based assessment. They focus on stratigraphic superimposition and conduct meta-archaeologies of historiographic narratives. Media archaeology, on the other hand, is a material methodology that enables investigation of the cultural layers of technology, grounded in a fascination with the fragment, trace, and ruin: "it is in technical media that one finds the things a contemporary media archaeologist 'reads'" (Parikka, this volume). It describes, traces, and centres on conditions of relations and unfoldings that appear to promise immediacy and authenticity (Winthrop-Young, this volume). It is a time-critical process of technological devices (Ernst, this volume). It is gestural, an *anarchaeology* that invites us to search for a world not identical to the one that we are experiencing (Zielinski, this volume). Archaeology-as-such has moved away from "revelation" towards an understanding of the archaeologist's role in co-producing materialities. The past does not sit passively awaiting interpretation; it is made. And so it is perhaps unhelpful to try, fail, and fail again to settle a final definition of archaeology that would create a lasting connection between the media archaeologists and the archaeologists investigating media. The contributions to this Forum demonstrate that there are as many similarities across our interests as there are differences. In the printed and online versions of this Forum, what the contributors express is a commitment to thinking carefully and rigorously about the possibilities of existing and future encounters between our disciplines. Yet, there are still demands being made of one another: in order to be accepted, you must conform to archaeological norms. Those norms are, of course, the very stuff of media archaeology.

I end with an invitation to an opening. What might it be to consider our differences and our frictions as multiple possibilities? Consider while reading the following rich, generous, and diverse contributions what might happen if instead of seeing in one another only deficits, we reframe our encounters in terms of Gilbert Simondon's theorizing of the potential of transductive tension in the process of becoming (Simondon 1989; cf. Stiegler 2009)? That is, according to Simondon's thinking through the event and individuation via processes of crystallization, the "genesis of a structure in a milieu in a state of pre-individual tension requires […] a problematic coupling between the different realities that it engages in communication" (Sauvanargues 2012, 64). Why is a collective and reciprocal engagement necessary between non-archaeologists with interests in media materialities and archaeologists with interests in media technological assemblages? Perhaps, in recognizing that neither has reached an endpoint of being, that both continue to emerge, new events of practice that open up new possibilities might crystallize for each out of the materials through which we all work. Our problematic coupling speaks to a disciplinary individuation that is always in process, is never finished, and which will almost certainly produce new, unexpected things.

Bibliography

Astruc, A. 1992 [1948]. "Naissance d'une nouvelle avant-garde: la camera stylo." In *Du Stylo à la camera… et de la caméra au stylo: Écrits 1942–1984*, by A. Astruc, 324–328. Paris: L'Archipel.

Barad, K. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning.* Durham, NC: Duke University Press. http://dx.doi.org/10.1215/9780822388128

Baudrillard, J. 1993. *The Gulf War Did Not Take Place*. Translated by P. Patton. Bloomington: Indiana University Press.

Beale, T. W. and P. F. Healy. 1975. "Archaeological Films: The Past as the Present." *American Anthropologist* 77(4): 889–897. http://dx.doi.org/10.1525/aa.1975.77.4.02a00180

Clarke, D. 1973. "Archaeology: The Loss of Innocence." *Antiquity* 47: 6–18.

Drucker, J. 2013. "Performative Materiality and Theoretical Approaches to Interface." *Digital Humanities Quarterly* 7(1). Available online: http://www.digitalhumanities.org/dhq/vol/7/1/000143/000143.html

Elsaesser, T. 2004. "The New Film History as Media Archaeology." *Cinémas: revue d'études cinématographiques / Cinémas: Journal of Film Studies* 14(2–3): 75–117.

Ernst, W. 2005. "Let There Be Irony: Cultural History and Media Archaeology in Parallel Lines." *Art History* 28(5): 582–603. http://dx.doi.org/10.1111/j.1467-8365.2005.00479.x

____. 2013. *Digital Memory and the Archive*. Edited by J. Parikka. Minneapolis: University of Minnesota Press.

Graves-Brown, P., R. Harrison and A. Piccini. 2013. "Introduction." In *The Oxford Handbook of the Archaeology of the Contemporary World*, edited by P. Graves-Brown, R. Harrison and A. Piccini, 1–23. Oxford: Oxford University Press. http://dx.doi.org/10.1093/oxfordhb/9780199602001.001.0001

Guynn, W., ed. 2010. *The Routledge Companion to Film History*. Abingdon, UK: Routledge.

Hayles, N. K. 1993. "The Materiality of Informatics." *Configurations* 1(1): 147–170. http://dx.doi.org/10.1353/con.1993.0003

____. 1999. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: University of Chicago Press. http://dx.doi.org/10.7208/chicago/9780226321394.001.0001

Hicks, D. 2010. "The Material-Cultural Turn: Event and Effect." In *The Oxford Handbook of Material Culture Studies*, edited by M. Beaudry and D. Hicks, 25–98. Oxford: Oxford University Press. http://dx.doi.org/10.1093/oxfordhb/9780199218714.013.0002

Huhtamo, E. 2011. "Media Archaeology." In *The Routledge Companion to Film History*, edited by W. Guynn, 203. Abingdon, UK: Routledge.

____. and J. Parikka, eds. 2011. *Media Archaeology: Approaches, Applications and Implications*. Berkeley: University of California Press.

Kirschenbaum, M. 2005. "Every Contact Leaves a Trace: Computer Forensics and Electronic Textuality." Available online: http://lte-projects.umd.edu/mgk/blog/LeavesATrace.pdf

____. 2008. *Mechanisms: New Media and the Forensic Imagination*. Cambridge, MA: MIT Press.

Kittler, F. 1990. *Discourse Networks, 1800/1900*. Translated by M. Matteer with C. Cullens. Stanford: Stanford University Press.

Lister, M., J. Dovey, S. Giddings, I. Grant and K. Kelly. 2009. *New Media: A Critical Introduction* (2nd edition). Abingdon, UK: Routledge.

Newland, C. 2004. *A Historical Archaeology of Mobile Phones in the UK*. MA Diss., Department of Archaeology, University of Bristol. Available online: https://www.academia.edu/468072/An_Archaeology_of_Mobile_Phones

Parikka, J. 2010. "What is Media Archaeology?" *Cartographies of Media Archaeology* 16 December. Available online: http://mediacartographies.blogspot.ca/2010/10/what-is-media-archaeology-beta.html. Also available at *Machinology* 16 December 2012: http://jussiparikka.net/2012/12/16/what-is-media-archaeology-beta-definition-ver-0-9/

____. 2012. *What is Media Archaeology?* Cambridge: Polity Press.

____. 2013. "Afterword: Cultural Techniques and Media Studies." *Theory, Culture & Society* 30(6) 147–159. http://dx.doi.org/10.1177/0263276413501206

Penrose, S. 2013 "Archaeologies of the Postindustrial Body". In *The Oxford Handbook of the Archaeology of the Contemporary World*, edited by P. Graves-Brown, R. Harrison and A. Piccini, 685–698. Oxford: Oxford University Press. http://dx.doi.org/10.1093/oxfordhb/9780199602001.013.008

Piccini, A. 1999. *Celtic Constucts: Heritage Media, Archaeological Knowledge and the Politics of Consumption in 1990s Britain.* PhD Diss., Department of Archaeology and Prehistory, University of Sheffield. Available online: https://www.academia.edu/1080948/Celtic_Constructs_heritage_media_archaeological_knowledge_and_the_politics_of_consumption_in_1990s_Britain

Sauvanargues, A. 2012. "Crystals and Membranes: Individuation and Temporality." In *Gilbert Simondon: Being and Technology*, edited by A. De Boever, A. Murray, J. Roffe and A. Woodward, 57–72. Edinburgh: Edinburgh University Press.

Shanks, M. 2012. *The Archaeological Imagination*. Walnut Creek, CA: Left Coast Press.
Siegert, B. 2015. *Cultural Techniques: Grids, Filters, Doors and Other Articulations of the Real*. Translated by G. Winthrop-Young. New York: Fordham University Press.
Simondon, G. 1989. *L'individuation psychique et collective.* Paris: Aubier.
Stiegler, B. 2009. "The Theatre of Individuation: Phase-shift and Resolution in Simondon and Heidegger." *Parrhesia* 7: 46–57.
Vismann, C. 2008. *Files: Law and Media Technology*. Translated by G. Winthrop-Young. Stanford: Stanford University Press.
Zielinski, S. 1986. *Zur Geschichte des Videorecorders*. Berlin: Wissenschaftsverlag Volker Spiess.

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Sites of Media Archaeology: Producing the Contemporary as a Shared Topic

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A Shared Contemporary

Media archaeology has commenced many times, in many forms. The term itself is most often seen as a version of Michel Foucault's archaeology of knowledge (Foucault 1972) but with a further media technological determination that, according to the German media theorist Friedrich Kittler (1990), has made it relevant for the age of technical media too. In other words, Kittler's claim was that in order to update Foucault's methodological insights we need to be aware that not all relevant cultural data necessarily come in the form of written documents, books, and other texts that you discover in the cherished libraries of the humanities. Instead, it is in technical media that one finds the things a contemporary media archaeologist "reads", from photographs to film rolls, to computational media and its algorithmic readability: what AI research, the digital corporate culture, and the military-surveillance industrial complex are now trying to decipher as "machine readability". Besides Foucault and Kittler, cultural historians such as Erkki Huhtamo, film historians such as Thomas Elsaesser, and media theorists such as Siegfried Zielinski have contributed to the emergence of the concept, which has never had one platform where it has been articulated.

Suffice to say, the term has, over the past years and decades, gone through various metamorphoses and variations, testifying to the agility and dynamics of the concept as forming a theory in motion (Bal 2002). The concept and discipline of archaeology, which emerged in the nineteenth century out of antiquarianism, has accompanied the emergence of modern interests in the self-understanding of a culture, as Knut Ebeling (2012, 18) outlines in his massive study of "wild archaeologies", the wanderings of the concept outside archaeology proper. This cultural-historical insight into archaeology unfolds the prescribed depth as the place where truth is found, the under-the-surface as the rhetorical trope of discovery as an activity of digging, and the missing archaeological

object as the clue through which the cultural self-understanding finds its solution. These are of course themes that pertain closely to Sigmund Freud (Thomas 2009; Elsaesser 2011), who, indeed, is one of the focuses in Ebeling's study. But what sort of a practice, technique, is it that is employed in this cultural self-understanding, especially when concepts from archaeology are transported into a (media) analysis of more recent history?

As both media archaeologists (e.g. Huhtamo and Parikka 2011) and archaeologists recognize, it is the interest in the fragment, trace, and ruin that seems to bind the two fields. Archaeologies of the contemporary have also addressed the constitution of modernity through its garbage and modes of production, and, especially, consumption, as well as by the spatial determinations of cultural practices and material culture, and, at times, also technology (e.g. Buchli and Lucas 2001; see also Piccini, this volume). A shared ground between media and contemporary archaeology is often found in the work of Walter Benjamin, who himself was responding to discussions already underway, involving Johann Winckelmann much earlier and Georg Simmel as Benjamin's closer contemporary. Both fields are interested in material culture that emerges before the written document and also after it, when the cultural techniques of reading and writing are not merely executed by way of natural languages but by computational algorithms, increasingly automated and working in different forms than human language. It is an interest in the prehistorical and post-historical dimension that ties media archaeology with archaeology. For media archaeology, we can say that it is something that stems from historical methodologies but also comes in the wake of a new historicism detached from the specific emphasis on language (both the written document and the spoken word) as its sole focus. Instead, other modalities, other media materialities enter the scene and come under theoretical consideration.

Perhaps one should start investigating what is the bind, the glue, in terms of objects of analysis, instead of the intellectual lineages that connect the two fields that increasingly share a fascination with *the contemporary*. Indeed, perhaps it is the notion and thematic problematization of the contemporary that become one key shared ground where media archaeology, stemming from cultural history and media theory, approximates some interests and methods in archaeology. Instead of trying to find a Grand Theory that explains and unifies disparate and separate fields of knowledge production, it is better to look at the shared techniques and objects of analysis (cf. Siegert 2008), where issues of what "the contemporary" even is become highlighted. Works such as *The Archaeology of the Contemporary World* (Graves-Brown *et al.* 2013), *Archaeologies of the Contemporary Past* (Buchli and Lucas 2001), and many others are excellent guidebooks also to the media archaeologist, especially when part of the attraction for the latter has been to find ways of how to expand what we mean by "media". Not merely mainstream-media technologies, but also various cultural practices and technologies have been adapted as valid for media analysis, as have also the themes of non-use of media: in other words, abandoned media, electronic waste, and the residual (see Acland 2007; Parks 2007; Gabrys 2011; Maxwell and Miller 2012). Interestingly, in archaeologies of the contemporary, the focus on garbage—even coined as Garbology—has been already been tapped into (Rathje 2001).

The contemporary becomes articulated as the tension between past, present, and future, where that tension becomes a topic in itself; the contemporary is the political

category (see Brown 2001) that is able to address the multiplicity of times that stretch across the normalized time categories of "past" and "present" or in media discourse: "new media" and "old media" are not necessarily the most useful of terms, because they divide time into a problematic, simplifying binary. As Lisa Parks argues: "By continuing to use terms such as old and new media without reflection or analysis, critical media scholars risk inadvertently reinforcing the imperatives of electronics manufacturers and marketers who have everything to gain from such distinctions" (Parks 2007, 33).

Instead, the often slightly metaphorical talk of historical layers of media serves, despite its problems, as a reminder of the coexistence of different temporal levels of media technological artefacts. The widely publicized search for the abandoned Atari games in New Mexico (see Reinhard, this volume) was such an event where the fields of archaeology and media archaeology conjoined in a recognition of the value of excavation for a fragment of the contemporary. One still should ask what the relation is between such widely publicized media event archaeologies and less-glamorous abandoned media waste, e.g. in Lagos, Nigeria, or Guiyu, China; the performance of such media waste locations is one of bodies that are tied in different ways to the global supply chains of electronics.[1] And yet they are contemporary to the global distribution of the digital culture and its artefacts.

The contemporary—a fascination with the recent fragment of consumer society—becomes a conceptual lead to an analysis that carries both a historical and material value. It is increasingly in material practices that media archaeology has been able to develop new methods that offer a fruitful ground for collaboration. Recently, Shannon Mattern (2015) has recognized such between research into urban media archaeology and the contemporary archaeological, including, for example, archeoacoustics.

Media Archaeology Labs

Consider again, against the backdrop of interest articulated by Graves-Brown *et al.* (2013), how the emergence of media archaeology labs contributes to the artefactual methods of opening up time through devices. Such institutional practices resonate with the wider topic of humanities labs, where physical sites, "labs", bring together professors and students around joint research topics, underlining the situated techniques of knowledge creation even in the humanities and also the specific technologies that are housed under the umbrella term "digital humanities". indeed, in terms of digital humanities, labs have been characterized as the new (at least for humanities) "collaborative, team-based ethos, embracing a triangulation of arts practice, critique, and outreach as they merge research, pedagogy, publication, and generative practices" (Burdick *et. al.* 2012, 58).

Irreducible to, but resonating with, the emergence of digital humanities practices, the media archaeology labs come in different forms while sharing an interest in the contemporary nature of the past. The original lab, the Berlin Media Archaeology Fundus (MAF), is housed as part of the Institute of Musicology and Media Studies at Humboldt University in Berlin. The Institute is led by Wolfgang Ernst, whose writings on media

1. Related to this topic, see the AHRC-funded project "Bodies of Planned Obsolescence" (http://www.e-waste-performance.net/), which stages a different geographical focus for the performance of digital waste and obsolescence.

FIGURE 1. The Berlin Media Archaeological Fundus (image used by permission of the Institute/ Ines Liszko).

archaeology, archives, and time-critical culture have recently been translated into English (Ernst 2013a, 2013b). The task of the MAF is to collect relevant electrotechnical and mechanical technologies to connect as part of the teaching. It is not articulated as an archive in the traditional sense—nor as a museum—but as a merging of various theoretical and practice-based functions, which introduce different spatial arrangements to humanities teaching and scholarship than are found in the classroom or the library.

Together with the Signal Laboratory, which is also connected to the Institute, the MAF distances itself from the usual focus on the artefactual in terms of the design, the shape, and context of any device, and instead taps into operationality. Indeed, technologies such as radios and computers, and measurement devices such as oscilloscopes and galvanometers, are treated as media epistemological frameworks. According to the idea behind the MAF, what distinguishes the technological media object is that it reveals its "essence" only when it is working—e.g. circuiting signals, processing sequences, etc. It is this "time-critical" nature that reveals the signal-focused logic of this media archaeology. The "archaeological object under the surface" refers to how machines store, process, and transmit signals (see Parikka 2011). Students approach such devices as instances of the technological epistemology—even called "epistemological toys"—which open up ways of knowing the world from the technological perspective. This task is related to media literacy, or media competency—the need to understand the basis of twentieth-century modern media culture—but it is also a way to investigate how and where the hardware turns into algorithmic and signal-processing principles.

In Wolfgang Ernst's words, this relation to the technological as the—by design—hidden processes inside the machine becomes the impetus towards archaeology as

the method of non-textual analysis; this is the point where media analysis turns from text to the material, from traditional hermeneutics to diagrammatics:

> Taking machinic elements apart in order to try to reanimate their function is a way of media analysis in the strict sense: not restricted to textual interpretation but to diagrammatic reading of circuit plans and material hermeneutics (media-archaeological philology). If it comes to source code in the case of ancient computers, we can take the name of the machine-orientated programing language ASSEMBLER literally and dis- and re-assemble it. (Emerson and Ernst 2013)

The MAF is not the only media archaeological laboratory, but the idea of a spatial place for media analysis of historical artefacts has spread gradually over the past years. Of the most established, the Media Archaeology Lab (MAL) in Boulder, Colorado, led by Lori Emerson, has a similar agenda as the MAF, as it also represents something of a mix between the archive and the museum. It is clear that in such instances, media archaeology labs are hybrid sites of knowledge production that aim to bootstrap the "archaeological" not merely as a methodology but as a situated practice of engaging with material pasts in the contemporary. It is perhaps even better to say that the contemporary is not merely an object of reference, but is something that is *produced* by way of the activities in the lab.

In Emerson's words, the MAL sets itself against two too-easily domesticated assumptions:

> a) the tendency to create neat teleological arcs of technological progress that extend from the past to the present and b) the tendency to represent such arcs through static exhibits that display the outside and surfaces of these artifacts rather than their unique, material, operational insides.
>
> (Emerson 2014)

The MAL collections are focused on the specific early period of home computing in the 1970s and 1980s. Besides the collection, one specific aim through the residency program is to open up the site as a multidisciplinary workspace for artists and writers, who can also have first-hand contact with the machines. Hence, the MAL becomes an institutional version of Mieke Bal's call for travelling concepts; institutional borders are shifted within institutions by sites of liminal practice where historical knowledge meets cultural theory meets artistic practice. Liminality can in this way be seen as an extension, or radicalization, of the term "interdisciplinary".[2] In some ways, such sites respond

2. I prefer to use in this context the notion of "liminal" instead of "interdisciplinary" to refer to the proximity of theoretical and practical sides in such institutions. At times the two become inseparable. The notion of interdisciplinarity has suffered an inflation over the years, becoming more of a piece of institutional jargon cherished by management and policy statements than equipped with dynamic critical potential. It is also in danger of freezing the disciplines purportedly linked, instead of emphasizing the issues that fall in between disciplines (transdisciplinarity) and also how disciplinary boundaries constantly shift back and forth when encountering new ideas, practices, habits, etc.

to calls for "experimental media archaeology" (Fickers 2015) that are also practised in institutional settings, such as art school collaborations with archaeology.[3]

Hence, I want to argue that it is through the emergence of such media archaeology labs and humanities labs that one can also find new ways to engage across disciplines in constituting what the "contemporary" is. From the planned obsolescence of discarded technologies to the sites of abandoned hardware with toxic effects on the soil, the material is both a residue and an object of knowledge for both archaeologists and media archaeologists. Digital culture and the massive multiplication of the number of objects in technological culture have also impacted on the cultural heritage agenda, with museums having to face the issue of curating technology—and curating and archiving *in* technology. This means also acknowledging how technical media in some sense might even resist preservation. This situation demands new methods and concepts in order to understand this material culture. As part of this dilemma, issues of cultural heritage have shifted from the usual institutions of cultural heritage—museums—to various hybrid forms: from popular culture fascinated with archaeological metaphors to dump sites like the Atari game dump in the Alamogordo desert, New Mexico, and from such academic and artistic sites mentioned above to the wider natural environment which registers the effect of history of technology through its waste load (see also Parikka 2015).

Developing such new forms of institutional practice enables us to understand how media theory itself is also a practice that takes place in institutional situations and also how it can be proximate to other disciplines, in this case archaeology (see again Mattern 2015). It is the contemporary as an object of fascination—material culture of technology and media—which allows the development of new methods and collaborations. The contemporary is not merely the old, or the new, but an acknowledgement of how past technological ideas, systems, machines, and even infrastructures can be contemporaneous with us, and open up pastness in new ways. And it is the contemporary that is being not merely reflected but actively produced in these practical and theoretical knowledge situations and institutions that carry the name of "archaeology" as an ethos of tracing the material, from objects to the electromagnetic and the digital.

3. Art and design institutions have also addressed the artistic methods of recreation of media archaeological situations. At the University of Southampton's Winchester School of Art, student projects have included the Photosculpture project, led by two lecturers, Ian Dawson and Louisa Minkin, in 2013. The same group has led the art school into collaboration with the university's Department of Archaeology, resulting in a joint publication on digital imaging and prehistoric imagery with multiple authors across disciplines: Andrew Meirion Jones, Andrew Cochrane, Chris Carter, Ian Dawson, Marta Diaz Guardamino Uribe, Lena Kotoula, and Louisa Minkin (Jones *et al.* forthcoming).

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Bibliography

Acland, C. R., ed. 2007. *Residual Media*. Minneapolis: University of Minnesota Press.

Bal, M. 2001. *Traveling Concepts in the Humanities*. Toronto: Toronto University Press.

Brown, W. 2001. *Politics Out of History*. Princeton, NJ: Princeton University Press.

Buchli, V. and G. Lucas, eds. 2001. *Archaeologies of the Contemporary Past*. London and New York: Routledge.

Burdick, A., J. Drucker, P. Lunenfeld, T. Presner and J. Schnapp. 2012. *Digital_Humanities*. Cambridge, MA: MIT Press.

Ebeling, K. *2012. Wilde Archäologien 1: Theorien der materiellen Kultur von Kant bis Kittler*. Berlin: Kadmos.

Elsaesser,T. 2011. "Freud and the Technical Media: The Enduring Magic of the Wunderblock." In *Media Archaeology: Approaches, Applications and Implications*, edited by E. Huhtamo and J. Parikka, 95–115. Berkeley: University of California Press.

Emerson, L. 2014. "Media Archaeology Lab: Opening the Archive, Disrupting the Museum." *loriemerson* 25 July. Available online http://loriemerson.net/2014/07/25/media-archaeology-lab-opening-the-archive-disrupting-the-museum/

____. and W. Ernst. 2013. "Archives, Materiality and the 'Agency of the Machine': An Interview with Wolfgang Ernst." *The Signal: Digital Preservation* 8 February. Available online: http://blogs.loc.gov/digitalpreservation/2013/02/archives-materiality-and-agency-of-the-machine-an-interview-with-wolfgang-ernst/

Ernst, W. 2013a. *Digital Memory and the Archive*. Minneapolis: University of Minnesota Press.

____. 2013b. "From Media History to Zeitkritik." *Theory, Culture & Society* 30(6): 132–146.

Fickers, A. 2015. "Hands-on! Plädoyer für eine experimentelle Medienarchäologie." *Technikgeschichte* 82: 67–86.

Foucault, M. 1972. *The Archaeology of Knowledge*. Translated by A. M. Sheridan Smith. London: Routledge.

Gabrys, J. 2011 *Digital Rubbish: A Natural History of Electronics*. Ann Arbor: The University of Michigan Press.

Graves-Brown, P., R. Harrison and A. Piccini, eds. 2013 *The Oxford Handbook of the Archaeology of the Contemporary World*. Oxford: Oxford University Press.

Huhtamo, E. and J. Parikka, eds. 2011. *Media Archaeology: Approaches, Applications and Implications*. Berkeley: University of California Press.

Jones, A. M., A. Cochrane, C. Carter, I. Dawson, M. D. Guardamino Uribe, L. Kotoula and L. Minkin. Forthcoming. "Digital Imaging and Prehistoric Imagery: A New Analysis of the Folkton Drums." *Antiquity*.

Kittler, F. A. 1990. *Discourse Networks 1800/1900*. Translated by M. Metteer, with C. Cullens. Stanford, CA: Stanford University Press.

Mattern, S. 2015. *Deep Mapping the Media City*. Minneapolis: University of Minnesota Press.

Maxwell, R. and T. Miller. 2012 *Greening the Media*. Oxford: Oxford University Press.

Parikka, J. 2011. "Operative Media Archaeology: Wolfgang Ernst's Materialist Media Diagrammatics." *Theory, Culture & Society* 28(5): 52–74. http://dx.doi.org/10.1177/0263276411411496

____. 2015. *A Geology of Media*. Minneapolis: University of Minnesota Press.

Parks, L. 2007. "Falling Apart: Electronics Salvaging and the Global Media Economy." In *Residual Media*, edited by C. R. Acland, 32–47. Minneapolis: University of Minnesota Press.

Rathje, W. 2001 "Integrated Archaeology: A Garbage Paradigm." In *Archaeologies of the Contemporary Past*, edited by V. Buchli and G. Lucas, 63–76. London: Routledge.

Siegert, B. 2008. "Cacography or Communication? Cultural Techniques in German Media Studies." Translated by G. Winthrop-Young. *Grey Room* 29: 26–47. http://dx.doi.org/10.1162/grey.2007.1.29.26

Thomas, J. 2009 "Sigmund Freud's Archaeological Metaphor and Archaeology's Self-Understanding." In *Contemporary Archaeologies: Excavating Now*, edited by C. Holtorf and A. Piccini, 33–45. London: Peter Lang.

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Media Archaeology-As-Such: Occasional Thoughts on (Més-)alliances with Archaeologies Proper

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Radical Media Archaeology Against the Soft Archaeological Metaphor

In Figure 1, a signpost warns construction workers not to violate fibre optic cables buried in the ground: *Call before you dig*.

Is this media archaeology? The true media archaeological sense of this scene here is a twofold one. First of all, the warning does not refer to any kind of past, nor to a historic archive. The reference is to the (impossible) archive of the present, in this case its technological condition (*l'archive* in Michel Foucault's sense) for (tele-)communication. *Radical* media archaeology is *not* about "digging" out "dead" media but investigation into the technical (and symbolic) operativity of media processes—be it artefacts from the past or in the present.

In a more deconstructive sense, media archaeology is a mode of permanent self-reflection on the technological conditions of a cultural enunciation. This becomes

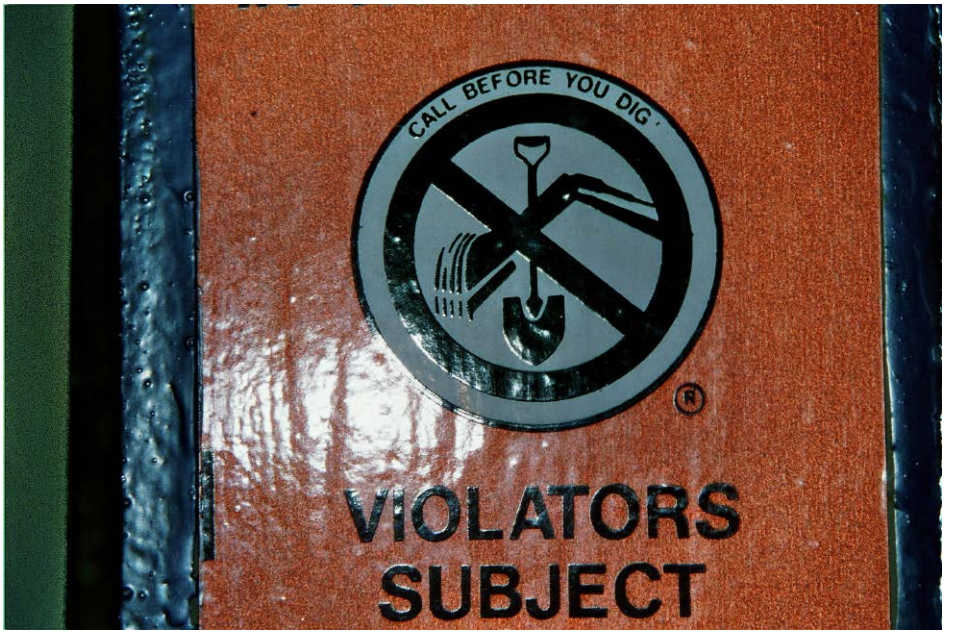

FIGURE 1. A sign post close to Princeton University, New Jersey (photograph by Axel Doßmann, October 1995).

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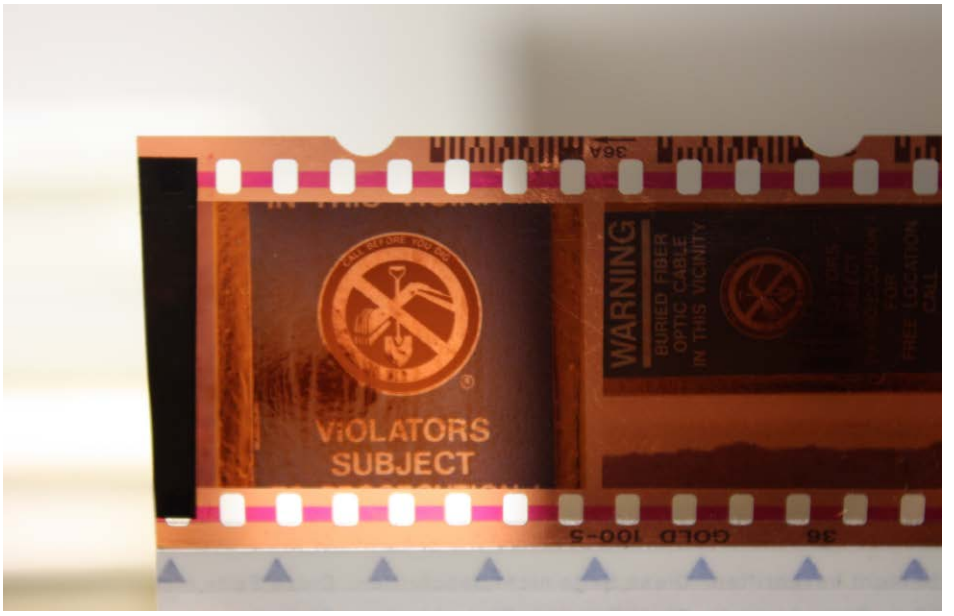

FIGURE 2. Photographic negative of the sign post illustrated in Figure 1.

apparent in the case discussed, since the recording of the signpost itself is preserved as a photographic negative—a temporal latency for which the digital no longer allows (as emphasized by Baudrillard 2007).

It took an effort finding a special office which is still provided with a "negative scanner" to get the illustration in Figure 2 ready for publication in an online journal.

Let us therefore not get lost in the digging metaphor when it comes to technological media culture and its tempor(e)alities. Archaeology as a proper discipline in popular discourse is still identified essentially with the field excavation as archetypal image (even if this is not fully justified any more); for media archaeology the figure of "unearthing" turns into an empty metaphor. Revealing and discovering, here, is of a more difficult nature, closer to Martin Heidegger's epistemological discussion of ancient Greek *aletheia* than to the flat Enlightenment metaphor of "bringing to light".

Interest in the temporal mechanisms and materialities of human culture once motivated me to study classical archaeology—which I broke off after having passed half the curriculum. I remember my growing impatience with a certain lack of theoretical reflection within the discipline in Germany. In those days in the early 1980s, my professor advised me to read a book whose author's name I could barely write down correctly: an "archaeology of knowledge" by a certain Michel Foucault. Maybe the association of archaeology-as-such (the academic discipline) with Foucault's notion of *l'archéologie* is one of the biggest misunderstandings which has happened in the recent intellectual past. Does his use of the term have anything to do with professional archaeology at all? Readers frequently felt seduced by the assumption that the discourse-analytic operation relates to the digging metaphor in archaeology; but its core is, rather, structural and related to propositional logics (Kusch 1991). The media-archaeologist—in partial alliance with

Gilbert Simondon (Simondon 1958), but even more strictly—studies the *non*-discursive conditions of a technological formation. The term "technology" is taken literally here: the study of hardware operations (*techné*), which is in alliance with conventional archaeology's focus on the material-cultural artefact; and the study of logical set-ups (*lógos*), such as the electro-magnetic switching for implementing symbolic algebra. In one of its most radical versions, media archaeology extends even to the critical examination of the rare earth that conditions technical micro-media on the granular level.

Foucault himself occasionally slipped into the metaphorical language of traditional archival practice and archaeology-as-such. In an interview at Berkeley University, Foucault once answered a student question about whether archaeology is a new method or simply a metaphor. The English version reads like this:

> We […] have the word *"la arché"* in French. The French word signifies the way in which discursive events have been registered and can be extracted from the archive. So archaeology refers to the kind of research which tries to dig out discursive events as if they were registered in an *arché*.
>
> (Foucault 1978, 10)

From a computational point of view, such "archival" and "archaeological" terms have become a dead metaphor that rather hinders the critical insight into what actually happens on the signal level. What the micro-processor does in data processing is in fact assigning storage locations and providing them with addresses—which is techno-mathematics and techno-logistics rather than a simple cultural-symbolic practice.

Media archaeology is not simply an addition to the familiar archaeological hermeneutics by comparing, for example, the description of the "pre-cinematic" image sequences on the ancient Trajan's Column in Rome to technologies like chronophotography. The media-archaeological task is rather to reveal the *dis*continuity of the media-artefactual message when compared with traditional cultural artefacts by describing their implicit techno-mathematical operations.

Currently there are almost as many methodological variances of "media archaeology" as there are definitions of "media" themselves—which for the purpose of clarity in *this* text is decisively reduced to signal-processing media and their technological messages, not their mass media or social media content. There is soft media archaeology, which takes care of "dead media" (Bruce Sterling[1]) and which tends to be neglected in the historiography of culture and technology or requires an "anonymous history" in the sense of Sigfried Giedion (1948). Another variation of media archaeology remembers imaginary or alternative media (Siegfried Zielinski's "variantology"—Zielinski and Link 2006) or identifies patterns of technological recurrence ("*topoi*") *within* cultural and social history (Huhtamo 2013). Against such "rediscovery" gestures, radical media archaeology identifies the cut induced by technologies into familiar cultural history in a non-historicist way. Radical media archaeology has a sense of critical tempor(e)alities which escape narrative conceptualization.

1. See the Dead Media Project website (http://www.deadmedia.org/).

Radical media archaeology—in its technically "grounded" version—takes its departure from technology in its proper sense. It concentrates on the epistemological insights that can be derived from the close analysis of electro-mechanical media, electronic media, and finally computative machines. "Radical" here refers to the affinity between media archaeological analysis and mathematics, epitomized in the *radical* square root. Fundamentally, media archaeology understands the *arché* in its mathematical sense: algorithmic rooting in numbers. The *logo* of media archaeology is therefore √ rather than the shovel or the file cabinet.

The task of media archaeology in relation to professional archaeology is to de-metaphorize its Enlightenment gesture of "bringing to light", separating truly technologically induced aesthetics from superficial effects.

To which academic department does media archaeology belong? Many archaeologies-as-such belong to the history or to the classics departments, even though prehistoric archaeology rather fits with the sciences (as has been declared since the late nineteenth century—Frerichs 1981). Media archaeology, with its final insistence on epistemological questions, is rooted in the humanities, but with its methods and objects it fits computing and the technical sciences. Its function is not the negation of the historical disciplines but the necessary complementary perspective on what constitutes culture. "Historic" research means con*text*-intensive analysis (which is text-based indeed), and the linear ordering of events—mostly achieved by historiographic narrative. Since the end of eighteenth century, the emphatic philosophy of history and all manner of ideological "metahistories" (*pace* Hayden White) served to reduce the experience of growing temporal complexity since the French and industrial revolutions (Kittler 1989, 7–14, esp. 8). But complexity nowadays can be coped with by computational probabilities in a non-linear way. That is where so-called digital humanities (or computational philology) becomes a twin method to media archaeology: informational aesthetics as developed in the heroic age of cybernetics had a 'cold' media-archaeological way of looking at cultural artefacts (Rosen 2011)

Does media archaeology share this distancing descriptive gaze (closer to science than to humanities) with archaeology proper? Here the study of cultural materialities is not immediately subjected to the philological, textual filter of traditional hermeneutics. But more radically, the *media*-archaeological gaze is the gaze by the technical medium itself—like an optical scanner (or "imager"" for deciphering QR-codes) looks at the artefacts. In that sense, media archaeology is closer to prehistoric archaeology than to Greek and Roman archaeology, since here the human element is not textually interpolated as happens in classical studies.

The relation between media archaeology and "archaeologies-as-such" is twofold. In a direct way, media archaeology has a priority concern with the materialities of media, like the archaeologist-as-such concentrates on material culture (even if processually interpreted) —different from the philological approach, which subjects evidence to hermeneutics immediately. The second relation is more abstract. Archaeology has been among the earliest disciplines to apply scientific, then mathematical and computational analysis to excavation data, which anticipated what is now called digital humanities (Schreibman *et al.* 2004). When techno-mathematical tools of analysis are applied to archaeology proper (Hodson *et al.* 1971), *active* media archaeology results.

The Operative Presence of Technological Artefacts from the Past

What media archaeology can learn from archaeology proper is the material-oriented *ekphrasis*, the close reading and artful description of the technically essential in devices as the spatial coexistence of discrete elements. Somewhat different, however, is the media-archaeological focus on outlining the *operative being* of technological artefacts, since it is only here that materialities become *medium* (a difference remarked upon by Gotthold Ephraim Lessing in his 1766 treatise *Laocoon*).

The relation between archaeological artefacts "as such" and media archaeological devices is marked by a decisive difference in its mode of existence. Media studies at Humboldt University in Berlin houses a so-called Medienarchäologischer Fundus, or Media Archaeological Fundus (MAF).

FIGURE 3. Insight into the Media Archaeological Fundus at Humboldt University, Berlin (with the author).

This teaching and research collection, ranging from the fluorescent vacuum electron tube to the temperature sensor as a peripheral device of the early Commodore 64 computer, includes "antique" technological artefacts which are of epistemological relevance. They are neither meant to enchant the engineer only, nor do they serve to illustrate the history of technology, which is better done by museums with their original specimens. The MAF rather provides "archaeological" insights into actual media culture; an ancient telegraphy relay, for example, is meant to open a discussion about to what degree "digital" communication not only comes after but actually preceded the time of analog media such as telephony and radio. In combination with the twin institution of a Signal Laboratory, the collection's aesthetics are based on the concept of an operative media theatre, with its core theoretical assumption being that a technological artefact is in its medium state only when it dramatically unfolds in signal transmission, recording, and replay, and in operative symbol processing. Therefore, the items are not presented as

objects in their past design, not as frozen pieces of hardware shelved in vitrines, but are mostly stripped of their clothing, since the focus of media archaeological attention is directed towards the inside and the function of the objects. "Open source" and "open access" is meant literally here, with a hands-on bias. Media artefacts from the past thus do not appear primarily as historical objects with their contextual associations and documentation, but in their presence as "time objects" (in the sense of Edmund Husserl's phenomenology of time).

It is here that a time-critical difference from the traditional cultural archaeological artefact arises. The latter can only be understood when reconstructing its performance by humans (so-called *cultural techniques*), while technological media can be restored to self-active statements. This view coincides with recent attempts within archaeology to explore the more-than-human or even non-human agencies of artefacts, as shown in Figures 4–6.

Media archaeology is not a subsidiary or auxiliary discipline to cultural history, but is its non-narrative, non-textual alternative. In terms of historical research, the meaning of a past material object rests in the information attached to it in the form of associated textual records (Crowther 1988, 35–46, esp. 42); media archaeology, though, deals with objects which can be re-enacted by virtue of their own inherent techno-logics. Here is media archaeology's distance from "cultural history". The Antikythera mechanism from late Hellenistic times, even if corroded to an almost entropic mass of metal, was still able to be remodelled by Derek de Solla Price (Freeth 2008).

FIGURE 4. A Webster wire recorder with gusle bow string from 1948. It looks like the dead end of an electronic technology, but when restored to operation, all of the sudden a recording of Bosnian oral poets (*guslari*) from the 1950s might resound from the spool (as made by Albert Lord while preparing for his 1960 study *The Singer of Tales*).

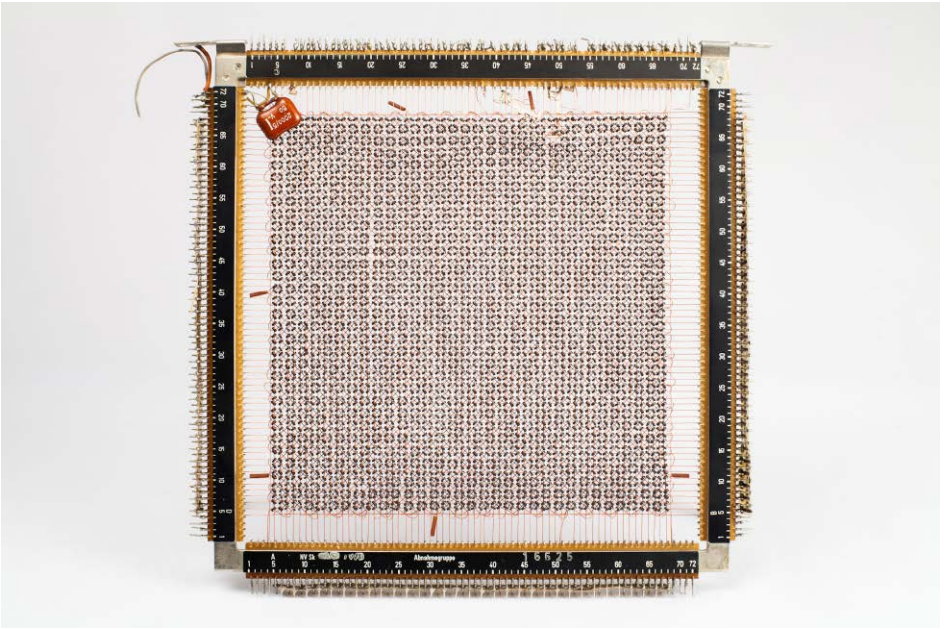

FIGURE 5. Ferromagnetic core memory grids were essential in early electronic computing to store data in a non-volatile way. It takes operative analysis to decode this message. Such an artefact may be read out algorithmically to reveal its latent information after forty years. Delayed memory of such kind is not historical, but embodies a different kind of tempor(e)ality.

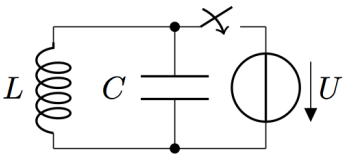

FIGURE 6. Different from other archival records, a technological diagram, such as this diagram of a resonant creating periodic oscillations, is not historically distant but allows for regenerative experience of a past as presence, which in this case would produce musical tones.

When the string of a monochord is picked, then divided into half and picked again, the mathematical ratio of 1:2 sonically unfolds as a harmonic octave. The archetypal experience that once led Pythagoras to develop his rational philosophy, which has deeply influenced occidental thought and aesthetics, is not simply historically distant by two-and-a-half millennia. The harmonic oscillations which were generated by the Pythagorean monochord long ago, by virtue of the medium specifity of mechanical vibrations still behave the same, so that we can still share the original experience. However, the escapement-driven late medieval mechanical clocks liberated oscillations from the impulse of the human hand. Electric circuitry since the nineteenth century enabled the resonant circuit essential for generating non-material oscillations and for receiving electro-magnetic waves. An antique detector radio from the 1920s, locked up in some museum or private collection, will still demodulate AM radio on medium-wave band if set in action again by simply providing

it with an antenna, along with ear-phones and earth grounding. At that moment, the technological artefact is not simply historically distant from the present by a century but is archaeologically present: it can co-originarily be re-experienced by virtue of a technical setting and corresponding infrastructure which remains invariant towards changes of socio-cultural contexts and political regimes. Where some archaeologists may actually ignore the technical presence of the Mesolithic bone flute that still plays by seeking its "meaning", archaeo-acoustics will focus on wavelength and reverberation (d'Errico and Lawson 2006).

Even Heinrich Hertz's late nineteenth-century legendary experimental setting of wireless "radio" spark transmission in the lecture room of Karlsruhe Technical University can still be rehearsed and still behaves the same. Media operativity allows for time-tunnelling, which is well known from human experimental archaeology. The difference is the active agency of *media* archaeological artefacts.

Different from the familiar material artefact in archaeology, media artefacts in a dialectical synthesis combine what has been separated so far between historical and archaeological sciences: text and materiality. In its most literal sense, techno/logy means first of all logical (mathematical, diagrammatical) knowledge which can be symbolically coded as "software" and thus be transmitted across time almost without loss through re-enactment; thus by algorithmic coding the task to be performed is developed into a time series. On the one hand, the physical and logical laws of material media are suspended from relativistic cultural historicism. At the same time, techno-logical knowledge has to be materially implemented as "hardware" in order to become media-active; this implementation embeds the process in a temporal context with its proper "historical index" (Benjamin 1999 [1955], 245–246). In order to be executable, any algorithm has to take place in matter—even if this is just numbers and letters on paper, written and read by humans (the Turing Machine).

Archaeology of Presence and Media Archaeology of the Present

Media archaeology starts with analysis of "presence" itself; in digital culture more than ever, the present is immediately quantized, "sampled and held" (the electronic pre-condition for realtime digital-signal processing). The audio-visual and textual present is being archived as soon as it happens—from Twitter messages and instant photography to sound recording. But even more dramatically undoing the traditional order of times, big data analysis algorithmically predicts the future already as future-in-the-past (*futurum exactum*). Never has a culture been more dynamically "archival" than the present epoch of digital media. By chronotechnical immersion, media archaeology aims at being fast enough to analyze such events as they happen in real time—thus sacrificing the traditional claim by historians and other historicist humanities that only from a temporal distance (a time lag) is critical observation possible.

In accordance with such media archaeologies of presence in the techno-logical sense, a more adventurous avant-garde academic archaeology couples performed presence with the question over "how we create relationships with that which remains" and "the analyses of signs, remains and traces of dynamic and processual phenomena that once occurred in the consequences of an act" (Giannachi *et al.* 2012, 2). All of a sudden, archaeology-as-such and media archaeology hold hands again.

Bibliography

Baudrillard, J. 2007. *Pourqoui tout n'a-t-il pas déjà disparu?*. Paris: Les Éditions de l'Herne.

Benjamin, W. 1999 [1955]. "Theses on the Philosophy of History." In *Illuminations*, by W. Benjamin and translated by H. Zohn, 245–255. London: Pimlico.

Crowther, D. 1988. "Archaeology, Material Culture and Museums." In *Museum Studies in Material Culture*, edited by S. M. Pearce, 35–46. London: Continuum.

d'Errico, F. and G. Lawson. 2006. "The Sound Paradox: How to Assess the Acoustic Significance of Archaeological Evidence?" In *Archaeoacustics*, edited by C. Scarre and G. Lawson, 41–58. Cambridge: McDonald Institute for Archaeological Research.

Foucault, M. 1972. *The Archaeology of Knowledge*. Translated by A. M. Sheridan Smith. London: Routledge.

____. 1978. "Dialogue on Power: Michel Foucault and a Group of Students." In *Chez Foucault*, edited by S. Wade, 4–22. Los Angeles, CA: Circabook.

Freeth, T. 2008. *The Antikythera Mechanism: Decoding an Ancient Greek Mystery.* Cambridge: Whipple Museum of the History of Science.

Frerichs, K. 1981. *Begriffbildung und Begriffswandlung in der Vor- und Frühgeschichte. Zur logischen Analyse archäologischer Aussagen.* Frankfurt am Main: Lang.

Giannachi, G., N. Kaye and M. Shanks, eds. 2012. *Archaeologies of Presence: Art, Performance and the Persistence of Being*. Abingdon, UK: Routledge.

Giediron, S. 1948. *Mechanization Takes Command: A Contribution to Anonymous History*. New York: Oxford University Press.

Hodson, F. R., D. G. Kendall and P. Tautu, eds. 1971. *Mathematics in the Archaeological and Historical Sciences.* Edinburgh: Edinburgh University Press.

Huhtamo, E. 2013. *Illusions in Motion. Media Archaeology of the Moving Panorama and Related Spectacles*. Cambridge, MA: MIT Press.

Kittler, F. A., ed. 1989. *Austreibung des Geistes aus den Geisteswissenschaften: Programme des Poststrukturalismus*. Paderborn: Ferdinand Schöningh.

Kusch, M. 1991. *Foucault's Strata and Fields: An Investigation into Archaeological and Genealogical Science Studies*. Dordrecht: Kluwer. http://dx.doi.org/10.1007/978-94-011-3540-5

Rosen, M., ed. 2011. *A Little-Known Story about a Movement, a Magazine, and the Computer's Arrival in Arts: New Tendencies and Bit International, 1961–1973*. Cambridge, MA: MIT Press.

Schreibman, S., R. G. Siemens and J. Unsworth, eds. 2004. *A Companion to Digital Humanities*. Oxford: Blackwell.

Simondon, G. 1958. *Du Mode d'Existence des Objets Techniques*. Paris: Aubier.

Zielinski, S. and D. Link. eds 2006. *Variantology 2: On Deep Time Relations of Arts, Sciences and Technologies*. Köln: Walther König.

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Artifactual Interpretation

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It was very late in the process of writing my dissertation—a cultural history of the gadget—that I came across an article on using the archaeological record to reconstruct social interaction during the Paleolithic (Gamble 1998). As a media studies scholar, it wasn't only the disciplinary differences that were so exciting (the dense network of citations, the seamless toggling between theoretical synthesis and quantitative analysis). I encountered this one article that sat atop of a century's worth of research and debate

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over what it means to interpret an artifact at a moment in which humanists like myself—primarily trained in the analysis of text—are beginning to take up new objects of study in what some have referred to as the "material turn". Several years later, and deeper into the literature on topics like the Mousterian debate and technofunctional variation than I ever would have expected to be, I have found the history of archaeological thought to be an immensely valuable, untapped resource for some of our current questions, enthusiasms, and impasses in media studies.

Of course, the growing field of media archaeology had already been a huge influence on my work. It was with the writings of scholars like Wendy Chun, Timothy Druckrey, Wolfgang Ernst, Lisa Gitelman, Eric Kluitenberg, and Jussi Parikka that I first formulated my approach to the gadget as both a functional device and a fictional device, a material object and a cultural imaginary. But media archaeology is a field that largely takes its cue from a Foucauldian understanding of the term—archaeology as an analysis of the conditions under which a certain object, statement, or discourse becomes possible or sayable in a precise historical moment. A Foucauldian archaeology of natural history, for instance, would analyze the "governing statements" of that discourse, as listed in Foucault's *Archaeology of Knowledge*:

> those that concern the definition of observable structures and the field of possible objects, those that prescribe the forms of description and the perceptual codes that it can use, those that reveal the most general possibilities of characterization, and thus open up a whole domain of concepts to be constructed. (Foucault 1972, 147)

The media theoretical adaptation of this Foucauldian concept is twofold: first, that discernible objects and perceptual codes are themselves the products of media technologies. All modes and kinds of knowledge bear the imprint of those instruments used to record, organize, and express them. And second, that the histories of these technologies must take into account the curiosities and forgotten paths not taken: quirky or fantastic inventions that either never made it to the mainstream or now evoke a kind of retro-tech nostalgia (stereoscopes, hand-cranked 8-mm film viewers, card indexes, magnetophones, and the like). Part of the field is the simple challenge, common to all good theory, to think the present state of things differently. What if the tablet computer took off as it was originally proposed in the 1970s as a teaching platform for object oriented programming, rather than the app vending machine it is today (Alt 2011)? What if the metaphors we use to understand hidden computational operations—like copying a file, visiting a site—were fundamentally different (Tholen 2002)? How do we go about imagining that?

But much is lost, I would argue, when importing this notion of archaeology solely in the Foucauldian sense. In media studies, we need to be careful of moving too quickly from a description of a given artifact to an account of aesthetics or power relations without producing a model of how those circuits move in the first place from technology to culture and vice versa. What is at stake in interpreting an artifact in the humanities? While "interpretation" is usually associated with text, and artifacts are more closely connected with practices of description, what would it look like to more clearly outline our own hermeneutic when it comes to objects? In this sense, a sustained encounter between

media studies and archaeology proper wouldn't just be an experiment in taking "media archaeology" at its word. Such an exchange could provide the occasion for a rethinking of method amid the material turn. Let me explain.

Talk of a material turn has been percolating for close to 15 years now in a variety of humanistic disciplines. As Ian Hodder writes:

> It has become a truism in archaeology, anthropology, and the social sciences and humanities very broadly, to recognize a "return to things" over recent years, in contrast to the earlier focus on representation, and to the long scholarly tradition that separated subject from object, mind from matter. (Hodder 2011, 19)

For some, the material turn is seen as a potential answer to the exhaustion of critique, challenging us to tinker with and describe cultural phenomena that seem to resist existing theoretical frameworks (Hayles and Pressman 2013; Gillespie *et al.* 2014).

I think one of the things we've seen in recent approaches to "materiality" is not only how capacious what we might call the "material turn" can be—across a wide variety of methods, objects, periods, and disciplines—but also that there is a shared set of assumptions in these new approaches to materiality. More specifically, with emerging fields like platform studies, various new materialisms, critical making, as well as media archaeology, many more scholars now take the term "materiality" to mean the cultural lives of physical, tangible materials, rather than an abstract philosophical category. Tim Ingold's wonderful article "Materials Against Materiality" critiques this latter approach: "the concept of materiality, whatever it might mean, has become a real obstacle to sensible enquiry into materials, their transformations and affordances" (Ingold 2007).

In media studies, the effects of the material turn have been rather kaleidoscopic. Even though media studies is a discipline that thrives on decisive pronouncements regarding the primacy of the material—from Marshall McLuhan's "the 'content' of any medium is always another medium" (McLuhan 2001 [1964], 8) to Friedrich Kittler's "media determine our situation" (Kittler 1999 [1986], xxxix)—we've never settled on what precisely our object of study is. Should a media-theoretical account of radio analyze its unique narrative and cultural forms? Or on the other hand, should it focus on the specificity of the technological substrates that afford these cultural forms?

The "changing materialist content of materialism", as Raymond Williams puts it, has in media studies classically reflected a geographic divide (Williams 2005 [1978], 122). It used to be a safe bet to say that while German media studies emphasized the role of circuits, screens, and substrates—in other words the materiality of communication—Anglophone approaches were preoccupied with culture, aesthetics, and identity, the content delivered by those circuits. A 2003 collection of "key terms" for media studies published in the UK, for instance, contains no mention whatsoever of "material" or "materiality" among its 212 entries. The closest we get is in the definition of "medium" as "simply any material through which something else may be transmitted" (Hartley 2002, 142). That "something else" is clearly the primary focus of the remainder of the collection, which includes entries on celebrity, metaphor, multiculturalism, genre, and symbol, for instance. Materiality in this account is a neutral carrier of culture.

But the situation is no longer so simple on the American scene, with emerging approaches beginning to take up what was previously a Germanophone emphasis on the materiality of media. Again, to use some keyword collections as a yardstick, Bill Brown's entry in the 2010 *Critical Terms for Media Studies* includes "multiple orders of materiality", explained as

> A phenomenological account of the interface between user and technology, an archaeological account of the physical infrastructure of the medium, and a sociological account of the cultural and economic forces that continue to shape both the technology itself and our interactions with it.
>
> (Brown 2010, 59–60)

Anna Munster, in the *Johns Hopkins Guide to Digital Media* published just last year, shows how accounts of materiality are further complicated when the object in question is "digital". She writes that in new fields like software studies, attempts are being made to connect the digital to social relations and historical practices:

> Understanding the database, for example, as a *material* digital object, means accounting for not simply the way it organizes and stores data but how it *enacts* its mode of organizing multiply, the ways it transduces and interrelates its multiple, proliferating levels of hardware, software, data, and social practices. (Munster 2014)

So the idea here is that maybe, we can have a sort of hybrid analysis of the affordances of the material substrate as well as the cultural codes written upon it.

All of this is to say, there has been no consensus on "materiality" as a topic in my discipline. But the far-reaching material turn presents a unique opportunity for media studies. If there is anything that unites our wildly diverse confederation of departments, disciplines, and methodologies, it is McLuhan's foundational aphorism: "the medium is the message". Today, it's as if the fossil record of McLuhan's spadework can be found all over the humanities. In coming to terms with the specific forms of argumentation and evidence that media studies scholars have at their disposal—and there are many—we can offer up a methodology for conversations on materiality across the disciplines. Similarly, clarifying this methodology against a rigorous engagement with the history of archaeological thought can help us enrich the distinctive specificities of each approach. Now that humanities scholars trained in textual hermeneutics turn their expertise to material artifacts, such a methodology is very much needed.

But questions of method have been notoriously difficult in media studies. A recent call for participation in a graduate Summer School for Digital Cultures on the theme of "Challenging Methods" admits that "media studies has not developed an overarching theoretical or methodological frame and [has] instead privileged object specific approaches" (Sprenger and Engemann 2014). Surveying media studies' field of inquiry, Joseph Vogl notes that "we still have no single, stable, well-demarcated canon of knowledge to rely on, in spite of the widespread institutional and disciplinary establishment of media studies" (Vogl 2008, 2). Operating untethered from any established epistemological frameworks has produced "a mixing and clashing of methods and disciplinary traditions:

approaches from literary study, history, art history, information engineering, journalism, economics, communications, and the history of science all muddle together without any particular guiding principle" (Vogl 2008, 15). But it's precisely this wanderlust, this intellectual promiscuity, that gives the discipline its unique style. It's what allows Matthew Kirschenbaum to bring computer forensics to bear on electronic literature (Kirschenbaum 2008), Markus Krajewski to compare nineteenth-century domestic servants and search engines (Krajewski 2010), and Adrian Mackenzie to apply William James's philosophy of radical empiricism to contemporary wireless network infrastructures (Mackenzie 2010).

In fact, it may seem reductive to discuss methodologies for a discipline in which—to invoke the philosopher of science Paul Feyerabend's famous dictum from *Against Method*—"anything goes" (Feyerabend 1993). But we need not confine ourselves to *ex post facto* reconstructions of brilliant research findings or the prescription of deadening, procedural checklists. If media studies generates an ever expanding toolbox of means for thinking technologies, then we should embrace methodologies *as* thinking technologies, as Donna Haraway puts it (Lykke *et al.* 2008). Understanding media archaeology as a point of exchange with traditional archaeology is thus not only a way to highlight the distinctive interdisciplinarity at the heart of our discipline. It is also an opportunity to engage with a special set of practices at a moment in which the question of materiality is both up in the air and of the utmost importance. In the age of the anthropocene, as Fredrik Jonsson argued in a recent lecture, the question of integrating cultural and material explanations of historical change is one of the most pressing methodological problems for the humanities today (Jonsson 2014).

So how do we close the metaphorical divide between the "excavations" performed in archaeology and media archaeology? We do things we might not otherwise consider: draw our object of study, fill out a context sheet, experimentally recreate historical techniques, and think in terms of geological time. We search both canons for guideposts for future exchange. In addition to numerous intellectual affinities (compare Lewis Binford's definition of culture as "the extra-somatic means of adaptation for the human organism" [Binford 1962, 218] with the analytic horizon of Friedrich Kittler's "network of technologies and institutions that allow a given culture to select, store, and process relevant data" [Kittler 1992, 369]), there are several early points of direct contact between the two disciplines. Paleoanthropologist André Leroi-Gourhan's speculations on the effects of automation and "audiovisual media" on the *chaîne opératoire* are one example from the mid-1960s:

> Not having to "think with one's fingers" is equivalent to lacking a part of one's normally, phylogenetically human mind. Thus the problem of regression of the hand already exists today at the individual if not the species level. […] Manual imbalance has already partially destroyed the link that used to exist between language and the aesthetic image of reality. It is not a matter of pure coincidence, as we shall see, that nonfigurative art is flourishing at the same time as "demanualized" technicity. (Leroi-Gourhan 1993, 255)

The film scholar William Uricchio published a piece of media archaeology *avant la lettre* in 1981 on using the "tangible record" of early twentieth-century cinema in the field of industrial archaeology as a form of documentary evidence. This includes, perhaps

especially so, avant garde film, which made the machinery of modernity one of its primary subjects (Uricchio 1981). Finally, there's Peter Sloterdijk's more recent essay on mediation and distance, in which he suggests that "a genuine, unironic attempt to grasp early Stone Age logic can help us understand what drives media technology and design" (Sloterdijk 2012). No doubt, there are many more.

Like the anarchic intellectual inquiry championed by Feyerabend, media studies and archaeology are no doubt "much more 'sloppy' and 'irrational' than [their] methodological image" (Feyerabend 1993, 160). But if we want to answer Angela Piccini's challenge in this forum's introduction to "work together to ask new questions of media technologies and their relations", I think we're well equipped to do better than exchange mere images of each other's practice.

References

Alt, C. 2011. "Objects of Our Affection: How Object Orientation Made Computers a Medium." In *Media Archaeology: Approaches, Applications, and Implications*, edited by E. Huhtamo and J. Parikka, 278–301. Berkeley: University of California Press.

Binford, L. R. 1962. "Archaeology as Anthropology." *American Antiquity* 28(2): 217. http://dx.doi.org/10.2307/278380

Brown, B. 2010. "Materiality." In *Critical Terms for Media Studies*, edited by W. J. T Mitchell and M. B. N. Hansen, 49–63. Chicago: University of Chicago Press.

Feyerabend, P. 1993. *Against Method*. London: Verso.

Foucault, M. 1972. *The Archaeology of Knowledge*. Translated by A. M. Sheridan Smith. London: Routledge.

Gamble, C. 1998. "Palaeolithic Society and the Release from Proximity: A Network Approach to Intimate Relations." *World Archaeology* 29(3): 426–444. http://dx.doi.org/10.1080/00438243.1998.9980389

Gillespie, T., P. J. Boczkowski and K. A. Foot, eds. 2014. *Media Technologies: Essays on Communication, Materiality, and Society*. Cambridge, MA: MIT Press. http://dx.doi.org/10.7551/mitpress/9780262525374.001.0001

Hartley, J. 2002. *Communication, Cultural and Media Studies: The Key Concepts* (3rd edition). London: Routledge. http://dx.doi.org/10.4324/9780203449936

Hayles, N. K. and J. Pressman, eds. 2013. *Comparative Textual Media: Transforming the Humanities in the Postprint Era*. Minneapolis: University of Minnesota Press.

Hodder, I. 2011. "Human-Thing Entanglement: Towards an Integrated Archaeological Perspective." *Journal of the Royal Anthropological Institute* 17(1): 154–177. http://dx.doi.org/10.1111/j.1467-9655.2010.01674.x

Ingold, T. 2007. "Materials against Materiality." *Archaeological Dialogues* 14(1): 1–16. http://dx.doi.org/10.1017/S1380203807002127

Jonsson, F. A. 2014. "Victorian Anthropocene, 1834-1884." Paper presented at the Heyman Center for the Humanities Thursday Lecture Series: Materiality, Columbia University, 17 April.

Kirschenbaum, M. G. 2008. *Mechanisms: New Media and the Forensic Imagination*. Cambridge, MA: MIT Press.

Kittler, F. A. 1992. *Discourse Networks, 1800/1900*. Stanford, CA: Stanford University Press.

____. 1999 [1986] *Gramophone, Film, Typewriter*. Translated by G. Winthrop-Young and M. Wutz. Minneapolis: University of Minnesota Press.

Krajewski, M. 2010. *Der Diener: Mediengeschichte Einer Figur Zwischen König Und Klient*. Auflage: 1. Frankfurt am Main: S. Fischer Verlag.

Leroi-Gourhan, A. 1993. *Gesture and Speech*. Translated by A. Bostock Berger. Cambridge, MA: MIT Press.

Lykke, N., R. Markussen and F. Olesen. 2008. "'There Are Always More Things Going On Than You Thought!' Methodologies as Thinking Technologies: Interview with Donna Haraway." In *Bits of Life: Feminism at the Intersections of Media, Bioscience, and Technology*, edited by A. Smelik and N. Lykke, 32–44. Seattle: University of Washington Press.

Mackenzie, A. 2010. *Wirelessness: Radical Empiricism in Network Cultures*. Cambridge, MA: MIT Press. http://dx.doi.org/10.7551/mitpress/9780262014649.001.0001

McLuhan, M. 2001 [1964] *Understanding Media*. London: Routledge.

Munster, A. 2014. "Materiality." In *The Johns Hopkins Guide to Digital Media*, edited by M.-L. Ryan, L. Emerson, and B. J. Robertson, 327–330. Baltimore, MD: Johns Hopkins University Press.

Sloterdijk, P. 2012. "Actio in Distans: On Forms of Telerational World-Making." In *Philosophy of Communication*, edited by B. G. Chang and G. C. Butchart, 635–648. Cambridge, MA: MIT Press.

Sprenger, F. and C. Engemann. 2014. "DCRL & MECS Summer School 2015: Challenging Methods." *Leuphana Centre for Digital Cultures*. Available online: http://cdc.leuphana.com/news/news/blog-article/dcrl-mecs-summer-school-2015-challenging-methods/

Tholen, G. C. 2002. "Media Metaphorology: Irritations in the Epistemic Field of Media Studies." *South Atlantic Quarterly* 101(3): 659–672. http://dx.doi.org/10.1215/00382876-101-3-659

Uricchio, W. 1981. "The Motion Picture as a Resource for Industrial Archaeology." *Industrial Archaeology* 3: 233–237.

Vogl, J. 2008. "Becoming-Media: Galileo's Telescope." *Grey Room* 29: 14–25. http://dx.doi.org/10.1162/grey.2007.1.29.14

Williams, R. 2005 [1978]. "Problems of Materialism." In *Culture and Materialism: Selected Essays*, by R. Williams, 103–122. London: Verso.

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Becoming Archaeological

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Becoming Archaeological

Archaeologists do not agree entirely on what it means to become archaeological. Being buried under the ground surface is not one of the requirements; being "dead to the world" and forgotten is. But the process is far from simple or linear, and can involve many steps to prolong the life of a thing, whether building or small object, before it reaches this demise. Michael Schiffer in his books *Behavioral Archaeology* (1976) and then *Formation Processes of the Archaeological Record* (1987) was one of the first to give voice to the analysis of these natural and cultural processes. He was working from observations of modern behavior (in the southwest of the USA) in relation to materials, in which he identified the cycle of the use-life of materials, from their procurement as raw materials, their manufacture or construction into things, and their use, to their eventual discard and deposition in, under, or on the ground; he recognized mechanisms to prolong the use-life of materials including maintenance, curation, and repair, and then recycling, reuse, conservation and preservation. Not surprisingly, since the 1990s, Schiffer has become something of a "media archaeologist" himself, although he would not brand himself as such, in applying his principles of behavioral archaeology to the rise and fall of non-digital "technological" subjects (Schiffer 2011), including radios, electricity, electric cars, etc.

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In spite of the strong criticism that it received at the time of its first publication (in the 1970s and 1980s from Lewis Binford and others), a recent re-evaluation of Michael Schiffer's "behavioral" approach points out that it has had an enduring effect on our understanding of how things become archaeological (Reid and Skibo 2011). Since the late 1970s with an interest in how stone tools were used and discarded rather than what shapes they were made into, Tringham (1978) found the concept of *use-lives* that things had endured on their way to becoming archaeological a useful way of organizing the analysis of any material collection (whether stone tools, bone tools, ceramics, or architecture).

When Michael Schiffer first formulated his behavioral archaeology steps of the life-cycle, his underlying master-theory of human–materials relations was true to the favored North American concept of that time, that material culture is an optimization of cultural adaptation to the local ecological situation. Tringham's mid 1970s–1980s iteration used the use-life cycle to elaborate on a Marxist theory of the social relations of production and social inequality (Figure 1). In the 1990s, both Michael Schiffer and Ruth Tringham transformed their interest in use-lives into a project about life-histories, in which the path to becoming archaeological was complicated by historical contingency and a recognition that there was more than economics and ecology at the heart of human intentionality. They each did this differently: Schiffer turned to historically documented topics and data about technology and science (Gifford-Gonzalez 2011); Tringham turned to feminist and multiscalar interpretations of prehistoric people, things, events, and places (Tringham 1994, 2012).

We were certainly not alone in our interest in use-lives and life-histories. Currently there is an enormous body of archaeological literature globally that encompasses in one way or another the investigation of how things become archaeological. It means that archaeologists are by now well trained to think and work very hard at squeezing information about life-histories out of materials and connecting histories to histories. But, how does this help the media archaeologist?

How Buildings Die (or not)

One of the best ways to demonstrate the potential value of the concept of use-lives/life-histories for media archaeologists is through the example of buildings. We are more aware of the life-history of buildings from our own local observations of the world around us. Moreover, a few books and articles actually tackle the topic explicitly. Stewart Brand in his brilliant book *How Buildings Learn* (1994) and its accompanying TV series[1] are wonderful examples of such works, and very relevant to media archaeology studies. In modern industrial countries, when an architect and/or builder builds a building, does he or she ever think how long the building is expected to last? Well, in San Francisco special reinforcement is supposed to protect from earthquake destruction. There is extra protection from fire in the wooden buildings. There are codes to follow. But in general, there is no mention of *how long* the building should last. Brand's book points out that, in general, modern architects build for the immediate visual effect without thought of

1. The TV series has been uploaded to YouTube by the author. His YouTube channel is https://www.youtube.com/channel/UCjBdRnkOB5P85yki3rAvGUw

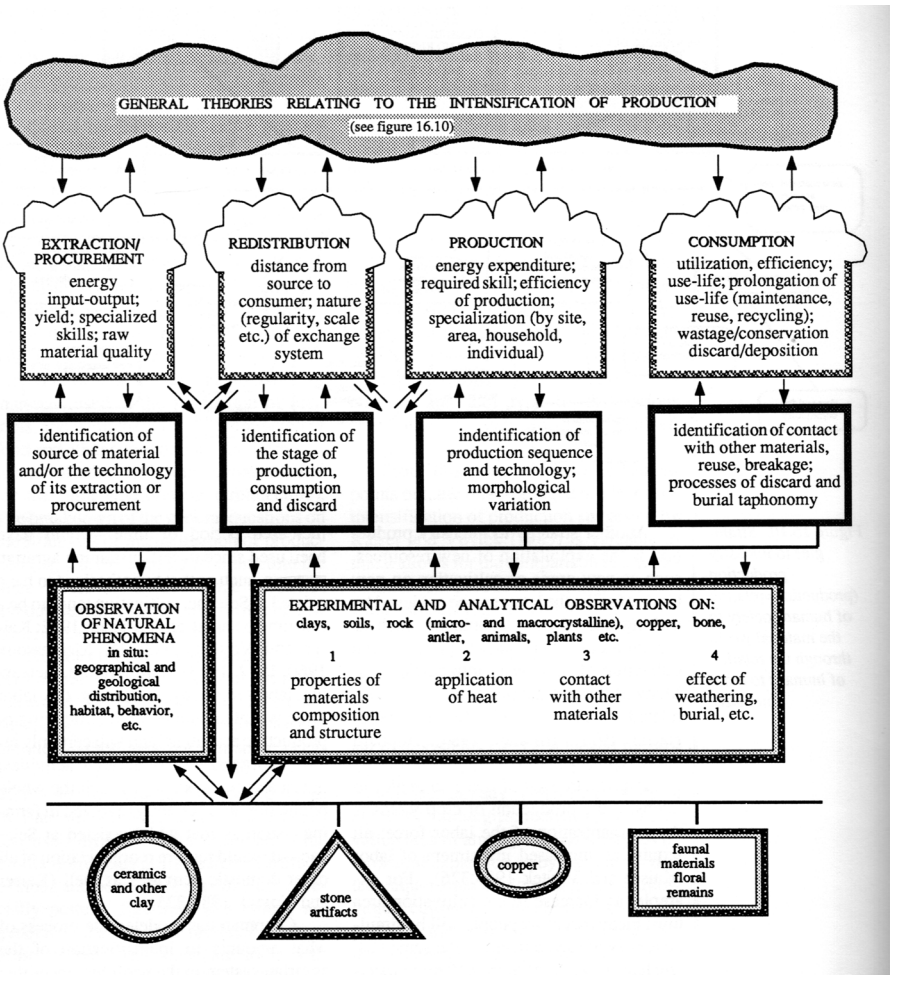

FIGURE 1. Investigating the intensification of production in an archaeological context through the concept of use-lives (after Tringham 1990, fig. 16.11).

how long the building is expected to last and how it will be used. He points to the many cases of disastrous and expensive results that such an attitude has had on buildings' lifespan and durability.

At a smaller scale, domestic houses in Western society are generally not planned for obsolescence, unlike cars and computer hardware. Houses continue changing ownership, changing purpose, and being remodeled and 'hacked' as their users change during their and the buildings' lives. Observations of the life-histories of buildings, whether archaeological (McGuire and Schiffer 1983; Stevanovic 1997) or modern (Alexander 1979; Brand 1994) show that the buildings that have the longest lifespan are those in which the designers have taken into consideration the changing lives of its present and future users by making the building modifiable to adjust for such transformations. Such builders—few amongst modern architects, but many in global small-scale societies of past and present—are thinking about the *longue durée* of their buildings and their

organic evolution. As long as such buildings are maintained (i.e. kept weather-tight) they will last almost indefinitely. But once a building is abandoned (and the reason for this is of crucial interest), its structure and "skin" will quickly deteriorate and collapse, and disappear, finally to become archaeological, under the ground or under another building.

In large urban centers there seems to be no cultural rule or even discussion on how we should know when a house should "die", or even when it is truly "dead" (DeSilvey 2012). But as archaeologists, we often come across examples of where this is not the case. In the 9000-year old site of Çatalhöyük, it seems that the life-span of a house was dependent on its residents, who would maintain their mudbrick houses by annual re-plastering for a number of years until it was decided to ceremonially "close" the house, and replace it with a new one built on the old one's wall stubs. In Building 3 at this site, we studied the building history of what was probably a 60-year house, and noticed that the living area of the building became smaller towards the end of its life; the answer to the question why—was this the result of a collapsing wall, or because the number of residents decreased?—remained ambiguous (Tringham and Stevanovic 2012). But archaeologists can live happily with ambiguity, and so should media archaeologists. There was no ambiguity, however, concerning the closure and abandonment of this house, which was an intentional ritualized event.

The investigation of decay and abandonment (and its rich archaeological literature, of which just some examples include Cameron and Tomka 1993; Colwell-Chanthaphonh and Ferguson 2006; DeSilvey 2006, 2012), whether of houses, fields, or movable objects—why and how this happens—is of crucial interest to archaeologists hoping to understand the paths of human history and prehistory, and should also be so to media archaeologists.

Life-Histories of Digital Objects

A digital simulacrum of this same Çatalhöyük East Mound was built in the virtual world of Second Life. None of the complexities of life-histories of houses could be expressed in the awkward building codes of Second Life, however, but we (especially Colleen Morgan, who was a prime mover on the project) learned many things about moving through Neolithic space. Okapi Island (Tringham n.d. 1), as it was called, was created in 2006, and was elaborated with buildings to give Second Life visitors an impression of being on the Neolithic mound. Okapi Island had an interesting life-history, as we became more adept at building, creating events and machinimas, and using the island for teaching. But we were *renters*, and as such were at the mercy of our landowners—Linden Labs. As you can read in Colleen Morgan's *Middle Savagery* blog (Morgan 2010), in 2010 they doubled the rent of Second Life land for educators (there was no rent control in Second Life).[2] Between 2010, when we received the eviction notice, and January 2012, when we informed Linden Labs that we would not be continuing to pay the rent and unceremoniously abandoned Okapi Island, there was a period in which the structures we had built began to fall apart, through vandalism, lack of maintenance, and our obvious lack of presence. Immediately after January 2012, Okapi Island disappeared from Second Life; after 5 years of active

2. For more on Opaki Island, see posts tagged "Second Life" at https://middlesavagery.wordpress.com/

life, Okapi Island itself had become archaeological. In this sense, although we agree with much of what he writes, we actually do not follow Harrison's definition of archaeology—specifically "archaeology of virtual settlements, defined here as interactive synthetic environments in which users are sensually immersed and which respond to user input" (Harrison 2009, 75). For us, this definition loses the very power of the word "archaeology" that shows that even something supported and created by cyber-infrastructure, such as Linden Labs Second Life, can decay, be abandoned, and lose meaning and even visibility.

We did not port/migrate Okapi Island to another world such as OpenSimulator; we let Okapi Island go. The site needed a lot of maintenance to keep it alive. Maintenance in this case meant an active presence of us archaeologists to welcome visitors, to create the feeling of an inhabited place (Figure 2). There are many sad places in Second Life that are empty of live residents, only with non-playing actors. So we tend to think that it would not have lasted long without the people motivated to keep it alive and "busy" (maybe Colleen Morgan disagrees). Linden Labs may have just accelerated a process that was already in motion (sort of like the eruption of Vesuvius at Pompeii…). Even so, we did send an appeal to Linden Labs in October 2010, but never heard back from them.

In the end, Okapi Island, like any archaeological site, could never be resuscitated to its "dynamic" interactive state. While it may still persist in some form in their backup tapes and drives, Okapi Island has been razed from Second Life. As a digital object its interactivity is completely dead. Fragments of its active time could be grasped from its video documentation (Tringham n.d. 2); its static visual imagery from the few screenshot photos and some documentation of the textures and models used.

While searching in 2014 in Erik Champion's *Playing with the Past* (2011) for web-based virtual cultural environments that could act as models for a game, *Dead Women Do Tell Tales*, that was being developed about Çatalhöyük (Tringham n.d. 3; see also Tringham 2015), we found that at least half of his examples have disappeared by now, which seems to be a common trend with games and other web-based interfaces in general. It's not surprising—according to the Library of Congress, the average lifespan of a webpage is only 100 days. Many of the disappeared, like Okapi Island, can be seen as tempting fragments displayed through video documentation on YouTube or Vimeo (e.g. Leavy n.d.).

Previously, in 1995–1998 we developed another game-like "afterlife" of an archaeological excavation project (Opovo) in Serbia, called *The Chimera Web*. In this case, the demise was the result of technological changes in the software (Macromedia Director) and incompatible upgrades to the computer system (Macintosh). Unlike the games mentioned above, we did not document the working model by video, although there are screenshots (Figure 3). All of the source content that was used, however, is safely stored in our personal archives; all, that is, except for the original design and storyboarding that was created using Eastgate's Storyspace, which did not keep up with the later development of MacOSX and we did not keep a personal watch on this. So by the time we came to revisit the *Chimera Web* Storyspace document with a view to resuscitating it from oblivion, it was too late. We had not even documented with screenshots the Storyspace web of hypertext links! But we cannot let this project disappear just yet. Maybe we will recycle its archived content in a new format. So perhaps *Chimera Web* is not quite dead (archaeological)—just resting, as Monty Python would have it.

FIGURE 2. Okapi Island in Second Life: (left) crowded with visitors in 2008; (right) sad and empty in 2011 (screenshots by Ruth Tringham).

FIGURE 3. *The Chimera Web* (1995): (left) main portal; (right) fire story portal (screenshots by Ruth Tringham).

There are many other such projects on personal hard drives around the world. Just recently, Erik Champion (n.d.) blogged about porting his 2005 model of the Mayan city of Palenque (which we believe sleeps/rests on his personal hard drive) to an updated version of Unreal Tournament engine (Unreal Development Kit). But will we ever see it without having to go to Perth, Australia?

There are lessons buried in these archaeological musings on life-histories to help answer such questions as to why digital objects often have such short life-spans, how they become archaeological, and what (if anything) should be done to prolong their lives. We know that the fastest way for a tool, a building, or a whole street to become archaeological is for it to be abandoned because it is not used, or because it is unusable; as mentioned above, it is important to investigate or think about the reason. As we see with buildings, for something to avoid the demise of becoming archaeological, it needs to be sustainable (preferably from the beginning of its life-history) by being in constant use, by continuously existing in the minds of its community of users, and by being able to be changed (or be modified) to respond to the changes of its users. The decision of whether to meet the challenges of these sustainability factors, or deciding not to, will determine whether something will fall into disuse, abandonment, metaphorical or physical burial in the morass of communal forgetfulness, and ultimately the demise of disappearance without hope of resuscitation.

We are deliberately being abstruse here in defining what that "something" is, because these rules apply, we believe, not only to cultural heritage in its many forms, but also to digital objects as well (Richards 2002). In fact some of the most helpful discussions and guidelines on digital sustainability have been published by the Archaeological Data Services under the direction of Julian Richards. In addition to the many valuable best practice recommendations to ensure the longevity of digital archived source content, one of Julian Richards's most interesting recommendations is that archaeologists should plan to encourage the accessibility, usability, and reusability of their digital objects by a broad audience (Richards n.d.).

The downside of all these recommendations for securing the longevity of digital content and avoiding its archaeological demise is that the accumulation of digital content is being done very fast and not everyone who produces and reuses it has the patience, skill, or technology to prepare it for long-term preservation.

Michael Ashley (2010) has assessed the problem that digital content (memories) are at high risk of becoming archaeological unless radically easier methods for producers to follow and more robust media for the productions to be housed in are provided. Fortunately, our practices in content production and curation are getting better, and the costs for high quality storage are dropping exponentially (Figure 4). This points to a better near future for curated, valuable digital heritage.

Both Julian Richards (2002) and Michael Ashley (2010) recommend that the solution is to recognize that not all digital content needs to be more than ephemeral; some (a lot) can be allowed to become archaeological, since there is redundancy of representation and—following what we have said earlier—if the content is not used it will become archaeological by a path of gradual attrition. It's a signal-to-noise problem. Along with the US Library of Congress (n.d.) recommendations and those of the Digital Curation

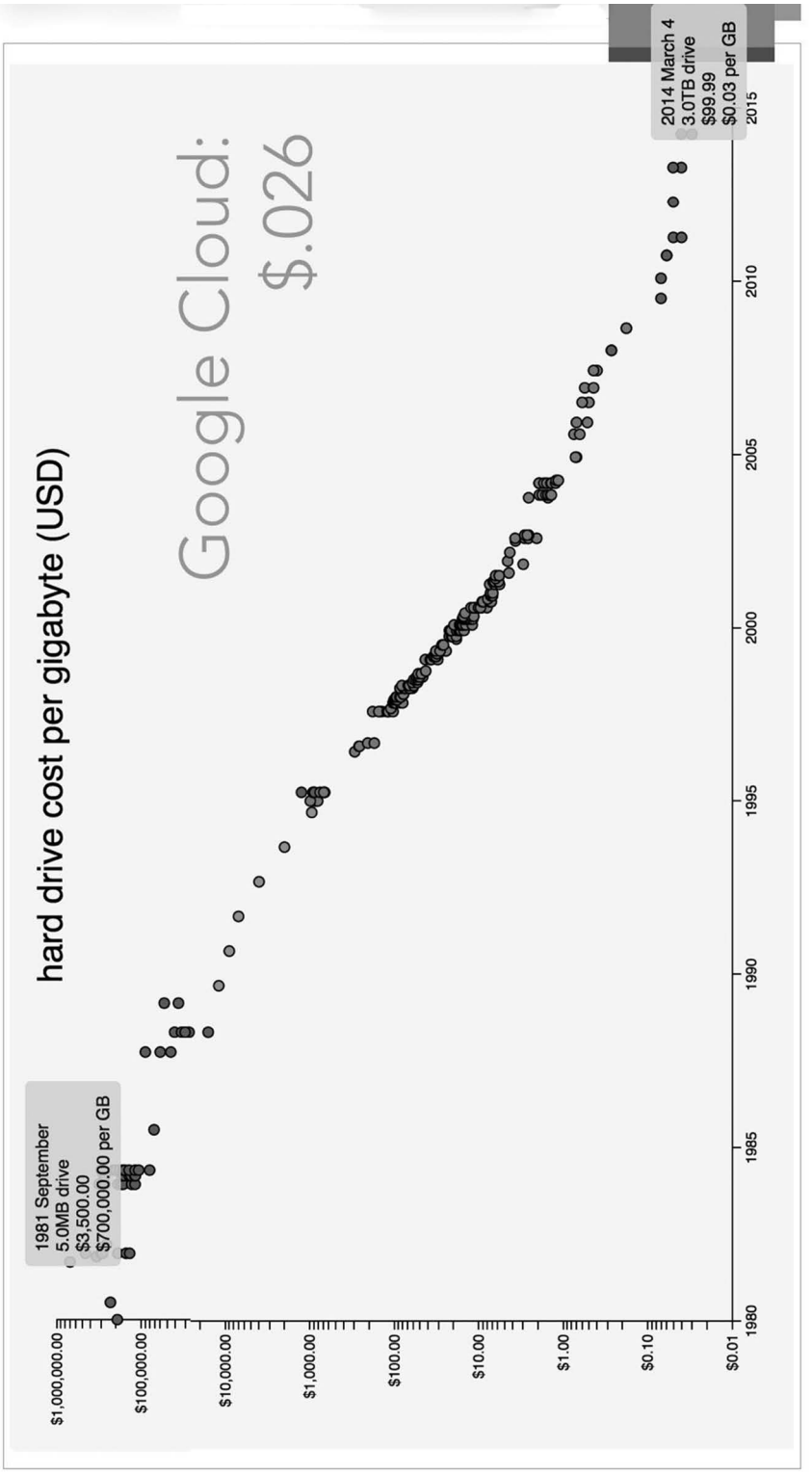

FIGURE 4. Hard drive cost per gigabyte 1980–2015 (Komorowski n.d., used by permission of the author).

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Centre (n.d.), they suggest a life-cycle for "born-archival" digital objects in which different versions of media are created for different purposes and with different life expectancies.

Returning to Schiffer, we can slightly reorder his *life-cycle* to work for media archaeology by moving preservation to the front of the workflow queue—preserve (durable, lossless file formats), maintain (fixity check, embed metadata and archive), curate (select, and if needed, destroy), recycle (generate representations for access), reuse (remix, regenerate), conserve (append and enrich), repeat. For example: a "rich" archived version with high resolution and detailed, embedded metadata according to core standards is expected to last and be meaningful for the long-term; it acts as the "master-source" from which other versions can be created, to be repurposable in other formats, and with any dynamic interactivity preserved intact. From this version "lighter" copies—representations with meaningful, embedded metadata—are created for dissemination to a broader public via web-based, mobile, and cloud-based platforms. Like the user interfaces on which they occur in different genres (websites, games, on-line journals, mobile apps), their life expectancy is short (Figure 5). With maintenance, such "light" interfaces and their media may remain accessible and usable, but they have a lower priority for long-term curation than the master-source content; they are more ephemeral and can be replaced, even resuscitated, as long as the master-source content is intact. The trick here is to encourage the enriching of the source content through interaction with the lighter-weight representations.

Thus media archaeologists can turn their thoughts to digital objects that have become forgotten in the mists of time, to study their version history (if any), user activity, author/creator life histories, modifier histories, user histories, user reviews, and hardware and software problems/complaints (and their solutions, if there are any), all as aspects that create the life history of a digital object that will shed light on why and how they might have become archaeological. While doing this, media archaeologists will see, as archaeologists have done with non-digital objects, why some digital objects have a longer life-expectancy than others.

References

Alexander, C. 1979. *The Timeless Way of Building*. Oxford: Oxford University Press.

Ashley, M. 2010. "Deep Thinking in Shallow Time: Sharing Humanity's History in the Petabyte Age." *Virtual Archaeology Review* 1(1): 9–12. Available online: http://varjournal.es/doc/varj01_001_27.pdf

Bollacker, K. 2010. "Avoiding a Digital Dark Age." *American Scientist* 98(2): 106–110. Available online: http://www.americanscientist.org/issues/num2/2010/3/avoiding-a-digital-dark-age/1

Brand, S. 1994. *How Buildings Learn*. New York: Viking Press.

Cameron, C. and S. Tomka, eds. 1993 *Abandonment of Settlements and Regions: Ethnoarchaeological and Archaeological Approaches*. Cambridge: Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511735240

Champion, E. 2011. *Playing with the Past*. London: Springer. http://dx.doi.org/10.1007/978-1-84996-501-9

____. n.d. "Peopled Virtual Heritage (Worlds)." *Erik Champion: Interactive History and Digital Culture* 21 January. Available online: https://erikchampion.wordpress.com/2015/01/21/peopled-virtual-heritage-worlds/

Colwell-Chanthaphonh, C. and T. J. Ferguson. 2006 "Rethinking Abandonment in Archaeological Contexts." *SAA Archaeological Record* 6(1) 37–41. Available online: http://www.saa.org/Portals/0/SAA/Publications/thesaaarchrec/jan06.pdf

DeSilvey, C. 2006. "Observed Decay: Telling Stories with Mutable Things." *Journal of Material Culture* 11(3): 318–338. http://dx.doi.org/10.1177/1359183506068808

medium	data medium	invented	lifespan
analog	clay/stone tablet	8000bc	>4000 years
analog	pigment on paper	3500bc	>2000 years
analog	oil painting	600	centuries
analog	silver halide black and white film	1820	>100 years
analog	modern color photographic film	1860	decades
analog	phonograph record	1877	>120 years
analog/digital	magnetic tape	1928	decades
analog/digital	magnetic disk	1950	3-20 years
analog/digital	polycarbonate optical WORM disk	1990	5-20 years
digital	iPad application, electronic	2012	1-5 years?

FIGURE 5. Table showing a trend in which digital data have shorter lifespans than analog data/media (based on table by Tom Dunne in Bollacker 2010).

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equinoxonline

____. 2012. "Making Sense of Transience: Anticipatory History." *Cultural Geographies* 19(1): 31–54. http://dx.doi.org/10.1177/1474474010397599

Digital Curation Centre. n.d. *Curation Reference Manual*. Available online: http://www.dcc.ac.uk/resources/curation-reference-manual

Gifford-Gonzalez, D. 2011. "Just Methodology? A Review of Archaeology's Debts to Michael Schiffer." In *Assessing Michael Schiffer and his Behavioral Archaeology*, edited by J.J. Reid and M. Skibo, 299–308. Special issue of *Journal of Archaeological Method and Theory* 18(4). http://dx.doi.org/10.1007/s10816-011-9113-4

Harrison, R. 2009. "Excavating Second Life: Cyber-Archaeologies, Heritage and Virtual Communities." *Journal of Material Culture* 14(1): 75–106. http://dx.doi.org/10.1177/1359183508100009

Komorowski, N. n.d. "A History Of Storage Cost." Available online: http://www.mkomo.com/cost-per-gigabyte-update

Leavy, B. n.d. "Virtual Songlines – Harbor Journey." Available online: https://vimeo.com/81783754

McGuire, R. and M. Schiffer. 1983. "A Theory of Architectural Design." *Journal of Anthropological Archaeology* 2(3): 277–303. http://dx.doi.org/10.1016/0278-4165(83)90002-8

Morgan, C. 2009. "(Re)Building Çatalhöyük: Changing Virtual Reality in Archaeology." *Archaeologies: Journal of the World Archaeological Congress* 5(3): 468–487. http://link.springer.com/journal/11759. http://dx.doi.org/10.1007/s11759-009-9113-0

____. 2010. "A Death-knell for OKAPI Island?" *Middle Savagery.* 20 October, 2010. Available online: https://middlesavagery.wordpress.com/2010/10/20/a-death-knell-for-okapi-island/

Reid, T.J. and J. Skibo, eds. 2011. *Assessing Michael Schiffer and his Behavioral Archaeology.* Special issue of *Journal of Archaeological Method and Theory* 18(4). http://dx.doi.org/10.1007/s10816-011-9113-4

Richards, J. 2002. "Digital Preservation and Access." *European Journal of Archaeology* 5(3) 343–366. http://dx.doi.org/10.1179/eja.2002.5.3.343

____. n.d. "Preservation and Digital Archiving." Available online: http://archaeologydataservice.ac.uk/advice/preservation

Schiffer, M. 1976. *Behavioral Archeology*. New York: Academic Press.

____. 1987. *Formation Processes of the Archaeological Record*. Albuquerque: University of New Mexico Press.

____. 2011. *Studying Technological Change: A Behavioral Approach*. Salt Lake City: University of Utah Press.

Stevanovic, M. 1997. "The Age of Clay: The Social Dynamics of House Destruction." *Journal of Anthropological Archaeology* 16(4): 334–395. http://dx.doi.org/10.1006/jaar.1997.0310

Tringham, R.1978. "Experimentation, Ethnoarchaeology and the Leapfrogs in Archaeological Methodology." In *Explorations in Ethnoarchaeology*, edited by R. Gould, 169–199. Albuquerque: University of New Mexico Press. http://dx.doi.org/10.13140/RG.2.1.1328.0805

____. 1990. "Conclusion: Selevac in the Wider Context of European Prehistory." In *Selevac: A Neolithic village in Yugoslavia*, edited by R. Tringham and D. Krstic, 567–616. Monumenta Archaeologica 15. Los Angeles: UCLA Institute of Archaeology Press.

____. 1994. "Engendered Places in Prehistory." *Gender, Place, and Culture* 1(2): 169–203. http://dx.doi.org/10.1080/09663699408721209

____. 2012. "Households through a Digital Lens." In *New Perspectives on Household Archaeology*, edited by B. Parker and C. Foster, 81–120. Winona Lake, IL: Eisenbrauns.

____. 2015. "Creating Narratives of the Past as Recombinant Histories." In *Subjects and Narratives in Archaeology*, edited by R. M. Van Dyke and R. Bernbeck, 41–75. Denver: University Press of Colorado.

____. n.d. 1. "Okapi Island in Second Life." Available online: http://www.ruthtringham.com/Ruth_Tringham/Okapi_Island.html

____. n.d. 2. "A tour of Okapi Island." Available online: http://vimeo.com/88005214

____. n.d. 3. "Dead Women Do Tell Tales." Available online: http://www.ruthtringham.com/Ruth_Tringham/Dead_Women_Do_Tell_Tales.html

____. and M. Stevanovic, eds. 2012. *Last House on the Hill: BACH Area Reports from Çatalhöyük, Turkey.* Çatalhöyük Volume 11. Los Angeles: Cotsen Institute of Archaeology Publications, UCLA.

US Library of Congress. n.d. "Sustainability of Digital Formats: Formats, Evaluation Factors, and Relationships." Available online: http://www.digitalpreservation.gov/formats/intro/format_eval_rel.shtml

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Symmetrical Media Archaeology: Boundary and Context

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The *idea* of archaeology—understood as material/discursive practice (Graves-Brown *et al.* 2013, 13), or the sites, artefacts, and data that constitute the *matter* of archaeology (e.g. Childe 1929; Wheeler 1954)—as somehow existing beyond or separate from *media*—which here is understood as a tool or platform of communication, hybridized or networked technologies (McQuail 2000), or vectors of knowledge or meaning (Foucault 1972; Shortland 1993)—is unrealistic. That is, the distinction between archaeology and media, if institutionally legitimate and operationally convenient, is arbitrary. Whether regarded as *stuff*, reflecting instrument or transformative praxis (Matthews 2009), as both message carrier and historical/cultural artefact, archaeology pre-exists as transmitter and transmission.

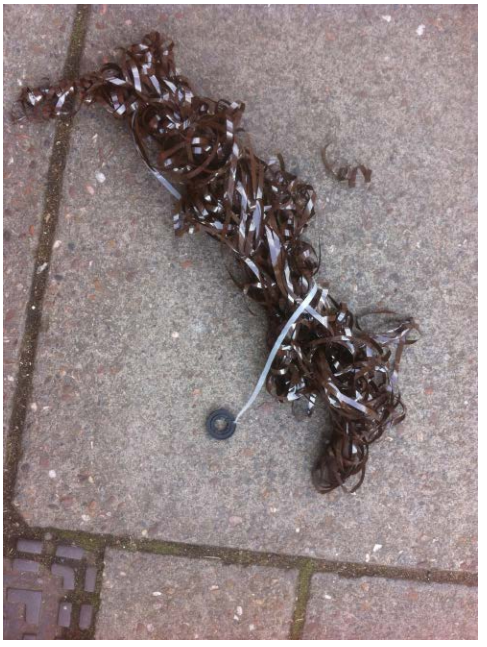

FIGURE 1. Audio-cassette tape tangle, Bristol.

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While this dichotomy reflects cultural traditions and institutional habit (Bal 2002; Becher 1989) rather than any philosophical boundary or material reality (Barad 2007), a wider discourse within a still emergent practice of media archaeology might provide different insight into our present inchoate moment of technological and social evolution. Furthermore, these intimately bound, interacting spheres of society and technology—the co-manufacture of people and things—are traditionally supposed as the very substance of archaeology (Childe1929). So, in a newer discipline, or perhaps, cluster of sub-disciplines or theoretical dispositions, currently inhabited by media scholars, cultural theorists, social scientists, historians of cinema and film, fellow-travelling steam-punk enthusiasts, and other thinkers, what might archaeology—as publically and institutionally constituted, and once (now famously) defined as restricted to "digging through foundations of demolished factories, boarding houses and dumps" (Huhtamo and Parrika 2011, 3)—bring to a discussion of media archaeology?

If many of those studying the detritus of our communication age look to rubbish tip, recycling centre, or, like myself, to front garden or pavement for abandoned cathode-ray tube television (CRTV), video cassette-player, magnetic ferrous-oxide tape, relict recording apparatus, or grounded aerial—in other words, look to much the same evidence (and take much the same photograph)—how might *archaeological* media archaeology differ? And how do these different constituencies in turn recycle their digital images of analogue processors, or otherwise engage with the fabric or materiality of media-stuff? How, or indeed does, a specifically archaeological encounter with technology or technological debris differ from that of Variantologist, social scientist, photographer, or performance artist? For that matter, aside from, on the one hand, the well-worn metaphor for stratified, subterranean knowledge, and, on the other, muddy field practice, what might be thought archaeological at all? And if, as David Clarke famously suggested and everyone else has repeated, "archaeology is what archaeologists do" (Clarke 1973, 6), what is it that we are supposed to do? Is there a peculiarly archaeological perspective, a way of addressing things with an archaeological gaze or transformative touch? Or again, is archaeology simply a fashion of measuring and categorizing? However, rather than routine or gesture, a performance of quantifying and sorting, or reading, writing, and talking, or ways of going-about-things as *habitus* (Bourdieu 1977), perhaps it is a consideration of context as epistemology rather than any one culturally reaffirming methodology that best characterizes the practice of archaeology (Harrison 2011). This founding idea of the archaeological context (Daniel 1943; Drewett 1999; Barker 2005)—proximity in space and time—is both banal and profound but generally not a preoccupation for most current scholars of media archaeology.

Jussi Parikka has recently considered media or their constituent fossil elements as latent actors extending through deep geological time. This "elemental media condition" (Bishop and Parikka 2013) of the "Anthrobscene" (Parikka 2015), with its emphasis on the necessary precondition for media with an implication of folded or nested time, falls outside usual archaeological parameters—those of material traces of hominin activity tracked and tidied into an orderly temporal procession. Nevertheless, if forensically and chronologically pedestrian, archaeology *is* able to trace, and argue from, detail (however partial) of the technological presence of genus *Homo* throughout the Pleistocene and for

Figure 2. Shattered remote TV control.

nearly two million years. While an interest in historical, economic, and industrial interaction is shared with other media scholars, it is a *making and enacting* of material as media in an evolving *longue durée*—be this communication by chipped stone or microchip—that preoccupies much archaeological and anthropological discourse (Barrett 1994; Gell 1998; Gamble 2007, 277–280). With this intellectual predisposition a researcher might look for the collective agency of tool and toolmaker in a cultural ecology, rather than a prelapsarian *potential* for media. Indeed, recent archaeological thinking might find it difficult to isolate artefact/medium, maker, and social context (e.g. Renfrew 1986, 146).

So if, with mattock, sieve, and microscope, one might glimpse the biography of a long-absent toolmaker, or in handling an expertly knapped flint tool haptically present-the-past, it is the evolutionary arms race of techno-social (or socio-technological) innovation, and concomitant communication at distance, that is surely the archaeological meta-narrative. Whether pushed by environmental or climactic change or pulled by increasing social complexity, the ecological dance of adaptive technology, human communities, and biosphere (Childe 1952; Fisher *et al.* 2009, 251–331) is a familiar archaeological tale. Accordingly, we might suppose that in the study of human affairs, archaeological antennae are especially tuned to analyse and contrast the runaway effects of accelerating cycles of novelty, consumption, and waste (Bradley 1990; Rathje 2001). And as for media, the message signalled with each transaction, coded as metaphor, metonym, or

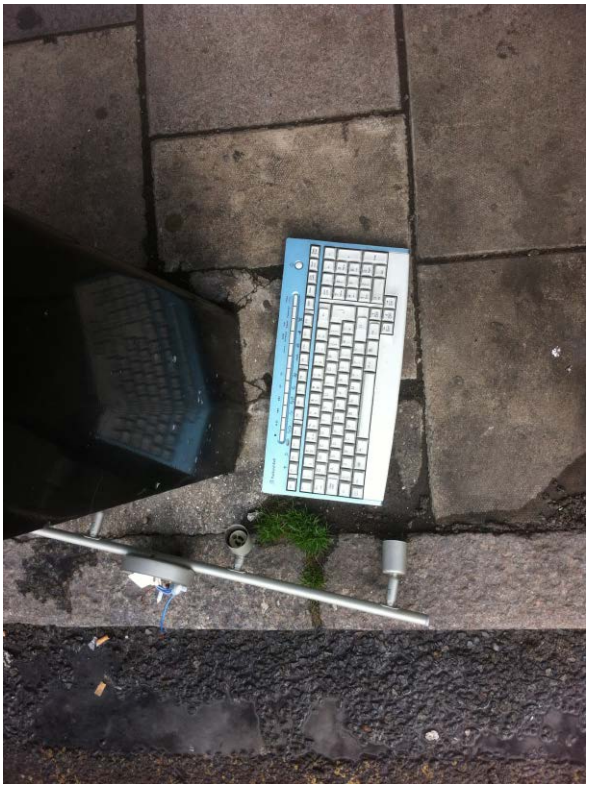

Figure 3. Computer keyboard on pavement.

synecdoche (Hodder 1993; Tilley 1999), with exchanges of gifts and goods, whether promising affiliation or warning of aggression (Sahlins 1963, 294–297; Mauss 1966), is *material* comment. In this way, Bronze Age pots posing as textiles or metalwork (Sofaer *et al.* 2013, 476–477), Aboriginal "stone" adzes chipped from post-contact bottle-glass (Harrison 2003), or French and Crimean War cannon resurrected as London street furniture (Evans 2015), continue to talk back as ironic, empowering, or disempowering skeuomorphs (another familiar archaeological trope, e.g. Sherratt 1997, 381–382, 431–456). And if we posit that a thing is never *just* a thing and that the cultural heft of those shiny messengers—iPhone or hand-axe—remains rather the same, this is a matter of argument. For us self-identifying media archaeologists, however, this is an argument clearly worth having.

But, for archaeologists in the field—or on the pavement or at the recycling centre—there is not just a time, but also a place for every thing. If we ask why things change we also ask how they arrived just *here,* and among these other things? This means to say, the archaeological privileges context and the find-spot as snapshot of a unique moment when some thing happened *that could have been otherwise* (Piccini pers. comm. 2015). If this spatio-temporal idea of context marks an episode of loss or abandonment at one (supposed) end of a cycle of production, it is this point at which archaeologists typically engage with their material. Accordingly, appropriate methodologies are routinely

calculated to extrapolate an historical scene, or even cultural hinterland, from what *is*, rather than what should or could be, there. This reverse engineering, arguing from the material particular to a generalized, abstract construct, which the material infers, might seem unduly perverse when the culture (itself an abstract concept) and time are our own. However, as the argument of archaeologies of the contemporary past runs, in making "the familiar unfamiliar by defamiliarising taken for granteds" (Buchli and Lucas 2001, 13), the researcher can at least attempt to isolate herself from cultural bias and latter-day assumptions of value, acceptance and rejection, totem and taboo (Freud 2001 [1913]). And perhaps this attitude, at once a bricoleur's intimacy with the object-as-encountered and the required distance of an involved yet sceptical anthropologist, is usefully appropriate to contemporary media-technology studies.

It was in light of all this that in 2011 I looked for—*but did not go out of my way to find*—abandoned media stuff. Or, I should say, inasmuch as in the middle of the day I stumbled across an unspooled audiocassette tape (the iconic 3.81-mm wide C90) promiscuously unwound across a busy Bristol pavement, derelict media stuff first found me. As media-worker and archaeologist I had an existing interest, but taken unawares (in my opinion the best state in which to approach research material) I had no methodology. Stretched as

Figure 4. Face (screen) down TV on street pavement.

it was in the middle of a busy thoroughfare this magnetic oxide tape, evidence of recent physical play/display—pulling the tape from the cassette to its full extent must have been a deliberate effort that suggested an exaggerated throwing or arm-length tugging action—could not have been there very long and would soon have been swept away by street-cleaner's brush or general footfall.

Like all of the street media stuff I would find, the unwound tape/spool assemblage was in a transitional state, its public presence momentary, and its material integrity fragile. Formal archaeological recording, with meticulous cross-referenced measurement, grid-layout, and context sheet was neither possible nor, I now believe, necessary. As with any archaeological work, recording methods and the manner and degree of intervention appropriate to the site and the circumstances of the find had to be decided, and in this case, as is not unusual, on the spot. Accordingly, a series of pictures of the find-site were taken with an iPhone 4, an equally iconic media artefact that helped make the redundancy of several technologies, including the audiocassette, more-or-less complete. However, fortunately for my research, all smart-phones, including the iPhone series, now record "Exchangeable Image File" (EXIF) data. Among other technical information—focal-length of lens, exposure with ISO, shutter speed, and so on—this protocol embeds in every jpeg file the record of the satellite Global Positioning System (GPS) and other location data obtained from cell-phone mast triangulation, and the date and time at which the picture was taken

Figure 5. Tape-drive mechanism and brick wall.

(Bobbitt 2009; Jiebo *et al*. 2011). The matrix of each digital smart-phone picture already contains its own stratigraphy of interrogable data. Together with simple pen-and-paper note-taking—my impressions of the site and initial characterization of the find and associated surface scatter—the location, date, and time of each media object stamped into its iPhone likeness meant that enough data to map a useful archaeological survey was thus effortlessly obtained. However, if what I considered an appropriate degree of recording was both to hand and uncomplicated, having begun, I immediately ran into more serious and complex questions of representation, definition, and ontology.

I strive to be reflexive, both as media practitioner and archaeologist. In this case, attempting to factor my own arrival at a find spot to capture a snapshot of some unique event, I had to contextualize, or at least consider, my own presence and the possible effects of any intervention. The problem that confronted me was how to measure any such action (of measurement) as against archaeological practice and what and where the object in question actually was. First, this self-imposed dilemma concerned scale; that is, the bespoke reference markers, or objects of known size: trowel, paintbrush, person, or pencil, one of which is usually included in every "proper" archaeological photograph. Although, as well as a pen, I do often carry a standard set of the smaller photographic reference scales with me, for several reasons it seemed inappropriate to use these in the context of found media. To mitigate their absence and for comparison of scale, there were already items of known or calculable size—kerbstones, paving slabs, manhole covers and the like—in the frame of most of the several hundred street photographs I was to make. But, more significantly for me, rather than badging sites of ruined media *as* archaeology by coyly deploying this or that methodological trope, or in inserting a totemic but intrusive archaeological object into a scene of abjection to stake this or that institutional or epistemological claim, I would look to discover what and where archaeology might be (Holtorf and Piccini 2009, 9–30; Harrison 2011). As, at this stage, I neither knew what I was looking for, nor quite what I was looking at, this was a key, if hastily improvised, decision.

The potential of my embryonic methodology of wayfaring and casual indeterminacy was borne on me with my second find, which arrived signed, dated, and clearly labelled. Remarkably, this "highly confidential" pitching document, originating from a well-known independent production company, introduced characters and plotted themes for a putative TV series in which the *dramatis personæ* were archaeologists and the setting that of marine archaeology. As the undoubtedly rejected document—whose sub-text spoke of the globalization and commoditization of twenty-first century "public service" television (Bailey 2014)—was abandoned at a council rubbish collection point, it self-defined as archaeological street media (Bailey 2012). After this extraordinary encounter (during which, breaking my own improvised rule, I removed the object for further study), and almost as mysteriously, between June 2012 and August 2014, I came across sixteen CRT TV sets cast out on the street and all within short walking distance of my home in north London. Most, but not all, of these were put outside residential houses at or near the pavement threshold, having no doubt been expelled from their former position in domestic life following London's digital switchover in April 2012. Among other street finds in this two-year period were: a second tangle of unwound audio-cassette

Figure 6. Street TV and cardboard packaging (various).

tape (also material evidence of physical display in public space); now obsolete VHS videotapes—usually boxed family collections tidily placed at or near refuse collection points; two VHS recorders; DVDs or CDs, at or near the brink of obsolescence and found singly on pavement or road where they had evidently been thrown or spun as Frisbee-like projectiles; one DVD video-game whose theme was ancient Egypt; a single 8-mm film spool seen in a builder's skip; two TV roof aerials (possibly the result of strong winds rather than purposeful or playful deposition); one (non-smart) mobile phone; three music-centres with separate speakers; one (boom-box) radio/cassette player; two seemingly complete desk-top computers; three computer keyboards; one small computer screen; one public phone-booth, with completely dismantled wiring; parts of earphones; and a great many phone, computer, and headphone cables and other scatters of wiring, plugs, and printed circuit parts. Apart from the majority of TVs and the boxes of VHS tapes, which had clearly been put out for collection, and several items seen in or immediately adjacent to builders' skips, the remaining objects had all been deposited or illegally dumped in a public place or thoroughfare. If not all were minor crime scenes, each of these episodes of rejection and abandonment was the result of a decision or series of decisions reflecting changing relationships of people to media

Figure 7. Waste optical cabling with coffee cups.

stuff or media platforms made, pronounced, or believed to be, redundant. Their state and status now changed; presumably all of these once-valued things had previously been charged with different techno-social significance, often operating simultaneously and at different scales: industrial, commercial, institutional, household, and individual.

In recording these rapidly vanishing events my sampling strategy was simple. These were all things I came across in the normal course of events as I went about my daily business. They were not sought out, and, as stated, they were all recorded on the same chip of the same iPhone 4. Here I come to the nub. If the title of Jussi Parikka's landmark book asked, "What is media archaeology?" (2012), I now ask *where* is media archaeology? How do we contextualize media archaeology? In the case of my modest collection of media images of media carriers, transmitters, and receivers it—the media object—seems to be here, there, and everywhere. The prototype abject object has in almost all cases vanished to be redistributed, recycled, or dumped (Maxwell and Miller 2013, 697–710). Its hardware, the constituent metals and plastics, might be reconstituted, even reincarnated as part of yet another media instrument. Or, it might be dismembered, buried in landfill site, or fragmented, separated away in sewage-farm or washed out to sea via street drain. Whatever their fate as physical object-concept, with my archaeological attention they now persist as images dispersed across media and potentially redistributed via photo-sharing groups and webpages, in mobile-phone or computer RAM, in storage drives and memory sticks, or somewhere/everywhere in bits, bytes, and nibbles at a Utah or San Antonio memory farm. Or, they still exist as indeterminate yet imminent trace, distributed sometime

around local, regional, or worldwide virtual networks. Inasmuch as each hyper-real object still exists as a discrete thing, it is as recollection (fragmented memory to be recalled by finger swipe or mouse-click), as simulacrum, or repetition of its originary concept: its own virtual computer-aided design (CAD). Rather than materiality or immateriality, this hybrid symmetry (Witmore 2006, 2007; Webmoor 2012)—tracing an idea of form and function from a computer's virtual drawing board to material realization, to memories of itself scattered in virtual space-time—might be thought pivotal to the matter of media archaeology.

So what to consider? What is real? After particle physicist and theorist Karen Barad (2007), I would say this all depends on where we decide to fix the parameters of our experiment, book-chapter, media work, or excavation. Where we *choose* to draw boundaries to incorporate observer, observed stuff, and the mechanisms of measurement/recording to make an "agential cut in reality" (Barad 2007, 326–337), might then become media archaeology assemblage. And if critical voices protest, asking how this effortless recording of disregarded, mass-produced debris can possibly be archaeology, which criteria say it is not? If lacking chthonic metaphor or established methodology, does this mean that archaeologists (of all people) ignore stuff that surrounds us hidden in plain sight? Surely, while method and technique are means to an end, it is not *necessarily* a recognizably archaeological performance or the routine application of archaeological methodology to mute material that transforms it, but the situation and intent of worker and work that allow it to speak; that communicate archaeologies of media.

Figure 8. Small computer screen with reflections.

Therefore, this paper, now circulated in a forum on media archaeology in an archaeological journal creates an archaeological cut in reality.

References

Bailey, G. 2012 "Greg Bailey on Broadcasting" *British Archaeology.* 122(13).

____. 2014. "Television and Archaeology: Views from the UK and Beyond." In *Encyclopaedia of Global Archaeology: Archaeologies of the Contemporary Past*, edited by C. Smith, 7253–7259. Berlin: Springer.

Bal, M. 2002. *Travelling Concepts in the Humanities: A Rough Guide.* Toronto: University of Toronto Press.

Barad, K. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press.

Barker, P. 2005. *Techniques of Archaeological Excavation* (3rd edition). London: Routledge.

Barrett, J. C. 1994. *Fragments from Antiquity.* Oxford: Blackwell.

Becher, T. 1989. *Academic Tribes and Territories: Intellectual Inquiry and the Cultures of Disciplines.* Milton Keynes, UK: Society for Research into Higher Education and Open University Press.

Bishop, R. and J. Parikka. 2013. "The Anthropobscene: The Elemental Media Condition." *Machinology* 5 December. Available online: http://jussiparikka.net/2013/12/05/the-anthropobscene-the-elemental-media-condition/

Bobbitt, R. 2009. "Photographers Have Several Camera Options for Geotagging Pictures with GPS Points" *Directions Magazine.* Available online: http://www.directionsmag.com/entry/photographers-have-several-camera-options-for-geotagging-pictures-with-gps-/122479

Bourdieu, P. 1977. *Outline of a Theory of Practice*. Translated by R. Nice. Cambridge: Cambridge University Press.

Bradley, R. 1990. *A Passage of Arms: An Archaeological Analysis of Prehistoric Hoards and Votive Deposits.* Cambridge: Cambridge University Press.

Buchli, V. and G. Lucas. 2001. "The Absent Present: Archaeologies of the Contemporary Past." In *Archaeologies of the Contemporary Past,* edited by V. Buchli and G. Lucas, 3–17. London: Routledge.

Childe, V. G. 1929. *Man Makes Himself.* London: Watts.

____. 1952. *The Most Ancient Near East.* London: Routledge.

Clarke, D. 1973. "Archaeology: the Loss of Innocence." *Antiquity* 47: 6–18.

Daniel, G. E. 1943. *The Three Ages: An Essay on Archaeological Method.* Cambridge: Cambridge University Press.

Drewett, P. 1999. *Field Archaeology: An Introduction*. London: UCL Press.

Evans, M. 2015. "Old Cannon Reused as Bollards." Available online: http://people.ds.cam.ac.uk/mhe1000/bollards/cannonbollards.htm

Fisher, C. T., J. B. Hill and G. M. Feinman. 2009. *The Archaeology of Environmental Change: Socionatural Legacies of Degradation.* Tucson: University of Arizona Press.

Foucault, M. 1972. *The Archaeology of Knowledge*. Translated by A. M. Sheridan Smith. London: Routledge.

Freud, S. 2001 [1913]. *Totem and Taboo*. Translated by J. Strachey. Abingdon, UK: Routledge.

Gamble, C. 2007. *Origins and Revolutions: Human Identity in Earliest Prehistory.* Cambridge: Cambridge University Press.

Gell, A. 1998. *Art and Agency.* Oxford: Oxford University Press.

Graves-Brown, P. M., R. Harrison and A. Piccini, eds. 2013. *The Oxford Handbook of the Archaeology of the Contemporary World*. Oxford: Oxford University Press.

Harrison, R. 2003. "The Magical Virtue of These Sharp Things: Colonialism, Mimesis and Knapped Bottle Glass Artefacts in Australia." *Journal of Material Culture* 8: 311–336.

____. 2011. "Surface Assemblages: Towards Archaeology *in* and *of* the Present." *Archaeological Dialogues.* 18(2): 141–161.

Hodder, I. 1993. "The Narrative and Rhetoric of Material Culture Sequences." *World Archaeology* 25(2): 268–282.

Holtorf, C. and A. Piccini. 2009. "Introduction: Fragments from a Conversation about Contemporary Archaeologies." In *Contemporary Archaeologies: Excavating Now,* edited by C. Holtorf and A. Piccini, 9–30. Frankfurt am Main: Peter Lang.

Huhtamo, E. and J. Parikka, eds. 2011. *Media Archaeology: Approaches, Applications, and Implications.* Berkeley: University of California Press.

Jiebo, L., J. Dhiraj, J. Yu and A. Gallagher. 2011. "Geotagging in Multimedia and Computer Vision: A Survey." *Multimedia Tools and Applications* 51(1): 187–211.

Matthews, C. 2009. "Is Archaeology Political? Transformative Praxis Within and Against the Boundaries of Archaeology." *Public Historian* 31(2): 79–90.

Mauss, M. 1966. *The Gift: Forms and Functions of Exchange in Archaic Societies.* London: Cohen and West.

Maxwell, R. and T. Miller, 2013. "The Material Cellphone." In *The Oxford Handbook of the Archaeology of the Contemporary World*, edited by P. M. Graves-Brown, R. Harrison and A. Piccini, 697–710. Oxford: Oxford University Press.
McQuail, D. 2000. *McQuail's Mass Communication Theory* (4th edition). London: Sage.
Parikka, J. 2012. *What is Media Archaeology?* Cambridge: Polity.
____. 2015. *The Anthrobscene.* Minneapolis: University of Minnesota Press.
Rathje, W. 2001. "Integrated Archaeology: A Garbage Paradigm." In *Archaeologies of the Contemporary Past*, edited by V. Buchli and G. Lucas, 63–76. London: Routledge.
Renfrew, C. 1986. "Varna and the Emergence of Wealth in Prehistoric Europe." In *The Social Life of Things: Commodities in Perspective*, edited by A. Appadurai, 141–167. Cambridge: Cambridge University Press.
Sahlins, M. 1963. "Poor Man, Rich Man, Big-Man, Chief: Political Types in Melanesia and Polynesia." *Comparative Studies in Society and History* 3(5): 294–297.
Sherratt, A. 1997. *Economy and Society in Prehistoric Europe: Changing Perspectives.* Princeton, NJ: Princeton University Press.
Shortland, M. 1993. "Powers of Recall: Sigmund Freud's Partiality for the Prehistoric." *Australasian Historical Archaeology* 11: 1–20.
Sofaer, J., B. Jörgensen and A. Choyke. 2013. "Craft Production: Ceramics, Textiles and Bone." In *The Oxford Handbook of European Bronze Age.* 469–487, edited by F. Fokkens and A. Harding. Oxford: Oxford University Press.
Tilley, C. 1999. *Metaphor and Material Culture.* Oxford: Blackwell.
Webmoor, T. 2012. "Symmetry, STS, Archaeology." In *The Oxford Handbook of the Archaeology of the Contemporary World*, edited by P. M. Graves-Brown, R. Harrison and A. Piccini, 105–120. Oxford: Oxford University Press.
Wheeler, M. 1954. *Archaeology from the Earth.* Oxford: Clarendon Press.
Witmore, C. 2006. "Vision Media, Noise and the Percolation of Time: Symmetrical Approaches to the Mediation of the Material World." *Journal of Material Culture* 11(3): 267–292.
____. 2007. "Symmetrical Archaeology: excerpts from a manifesto." *World Archaeology* 39(4): 546–562.

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The Sex Pistols' Guitar Tuner: Material Culture and Mythology

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> Would Johnny Rotten beam, or blush with embarrassment, to learn that graffiti he scrawled on a bedroom wall in 1977 are being assessed for their archaeological and cultural significance? In the scholarly journal *Antiquity*? By academics who see the wall as an "historic site"? Really?
>
> (*The Times* 22 November, 2011)

> THE WHO, THE ROLLING STONES and Black Sabbath recorded in the basement of Number 4, and Donovan cut his debut in Number 9. In Number 20, a young Elton John worked as a teaboy, and some archaeologists consider the graffiti that The Sex Pistols left behind on the upper floor of Number 6 as important a find as the cave paintings at Lascaux. (Armstrong, 2014)

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Thus has a piece of research by myself and John Schofield (Graves-Brown and Schofield 2011) inadvertently become part of the "culture of deception" and media mythology surrounding the Sex Pistols. This brief essay is an attempt to contribute to "the never ending search for the truth behind the Sex Pistols" (McLaren 2006, 5), by suggesting that material culture and our transactions with it constitute a dialectical challenge to myth and misinformation. As Barthes (1993 [1957]) says, there is a tendency to naturalize what is historically contingent, to prefer what we might like to believe or what we are told to believe over what the actual evidence might tell us. In the case of the Sex Pistols, one primary myth is their lack of musical competence; that their output was a form of anti-music. As Malcolm McLaren told the *Sunday Times* in 1977: "Christ, if people bought the records for the music, this thing would have died a death long ago." Similarly, guitarist Steve Jones had remarked "Actually, we're not into music. We're into chaos" (Spencer 1976).

The media myth of an anti-music suits a narrative which pits punk against the musical virtuosity of 1970s progressive rock, as a "year zero" or return to "roots" for a music which had been "corrupted" by the middle class. The only problem with this myth is that the buildings at 6 Denmark Street and the people and artefacts assembled there between 1975 and 1977 constitute a direct dialectical challenge to the view that the Sex Pistols were simply "into chaos". Indeed, it has been claimed that "If The Beatles had Abbey Road and George Martin, then the Pistols have Denmark Street and Dave Goodman" (Ray Morrisey quoted in Strongman 2007a, 119).

"Punk's Lascaux"

Whilst in December 2011, the media concentrated on the idea that the upper room in a building to the rear of 6 Denmark Street was "punk's Lascaux", the more revolutionary evidence lay in the building itself, and particularly its ground floor. At some time in the late 1960s, this room was converted into a soundproofed rehearsal room by the group Badfinger and their manager Bill Collins. When McLaren's Glitterbest bought the lease (for £600 and an electric piano that didn't belong to them—Matovina 2000; Strongman 2007b) from Collins in 1975, they found a "box of goodies", a rehearsal space equipped with a basic Electro Voice PA system, and "a few mics and a bit of soundproofing" (Goodman 2006, 22). One of the key points about the Sex Pistols, then, is that they intensively *rehearsed* at 6 Denmark Street for around two-and-a-half years until their dissolution in January 1978.

Moreover, "I made a real effort to get Steve's guitar in tune for once. I was aided by this monster of a strobe tuner […] that had been left behind by the previous occupants of their Denmark Street base" (Goodman, 2006, 60). The late Dave Goodman, engineer and first producer to the Pistols, had initially encountered them when he provided the PA for their first gig at the Nashville on 23 March, 1976. He appeared "in the Nashville's backstage room […] raving about how good the band were (back when 'good' was the last word we expected to be hurled at the band)" (McLaren 2006, 4), and continued to be their sound engineer and demo producer for the next two years. His (uncredited) version of "I Wanna Be Me" was on the B side of "Anarchy in the UK" (1976), his production of "No Fun" was the B side of "Pretty Vacant" (1977), and many of his recordings

Figure 1. Peterson Model 400 stroboscopic tuner (copyright Peterson Electro-Musical Products—licenced for all uses under Creative Commons Attribution-ShareAlike 3.0).

can be heard on the album *Spunk*, originally released as a bootleg just before *Never Mind the Bollocks* in 1977.

The "monster of a strobe tuner" in question was a Peterson Model 400 or 420 (Figure 1); first introduced in 1967, this was and remains one of the most accurate tuners available and was widely used by rock bands in the 1970s. According to the company's website,

> the strobe tuner began to be a common sight on stage and in the recording studio. Many will recall first seeing the mysterious flickering dials behind such luminaries as the Grateful Dead, The Who, Pink Floyd, Frank Zappa, Jimi Hendrix, Neil Young *et al.* (Peterson, n.d.)

Why did the Pistols, anti-musicians, use a state-of-the-art guitar tuner? Dave Goodman remarks: "I understand that discordancy and sheer volume can provoke feelings of aggression, but to me, if the Pistols were too out of tune, they would sound sad" (Goodman 2006, 60). One might add that during the recording sessions at Denmark Street, Decibel (Stoke Newington), and Riverside Studios (Chiswick), and at the later sessions at Wessex Sound for the *Never Mind the Bollocks* album, the Pistols, and in particular Steve Jones, fully embraced studio technology:

> I suggested he should try some overdubs to strengthen the tracks.
> "What's an overdub?" asked Steve innocently.
> "You know, you can put another guitar over the top of the original."
> "Oh, sounds great," he said…. (Goodman 2006, 31)

Reputedly, one of the tracks on *Never Mind the Bollocks* has in excess of 10 guitar overdubs.

Témoignage

The late Jacques Derrida (pers. comm.—EHESS seminar 1992) made much of the term "*témoignage*", which in French conveniently means both evidence and testimony. In the Rodney King case, he pointed out, the jury ignored the evidence of their own eyes to acquit the policemen seen beating King in a bystander's video. But as archaeologists, I believe, we must attend to the evidence of our eyes and (in the case of aural archaeology) our ears. One of the most prevalent mythic media tropes of punk is the conflation of the punk ethos with the "Winter of Discontent" of 1978–1979 and the inevitable equation of Lydon's stage role with Olivier's Richard III. Here it is quite simple to demonstrate from a mountain of evidence that the first wave of punk began c. 1975 and was more of less over with the dissolution of the Pistols in January 1978, well before the "rubbish piled up in the streets". Similarly, the fact that *initially* the Pistols were not particularly competent is conflated with the myth that they remained so, a myth that gains traction from the fact that John Richie, alias John Beverley, alias Sid Vicious, was *not* a competent musician. This is demonstrated by the fact that, as Steve Jones later recalled: "He played his farty old bass part and we just let him do it. When he left I dubbed another part on, leaving Sid's down low. I think it might be barely audible on the track" (quoted in Lydon 1993, 200).

The truth, if that is the right word, is summed up by the late Tony Wilson:

> Malcolm wanted […] to create the Bay City Rollers of outrage. He wanted a band that couldn't play […] and would be number one just cause [sic] they were disgusting. In fact, they became number one because they were fantastic. Culturally […] musically, even. (quoted in Nolan 2001, 26)

But where is the *témoignage*? In this, as historical archaeologists, we are confronted with the perennial tension between what people say and what is (see Schiffer 2000). For example, Matlock (2006, 64) recalls that the windows of the rehearsal room "had been bricked up as part of the soundproofing", yet as can be seen from Figure 2 this is clearly not the case, as the building retains its original nineteenth-century windows (see Graves-Brown and Schofield 2011). What is needed, then, is to sift a whole variety of *témoignage*—testimony and evidence—and anyone who believes that contemporary archaeology is frivolous or futile might reflect here on how many of the principal sources of testimony in this story (Bill Collins, Malcolm McLaren, Dave Goodman, Tony Wilson, Sid Vicious) are already dead. The resulting collage consists of written and verbal testimony, photographs, film/video, documentary sources, and the physical structures and artefacts available for interrogation.

With respect to the rehearsal room, which in a way is the key locus in the musical history of the Pistols (genuinely their Abbey Road), we have the room as it exists today (Figure 2) and its inferred history (Graves-Brown and Schofield 2011). From the photographs of Bob Gruen and Janette Beckman taken in 1976 and 1977 respectively, we can see the Pistols rehearsing and from film/video taken in 1973 we can see Badfinger rehearsing in the same space. From this we can confirm that there was some form of soundproofing consisting of black panels of an unknown material held in place by wooden battens. The images do not show the window side of the room but we may

Figure 2. The former rehearsal room at 6 Denmark Street, in 2010 (photograph by author).

guess, *contra* Matlock, that this soundproofing extended over the windows, leading him to believe that they were "bricked up".

In photos and film we can see microphones and hear them being used, so clearly some form of PA was available (although the actual PA is not visible) and here we can probably accept Goodman's testimony; he did, after all, make his living hiring out PA systems. We can see what instruments and amplifiers the Sex Pistols used and this is corroborated by the documentary sources, e.g. the white Gibson Les Paul guitar and the Fender Twin Reverb amplifier which both, seemingly, belonged to Sylvain Sylvain of the New York Dolls (Strongman 2007b). For those who like to claim that it must have been session musicians, such as Chris Spedding, who played on the Pistols' recordings, we have the footage of their performance on Tony Wilson's Granada TV show *So It Goes*, from 28 August, 1976, where they play a very competent live version of "Anarchy in the UK"—no miming here, *à la Top of the Pops* (Nolan 2001).

Finally, we have the sound recordings made over a period of five to eight days beginning 13 July, 1976, whose provenance in Denmark Street is established by a number of documentary sources, including the sleeve notes of *Spunk*. Here we can hear what many believe to be the "authentic" sound of the Sex Pistols, the sound that was heard at the mythic Lesser Free Trade Hall gig in Manchester on 4 June, 1976 (Nolan 2001). This is not the sound of incompetents; Matlock on bass forms a tight rhythm section with Paul Cook, and Steve Jones's new-found passion for overdubbing is ubiquitous. Stylistically, the music combines elements of "Krautrock", dub reggae, and the staples of British blues rock of the early 1970s, particularly, perhaps, The Who and Pete Townshend, whom Steve Jones sought to emulate (Nolan 2001).

No Fun?

If it seems I am labouring the point, I would argue that the Sex Pistols are one of the most prominent, but mythologized, cultural phenomena of the last 50 years, with their influence still somewhat debateable. In the history of popular music perhaps only the Beatles and Elvis Presley have attracted the same welter of apocrypha. If we can use the evidence of material culture (within which I include sound recordings, images, etc.) to get to at least some of what really happened, this seems a worthwhile exercise. Of course this does not mean that we can arrive at a definitive account. The Manchester Lesser Free Trade Hall concert of 4 June, 1976 is a case in point; the number of people who claim to have been there far exceeds the building's capacity and possibly reflects some confusion due to there being a second gig at the Free Trade Hall six weeks later. But beyond the limited photographic evidence available and some documentation, it will never be possible to say, definitively, who was there. Yet to accept that we cannot offer a totalizing account of events is *not* to accept that we can say nothing with authority. And in this context, the great value of material evidence, as Adorno (1973 [1966]) recognized, is that it cannot be explained away and is not as evanescent as the memories of those who were, or were not, at the Lesser Free Trade Hall.

The history of the Sex Pistols was/is a product of the media, the press, and television. But by applying an archaeological sensibility to the *témoignage*—material and testimony, witnesses and evidence—we can bring to light telling ironies that burst the bubble of myth. Whilst Lydon professed to hate the Beatles (and claimed liking them as a reason for sacking Glen Matlock), the Denmark Street rehearsal space was inherited from the first band to sign to the Beatles' Apple label. Having rejected the talents of Dave Goodman, the Pistols then recruited Chris Thomas as their producer. Not only had Thomas previously produced records for Badfinger, but he had learned his trade as an engineer at Abbey Road, working with the Beatles. The truth, where we can find it, *is* stranger than fiction.

Bibliography

Adorno, T. 1973 [1966]. *Negative Dialectics.* Translated by E. B. Ashton. New York: Seabury Press.

Armstrong, L. 2014. "Is Denmark Street, London's 'Music Alley', Under Threat?" *Mojo* 13 June. Available online: http://www.mojo4music.com/15049/denmark-street-londons-music-alley-threat/

Barthes, R. 1993 [1957] *Mythologies*. Translated by A. Lavers. London: Vintage.

Goodman, D. 2006. *My Amazing Adventures with the Sex Pistols.* Liverpool, UK: Bluecoat Press.

Graves-Brown, P. and J. Schofield, 2011. "The Filth and the Fury: 6 Denmark Street (London) and the Sex Pistols." *Antiquity* 85: 1385–1401. http://dx.doi.org/10.1017/S0003598X00062128

Lydon, J. 1993. *Rotten: No Irish, No Blacks, No Dogs.* London: Hodder & Stoughton.

Matlock, G. 2006. *I was a Teenage Sex Pistol*. London: Reynolds & Hearn.

Matovina, D. 2000. *Without You: The Tragic Story of Badfinger.* San Mateo, CA: Frances Glover.

McLaren, M. 2006. "Foreword." In *My Amazing Adventures with the Sex Pistols*, by D. Goodman. Liverpool, UK: Bluecoat Press.

Nolan, D. 2001. *I Swear I Was There: Sex Pistols and the Shape of Rock.* Lanchester, UK: Milo Books.

Schiffer, M. B. 2000. "Indigenous Theories, Scientific Theories and Product Histories." In *Matter, Materiality and Modern Culture*, edited by P. Graves-Brown, 72–96. London: Routledge.

Peterson. n.d. "Peterson Tuner History." Available online: http://www.petersontuners.com/index.cfm?category=26

Spencer, N. 1976. "Don't Look Over your Shoulder but the Sex Pistols are Coming." *New Musical Express* 21 February: 31.

Strongman, P. 2007a. *Pretty Vacant: A History of Punk.* London: Orion.

____. 2007b. (director) *Chaos! Ex-Pistols' Secret History: The Dave Goodman Story* (DVD). London: Universal.

The Times. 2011. "Anarchy in the DIY: Would it be in the True Spirit of Punk to Preserve Johnny Rotten's Wall of Graffiti?" 22 November. Available online: http://www.thetimes.co.uk/tto/opinion/leaders/article3233868.ece

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Kinetic Architecture and Aerial Rides: Towards a Media Archaeology of the Revolving Restaurant View

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Ever since the erection of the Eiffel Tower in 1889 and its overwhelming public success, cities have continued to incorporate various types of kinetic observation structures into their urban tissue, serving as an influential visual medium for the masses. In my media-archeological project, of which this text is a part, I explore how the experience and current innovation of these structures relate to the new imaging technologies that shape our contemporary media culture. In this text I will be treating the revolving restaurant as an optical device, where the attributes of elevated view combined with mechanical motion evoke a cinematic experience. In order to describe the relationship to cinema that such a view inhabits, I have turned to what I call *cinéma trouvé*—a cinematic experience of sites or places outside the traditional cinematic apparatus.

The artist duo Bull.Miletic (2011) have written about the genealogy of the revolving restaurant view as a panoramic desire starting from the Italian veduta, the Claude glass, and the picturesque gardens of the early eighteenth century. By tracing the origins of this vision machine through the development of immersive imaging practices such as the panorama and diorama, and the coming of modernism with urbanization, ferro-vitreous architecture, and the development of the railway and tourism, the revolving restaurant experience is firmly situated within New Film History's media-archeological context (Elsaesser 2004). Bull.Miletic examine the disparate and far-flung links between the revolving panoramic view and what Tom Gunning (2012) has called "the technological image", understood as an expanding arsenal of technological devices (from nineteenth-century philosophical toys to the cinema to video and digital media). My short comment here is thus intended as a contribution to an existing media-archaeological discourse in which the development of moving image media are seen in a larger cultural context.

The specific experience enabled by kinetic architecture and mechanical rides appears early in cinema as part of "the cinema of attractions" in the form of non-narrative phantom rides and exhibitions such as Hale's tours (Gunning 1986). In his Walter

Benjamin-influenced account of the changes brought to society by the invention of the railway, Wolfgang Schivelbush (1986) claims that "panoramic perception, in contrast to traditional perception, no longer belonged to the same space as the perceived objects: the traveler saw the objects, landscapes, etc. *through* the apparatus which moved him through the world" (Schivelbush 1986, 64, emphasis in original). Relying on related accounts such as "cinema by other means" (discussed in Levi 2012), "the body as a site of spatio-sensory perception" (in Bruno 2002), "the mobilized and virtual gaze", and "the virtual window" (Friedberg 1993, 2006), among others, this line of thought leads to my concept of "readymade cinema" or *cinéma trouvé*, a cinematic experience produced by an observation machine in which the spectator simultaneously travels through physical space and his or her own memory of conventional cinema. The concept of *cinéma trouvé* is a useful media archeological heuristic device, as it generates new and unconventional ways of thinking through issues of embodiment and materiality across mediated and physical experience. Below, I will jump-cut further along the aerial view to include what I, after the film scholar and media archeologist Pavle Levi (2012, 77), would call the cine-dream of kinetic architecture found in the wake of aviation's golden age and leading up to Cold War heterotopias.

Bel Geddes's Aerial Designs

Norman Bel Geddes's model for the *Aërial Restaurant,* a three-floor circular construction that was to make one full revolution every thirty minutes, was designed for the 1933 Century of Progress Exposition, also known as the Chicago World's Fair (Figure 1). What was supposed to be the world's first revolving restaurant was never realized due to structural and economic problems, but the mobile aerialized spectator was finally reinstated in Geddes's *Futurama* a few years later, drawing on the same basic principles. Geddes's *Futurama* model of the "world of tomorrow" at the 1939 New York's World's Fair demonstrated how the transformation of the city into a distant object of visual consumption had an ideologically recuperative effect, and how the miniature or model works on the same principle. As Mark Dorrian has noted, its "usefulness as urban planning's most potent tool of public persuasion endures through precisely such powers of sublimation" (Dorrian 2007, 6). In the model of Le Corbusier's *La ville radieuse*, we see the hand of the architect as a god-like liberator of urban space. At the same time, the vertical abstraction does away with history and compresses space into defined territory. Based on 119 aerial photographs, and presented as part of the automobile giant General Motor's *Highways and Horizons* exhibit in the tremendously popular Transportation Zone, Bel Geddes's "number one hit show" (Figure 2) enchanted a nation struggling after the Great Depression and longing for prosperity and progress (Morshed 2004, 74).[1]

For Bel Geddes and his contemporaries, new breakthroughs in aviation technology and the idea of traversing aerial space had a significant impact on the imagination of future civilizations. As Morshed remarks:

1. For a general discussion on the *Futurama*, see Bush (1979), Marchand (1992), and Hauss-Fitton (1994).

Figure 1. Norman Bel Geddes, Model of *Aërial Restaurant*, 1929 (courtesy of Harry Ransom Center, The University of Texas at Austin).

> Solitary in his monoplane, the aviator was the modernist trope *par excellence* representing a privileged view of the earth and was a catalyst for new models of aesthetic experimentation in literature, science fiction, and the arts during aviation's golden age. (Morshed 2004, 79)

Prior to the *Futurama*, a number of Bel Geddes's designs engendered his fascination with aerial ascension and mechanical motion. Within a couple of years after the historic event of Lindbergh's flight over the Atlantic in 1927, Bel Geddes had conceived of an aerialized architecture, "a V-winged leviathan aerial vessel with a wingspan of 528 feet and sleeping accommodations for 606 persons" (Morshed 2004, 85). This design marked a significant shift, as Paul Virilio (1997) has pointed out, tilting the concept of architecture out of its age-old gravitational axis. Similarly to the train ride, the airplane flight offered mechanical thrust through previously unimagined perspectives of space-time, dissolving the grounded identity of objects and subjects. As James Gibson has noted:

Figure 2. Norman Bel Geddes, *Futurama*, New York World's Fair, 1939 (courtesy of Harry Ransom Center, The University of Texas at Austin).

> Seeing the world at a traveling point of observation, over a long enough time for a sufficiently extended set of paths, begins to be perceiving the world at all points of observation, as if one could be everywhere at once. To be everywhere at once with nothing hidden is to be all-seeing, like God. (Gibson 1979, 197)

The all-seeing God-like view is also the cinematic view. Of "city symphonies" such as Walter Ruttman's *Berlin: Symphony of a Great City* (1927), Gunning remarks: "The street remains an essential image […], but the filmmaker rises above its one-way logic, employing cuts that move without friction, even with collisions. The camera remains disembodied, aerial, transcendent" (Gunning 2011, 70). The film camera's ability to see the world with an altogether different perspective from that of the human eye is in itself a kind of aerial view: "An exclusive realm detached from earthbound mortals" (Morshed 2004, 94).

Tati's *Playtime*

In his acclaimed film *Playtime* (1967), Jacques Tati's camera offers a dystopic no-place, rather than an aerial overview; "a glistening antiseptic environment" has become what is left of the aerial promise (Ockman 2000, 178). As if Bel Geddes's Aerial Liner Number 4 crash-landed at Orly, the traveler's continued journey now depends on the artificiality of the multiple glass surfaces in the unidentifiable airport terminal. The location of the film, according to Ockman, is "set outside normal space-time relations […]. It initiates the viewer into an 'other' order, a time of aesthetic play, cinematic time—*playtime*"

(Ockman 2000, 178). The background for Tati's vision is clear, Ockman reminds us: "Between 1954 and 1974, 24 percent of the buildable surface of the city was subject to demolition and redevelopment" (Ockman 2000, 83). A process started with Haussmann about a hundred years earlier, this violence of urban space's creation begins with an aerial view; as Walter Benjamin reflects: "Haussmann's urbanistic ideal was one of views in perspective down long street-vistas" (Benjamin 1997 [1935], 173), and with the Haussmannization of Paris, the citizens "began to become conscious of the inhuman character of the great city" (Benjamin 1997 [1935], 174). And equally, an aerial view will be its only remedy, commoditized through Ferris wheels, outlook towers, and eventually, revolving restaurants. "The violence of the urbanism 'on the ground'", as Dorrian states, "would be sublimated into the quasi-pastoral spectacle of the 'urban landscape'" (Dorrian 2007, 6). As Ockman concludes, the relation of film and architecture "is a paradigm of the relation between physical experience and the advancing forces of dematerialization and virtualization" (Ockman 2000, 93). The motion of the revolving restaurant adds to the dissolving-of-reality effect, making the external scenery less real, more cinematic, and, most importantly, relentlessly more ideal.

Cold War Heterotopias

The continuation on this media archeological journey takes me to the multi-media architectural practice of the Space Age architects Charles and Ray Eames. Their works and attitude towards architecture and spaces of information serve to illustrate how the politics of visual media and information strategies in post-World War Two USA created spaces of heterotopias on a global scale.[2]

The Eameses' contribution to the 1959 American National Exhibition in Moscow brought significant attention to the backdrop of Cold War strategies. Their multi-screen installation *Glimpses of the USA* provided over 2200 still and moving images separated onto seven gigantic 20-×-30-ft screens. Suspended from the roof of Buckminster Fuller's massive 250-ft diameter dome, the visual effect overpowered any previous multi-screen experience hitherto constructed. Here, the aerial shots we know from the city symphonies are repeated. The flying all-seeing camera, now from as high as outer space, starts up with star constellations and planets. Spread across the seven screens followed aerial shots of cities and landscape before closing in on details such as milk bottles, newspapers, and eventually the intimate private sphere of the family breakfast and the startup of everyday life. As Beatriz Colomina (2008) has noted, the *Glimpses* installation emphasized the domestic and personal "good life" in combination with aerial views and outer space voyage. Domestic life became "suspended within an entirely new spatial system—a system that was the product of esoteric scientific-military research but that had entered the everyday public imagination with the launching of Sputnik in 1957" (Colomina 2008, 81).

2. I retain here the concept of heterotopia elaborated by Michel Foucault, as a concept of human geography. According to Foucault (in a 1967 text for a lecture that was published later without his approval), heterotopia describes places and spaces that function in non-hegemonic conditions: "Places of this kind are outside of all places, even though it may be possible to indicate their location in reality. Because these places are absolutely different from all the sites that they reflect and speak about, I shall call them, by way of contrast to utopias, heterotopias" (Foucault 1986, 24).

On the agenda for the exhibition in Moscow was an attempt to soften the arms race and tame the space race of the Cold War into a dialog of domestic life and a competition in kitchen appliances. However, as Colomina notes, the final outcome of the gigantic seven-screen installation was "that of an extraordinarily powerful viewing technology, a hyper-viewing mechanism, which is hard to imagine outside the very space program the exhibition was trying to downplay." As such, Colomina continues, "this extreme mode of viewing goes beyond the old fantasy of the eye in the sky" (Colomina 2008, 81). The *Glimpses* installation showed the good life of domestic America, but "without ghettos, poverty, domestic violence or depression" (Colomina 2008, 84). The Situation Room in the White House, where multiple screens are set up to bring in information from all over the world, may have inspired the multi-screen design. The Eameses were preoccupied with the organization of information, and *Glimpses* was "organized around a strict logic of information transmission […] where the central principle is that of compression. […] The space of the multi-screen film, like the space of the computer, compresses physical space" (Colomina 2008, 85). As Colomina insightfully observes, for the Eameses "architecture is all about the space of information". We no longer need concern ourselves with "space" but rather with "structure" or, more precisely, with time. "Structure, for the Eamseses is organization in time" (Colomina 2008, 89). Propelled by the same spatial regime, Bel Geddes's revolutionary restaurant design was re-born at Seattle's World Fair in 1962 as the Space Cage (Figure 3)—the initial name of the Space Needle.

Nowhere is the architecture as information, as structure in time, and as such a cinematic experience, more evident than in the revolving restaurant. Growing out of the same Cold War mentality, the very beginning of the information age, the gently rotating overview reassured the audiences of their mediated existence. As with the 360-degree-cinemas (and the painted and moving panoramas before that), the concept was a complex mixture of the clarity of overview and a sensory overload. As one commentator observes, the Space Needle

> became a flying saucer, or halo in the sky, the symbol of the 1962 World's Fair. It fit the fair's theme of a cheery Space Age tomorrow, defying cold war anxiety over nuclear annihilation. (Egan 2012)

The moving image absorbed and projected back the existence of modernity and became part of every aspect of life, turning architectural design into micro temporalities. The status of architecture, Colomina concludes, is transformed into an enclosure of information, "a space we now occupy continuously without thinking" (Colomina 2008, 91). These spaces can be classified as heterotopias in the way they operate through perceptual modes, placing the subject out of joint between immersion, abstraction, and different dimensions of time.

Concluding Thoughts

I have argued that the elevation in combination with mechanical motion set the revolving architecture apart from normative architectural experience and transgressed into a cinematic elsewhere. An archaeology of the revolving restaurant sends us further back in history, to the multiplicity of early attractions and the historical quest for total immersion. At

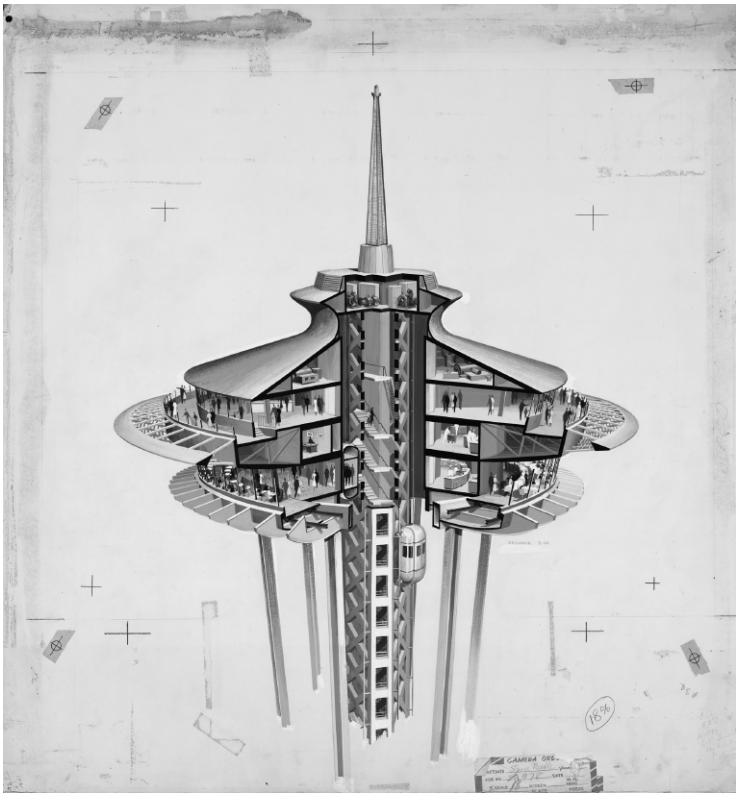

Figure 3. Century 21 Exposition (Seattle, Washington), design for the *Space Needle*, cross-section of restaurant. Architectural drawing by Seymour, acrylic or gouache on board, 1962, 68 × 64 cm (courtesy of University of Washington Libraries. Special Collections Division. UW18955z).

the same time as arousing complex feelings of overview and vertigo, power and dizziness, control and confusion, these elevated perpetual motion machines can tell us something about our relationship to moving images historically and today. The 135-m-high London Eye (re)launched the interest in urban observation wheels in 2000 and was soon followed by an unprecedented boost in urban wheels globally.[3] In parallel to this circle-centric development, other types of aerial rides such as the recently-installed Emirates Air Line (2012), a cable-car crossing the Thames by the Millennium Dome, and Oslo's own Sneak Peak (2012), a free-standing glass "elevator to nowhere", also contribute to this trend. In addition, the emerging technologies of commercial space rides and high-altitude ballooning promise to offer its passengers "the unexpected emotional reaction and unparalleled perspective-shift that comes from seeing our planet suspended in space" (World View n.d).

Alongside the apparent boom in aerial rides in the physical world, digital-cinema and new aerial-imaging technologies have prompted scholarly discussions on what has

3. A short list would include, but not be limited to: the Star of Nanchang, China (2006, 160 m); the Singapore Flyer (2008, 165m); the High Roller, Las Vegas (2014, 168 m); the New York Wheel (under construction, 192 m); the Beijing Great Wheel (planned, 208 m); the Dubai Eye (under construction, 210 m); and Moscow View (planned, 220m).

emerged as a new visual paradigm. Scholars such as Farocki (2012), Steyerl (2012), Elseasser (2013), and Dorrian and Pousin (2013), to name a few, have pointed to the increasing importance of aerial views prompted by new technologies of surveillance, tracking, and targeting such as Google Maps, drones (Weizman 2015) and satellites. Others (Brown 2013; Morgan 2015; Gunning forthcoming) have called for a more systematic study of camera movement impelled by the spatial configuration in digital cinema.

According to Erkki Huhtamo, media archaeology shows us how "the new is 'dressed up' in formulas that may be hundreds of years old, while the old may provide 'molds' for cultural innovations and reorientations" (Huhtamo and Parikka 2011, 25). As camera movement and aerial views emerge from older forms of cinema back into focus in digital cinema, the observation rides of the physical world correspondingly receive a boost of technological innovation. It is the resonance of these two spatial configurations that I am concerned with and that I am exploring in my media archeological project of the aerial view in motion. The revolving restaurant does not only show us a history of mass media and the way we are severely conditioned by our non-human machines (Kittler 1999; Ernst 2010); With this preliminary presentation I also hope to have shown how the view from a revolving restaurant can offer a nuanced media-archeological alteration of thought.

Bibliography

Brown, W. 2013. *Super Cinema: Film-Philosophy for the Digital Age*. New York: Berghahn Books.

Bruno, G. 2002. *Atlas of Emotion: Journeys in Art, Architecture and Film*. London: Verso.

Benjamin, W. 1997 [1935]. "Paris – Capital of the Nineteenth Century." *In Charles Baudelaire: A Lyric Poet in the Era of High Capitalism*, by W. Benjamin and translated by H. Zohn, 155–176. London: Verso.

Bull.Miletic. 2011. "Heaven Can Wait: The Revolving Restaurant as Hyper Cinema." In *Urban mages: Unruly Desires in Film and Architecture,* edited by S. Bull and M. Paasche, 146–163. Berlin: Sternberg Press.

Bush, D. J. 1979 "Futurama: World's Fair as Utopia." *Alternative Futures* 2(4): 3–20.

Colomina, B. 2008. "Enclosed by Images: The Eameses' Multimedia Architecture." In *Art and the Moving Image: A Critical Reader,* edited by T. Leighton, 75–91. London: Tate Publishing.

Dorrian, M. 2007. "The Aerial View: Notes for a Cultural History." *Strates* 13(22). Available online: http://strates.revues.org/5573.

____. and F. Pousin, eds. 2013. *Seeing from Above: The Aerial View in Visual Culture*. London: I.B. Taurus.

Egan, T. 2012. "Miracles in the Clouds." *New York Times*, 7 June. Available online: http://opinionator.blogs.nytimes.com/2012/06/07/miracles-in-the-clouds/

Elsaesser, T. 2004. "The New Film History as Media Archaeology." *CINéMAS* 14(2–3) 71–117.

____. 2013. "The 'Return' of 3D: On Some of the Logics and Genealogies of the Image in the Twenty-First Century." *Critical Inquiry* 39(2): 217–246. http://dx.doi.org/10.1086/668523

Ernst, W. 2010. "Cultural Archive versus Techno-mathematical Storage." In *The Archive in Motion*, edited by E. Røssaak, 53–73. Oslo: Novus Press.

Farocki, H. 2012. *Parallel* (Video installation). Taipei: Taipei Fine Arts Museum.

Foucault, M. 1986. "Of Other Spaces." Translated by J. Miskowiec. *Diacritics* 16: 22–27. http://dx.doi.org/10.2307/464648

Friedberg, A. 1993. *Window Shopping: Cinema and the Post Modern*. Berkeley: University of California Press.

____. 2006. *The Virtual Window: From Alberti to Microsoft*. Cambridge, MA: MIT Press.

Gibson, J. 1979. *The Ecological Approach to Visual Perception.* Boston, MA: Houghton Mifflin.

Gunning, T. 1986. "The Cinema of Attractions: Early Film, Its Spectator and the Avant-Garde." *Wide Angle* 8(3–4): 63–70.

____. 2011. "One-Way Street: Urban Chronotopes in Ruttman's Berlin: Symphony of a Great City and Conrad's Halsted Street." *Urban Images: Unruly Desires in Art and Architecture,* edited by S. Bull and M. Paasche, 62–79. Berlin: Sternberg Press

____. 2012. "Hand and Eye: Excavating a New Technology of the Image in the Victorian Era." *Victorian Studies* 54(3): 495–516. http://dx.doi.org/10.2979/victorianstudies.54.3.495

____. Forthcoming. "Nothing Will Have Taken Place Except Space: The Unsettling Nature of Camera Movement." In *Screen Space Reconfigured,* edited by S. Ø. Sæther and S. T. Bull, Amsterdam: University of Amsterdam Press.
Hauss-Fitton, B. 1994. "Futurama, New York World's Fair 1939-1940." *Rassegna* 60: 5–69.
Huhtamo, E. and J. Parikka, eds. 2011. *Media Archaeology: Approaches, Applications, and Implications.* Berkeley: University of California Press.
Kittler, F. A. 1999. *Gramophone, Film, Typewriter.* Translated by G. Winthrop-Young and M. Wutz. Stanford, CA: Stanford University Press.
Levi, P. 2012. *Cinema by Other Means.* New York: Oxford University Press.
Marchand, R. 1992. "The Designers Go to the Fair II: Norman Bel Geddes, The General Motors' 'Futurama,' and the Visit to the Factory Transformed." *Design Issues* 8(2): 23–40. http://dx.doi.org/10.2307/1511638
Morgan, D. 2015. "Beyond Destiny and Design: Camera Movement in Fritz Lang's German Films." In *A Companion to Fritz Lang*, edited by J. McElhaney. Oxford: Blackwell. http://dx.doi.org/10.1002/9781118587751.ch14
Morshed, A. 2004. "The Aesthetics of Ascension in Norman Bel Geddes' Futurama." *Journal of the Society of Architectural Historians* 63(1): 74–99. http://dx.doi.org/10.2307/4127993
Ockman, J. 2000. "Architecture in a Mode of Distraction: Eight Takes on Jacques Tati's *Playtime*." In *Architecture and Film*, edited by M. Lamster, 171–196. New York: Princeton Architectural Press.
Sennet, R. 1993. *The Conscience of the Eye: The Design and Social Life of Cities.* London: Faber and Faber.
Schivelbusch, W. 1986. *The Railway Journey: The Industrialization of Time and Space in the 19th Century*. Berkeley: University of California Press.
Steyerl, H. 2012. *The Wretched of the Screen*. Berlin: Steinberg Press.
Virilio, P. 1997. *Open Sky.* Translated by J. Rose. London: Verso.
Weizman, E. 2015 "Violence at the Threshold of Detectability." *e-flux* 64. Available online: http://www.e-flux.com/journal/violence-at-the-threshold-of-detectability/
World View, n.d. "About World View Enterprises, Inc." Avialable online: http://worldviewexperience.com/about/

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Fragile Storage, Digital Futures

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Data storage is a fragile thing; it is physical and in need of care, or else it breaks. Yet data are often thought to be both ephemeral and everlasting, categories for which a kind of physical fragility would seem to make little sense. Assumedly, data are both too fast and too slow to be fragile. This perception has long animated illusions of the digital as a fluid, ideal world divorced from the everyday dirt and matter of daily life. It produces dreams of an everlasting cloud of digital documentation, accessible everywhere yet located nowhere in particular.

Anyone attuned to the material culture of technology knows that these narratives are false, even if they produce everyday ways of acting with technology. Examples of the materiality of digital media breaking through these fantasies abound. For instance, when Pixar went to produce the DVD release of *Toy Story* (dir. Lasseter 1995), they found that around a fifth of the film's original files were corrupted as their disk storage had failed. The

2010 DVD release of *Toy Story*, as a result, is based on a digital transcode of a celluloid print, all because of the materiality of data storage and its fragility. In spite of its being "born-digital" as one of the first major digital animation spectacles of twentieth century cinema, the archival endurance of *Toy Story* exists only because of analog media (Ebiri 2014).

Celluloid may scratch and burn. Our experience of film has included not only the indexicality of the photograph projected in serial but also the indexicality of that which has touched, scratched, and modified the filmstrip itself. Ironically, digital prints of film seem to have greater permanence because they lack these visible signs of age. Every viewing of a digital film appears new and unblemished. Yet these beliefs about digital film require the forgetting of the materiality of storage media and the ever-changing formats of audio-visual data.

Data storage is fragile, and this is partially because there has rarely been attention paid to the practical reality of digital storage as something that has direct effects on our ability to record and understand our history and our present. We cannot abide these fictions about the abundance and permanence of data while hard drives fail, magnetic tapes degrade, and information corrupts. I propose an alliance structured around the fragility of data storage, an alliance between media archaeology, the archaeological analysis of material culture, and the digital humanities. This alliance would be devoted towards understanding the materiality of hardware and the performativity of software, accounting for the past, present, and future of born-digital cultural artifacts that have no original medium beyond the computer. It would examine the conditions for "data" to become an object made visible through software; it would acknowledge the material specificity of hardware designed to process and transmit data that is—for the most part—inaccessible to direct human knowledge; it would admit the different forms of experience structured around software and data, experiences that include multiple kinds of human and machine "perception"; and it would use this knowledge to preserve cultural objects that exist primarily or entirely as data, as artifacts that rely on proprietary software formats, as things that can only be used in conjunction with technologies planned for obsolescence, on operating systems no longer supported, on magnetic storage media that may only have a lifespan of less than a decade.

This would require embracing the interdisciplinary, or even antidisciplinary, implications provoked by the use of the term "archaeology" in "media archaeology", which descends from Foucault's invocation of the discipline in his *Archaeology of Knowledge*:

> There was a time when archaeology, as a discipline devoted to silent monuments, inert traces, objects without context, and things left by the past, aspired to the condition of history, and attained meaning only through the restitution of a historical discourse; it might be said, to play on words a little, that in our time history aspires to the condition of archaeology, to the intrinsic description of the monument. (Foucault 1972, 7)

Here, archaeology is an anonymous history, full of objects but devoid of people, characterized by ruptures and discontinuity rather than a grand teleology. These objects are nonetheless caught in a web of forces that shapes the possibility of their very existence. Foucault's archaeology challenges the assumptions that have guided history since

the nineteenth century; namely, of a guiding rationality or spirit that makes the world a reflection of human will or desire. Thus, archaeology rids history of "the twin figures of anthropology and humanism" (Foucault 1972, 12). This refiguration of history is ultimately political and oriented towards the present, to "free the history of thought from its subjection to transcendence" (Foucault 1972, 203) and open up immanent possibilities beyond totalizing narratives repeated as historical fact.

Media archaeologists have taken Foucault's provocations in a number of ways. Siegfried Zielinski, who has perhaps most closely adhered to Foucault's archaeological project, defines media archaeology as a means "to dig out secret paths in history, which might help us to find our way into the future" (Zielinski 1996). Zielinski's version of media archaeology, in his studies of the "deep time" of media and in his "variantologies", uses the past to find moments that recur in the present, with differences both subtle and significant, locating different routes for contemporary media and the arts than those hewn by media industry. Jussi Parikka, likewise, has suggested that much of the popularity of media archaeology has come from the use of technology's past to write "counter-histories to the mainstream media history" (Parikka 2012, 6), providing present alternatives to common narratives of technological progress and the "newness" of new media. This, however, sometimes cuts a bit closer to the genealogies of Foucault's later work than to his theorization of archaeology, providing different accounts of historical descent rather than celebrating discontinuity and the anonymous autonomy of objects and documents. Some media archaeologists have suggested a completely different purpose for this historical investigation of media. Erkki Huhtamo, for instance, has proposed that media archaeology "corrects our understanding of the past by excavating lacunas in shared knowledge" (Huhtamo 2013, xviii). Here, media archaeology is the uncovering of truth through sources and archives that may have been long inaccessible or forgotten.

"But blueprints and diagrams, regardless of whether they control printing presses or mainframe computers, may yield historical traces of the unknown called the body", claims Friedrich Kittler (1999, xl). I want to follow Kittler here, stressing not alternative or more accurate historical narratives, but the agency of technology to produce knowledge, bodies, and possible futures. The documents of the technological, from schematics to software, encode and produce whatever it is we may know about ourselves. Media provide our historical *a priori*, in that the ability of media to inscribe and store information materially determines what we know in our present about our history. Thus, Kittler claims, what "remains of people is what media can store and communicate" (Kittler 1999, xl). This is not a pure, nihilistic anti-humanism, as some of Kittler's detractors imply. "Writing" and "storage" have vastly broad definitions that can include performance and ritual, what some of those writing after Kittler refer to as "cultural techniques" (Winthrop-Young 2013), even returning to what Marcel Mauss (1992 [1934]) called "body techniques". What we know about our past is limited to what can be written down and stored—and, in this sense, media are rituals that materially perform cultural relations.

Foucault's archaeological "excavation" is one that examines how a specific object—be it Man or madness or the teaching of medicine—came to be taken *as an object*, in and of itself, as something independent and verifiable. It is about the material relations and regularities that enable a "thing" to come into existence as a thing. Following this, the

key function of media is to inscribe reality, to produce objects of knowledge that can be studied, known, and transmitted. This is what Foucault means when he uses the term "archive". The archive is the system of regularities that determines objects and what can be said of them. As the philosopher of science Karen Barad suggests, supplementing Foucault with Judith Butler and Niels Bohr, technological apparatuses "*are* discursive practices […] understood as specific material reconfigurings through which 'objects' and 'subjects' are produced" (Barad 2007, 148). The technical methods we use to inscribe reality define the limits of objects, the limits of subjects, and the relations through which both are constituted. Archaeology, in Foucault's sense, is to demonstrate how these objects are produced as one way of materially organizing knowledge, a way not guided by any overarching historical line, but that reveals the contingencies in the grouping of words and things.

What I want to take from media archaeology is less its emphasis on alternative historical narratives than the attention given to technological means of inscribing information, the attention to—to use a rough literal translation of Kittler's (1990) *Aufschreibesysteme 1800/1900*—systems for writing things down. To return to the *Toy Story* example with which I began, this requires us to ask not only about the specificity of a medium to record specific forms of information and not others—a concern that sometimes motivates Kittler—but also the physical capacity of storage media to endure over time. While they age and degrade (and burn) to varying degrees, the persistence of paper, of celluloid, of acetate, demonstrates how we have come to grasp these media as objects with specific material constraints and specific requirements for their preservation. But grasping the temporality of an inscription can be quite difficult when we introduce digital storage.

With digital data, it is neither clear that we know how to preserve our inscriptions nor that we know what we have inscribed. Part of this is because of the inability to grasp the relationship between software, data, processing hardware, and storage media. As Kittler himself notoriously stated, "there is no software", there are only voltage differences. Any "software" merely obscures the materiality of computational processing (Kittler 2013, 219–229). Yet what we experience when we encounter digital information is inherently processed by software, which depends on operating systems that are themselves distinct from, yet integrated with, hardware (Chun 2011, 3). Every occasion a program is run is different; what is performed on the screen and interacted with by a human user is unique each and every time. The underlying data are constantly rewritten and modified, in countless versions that are multiplied repeatedly (Kirschenbaum 2008). And when we start thinking about the role the internet plays in this entire apparatus, the spatial distribution of server farms, network infrastructure, and the various mechanisms that manage stored data are essential in maintaining the everyday experience of our (still contemporary) digital past.

We can speak, for instance, of an archaeology of Second Life or LambdaMOO. I mention these examples because one can still log in to these virtual worlds and find "people" represented by avatars, though we also find vast amounts of online space seemingly uninhabited. Much of these virtual worlds are anonymous ruins of a time that has already passed. One can interact with digital objects left behind, and, while we have excellent ethnographies of these spaces (e.g. Boellstorff 2008), we can subject them to a kind of "archaeological" analysis in which all we have are the traces produced by those who

occupied these spaces and have long vanished from them. There are official heritage sites in Second Life, which come with debates over preservation and collective memory specific to the "virtual" possibilities afforded digital places and objects (Harrison 2009). As it is in the "actual" world, virtual spaces have a unique cultural heritage that can only be revealed through the archaeology of the world and its virtual objects.

But stressing the materiality of media demands another dimension to this analysis: the infrastructure, the servers, and the software. How did the different versions of these virtual worlds—as software and processing data that represent objects and people, running on a distributed set of computers and servers across the globe—materially enable the encoding of specific bodies, specific experiences, specific memories? Undertaking an archaeology of a virtual world can point to how online space became a "thing" that is nonetheless different and discontinuous with the present (and perhaps even discontinuous with present versions of the same virtual world). What goes by the name "Second Life" or "LambdaMOO" is in no way consistent. To undertake a media archaeology of these virtual worlds would involve looking at the software itself, how it produces "space" online, and how it relates to the physical distribution of servers across the planet. What forms of processing go on to "make" what is experienced by human users? What technical specificities allow (or prohibit) different kinds of practices? How do these "worlds" exist in spite of these technological differences over time? How are they made distinct and separate from other "worlds" offline?

And, given these questions, how do we preserve these spaces for the future—and what do different methods of preservation do to that which is preserved? Previous versions of Second Life have already vanished. It is impossible to access Second Life without using one of the two most recent versions of its software, which means that its own history erodes and vanishes as technological progress moves "forward". And what happens when the company that runs Second Life, Linden Labs, shuts down? What other virtual worlds have been lost forever, before they became objects of scholarly attention? How will we come to know the history of computers, as software development marches on, as outdated file formats cease operation, as computers themselves break down and stop working? What should we do when the task is to preserve not simply a series of digital documents, but an entire apparatus that involves countless devices distributed across the world, organized through software designed for specific computers that may no longer exist? How do we preserve an "object" that has unclear boundaries?

Data storage is fragile, and it needs our care. And here is where the digital humanities are a necessary addition to the alliance between material culture and media archaeology, along with the desire to produce alternative narratives about media history central to the media archaeological project. The digital humanities are often organized around questions of the digital preservation of and access to humanistic documents, for research and for historical memory. We do not know what is currently being inscribed that will provide the alternative narratives for our collective future. But we cannot let some data—because it may seem irrelevant or, worse, non-monetized—simply vanish because we have not paid enough attention to the medium in which it has been stored.

This doesn't mean that we should merely conserve for conservation's sake. It means that conservation efforts nonetheless need to pay explicit attention to technical materiality. As is

clear from a report by Matthew Kirschenbaum, Richard Ovenden, and Gabriela Redwine (2010), there are countless unique problems that result from merely accessing digital data from just a few years ago. Like any other part of the archaeological record, physical storage devices may degrade or be otherwise damaged. Thus, "digital evidence is almost always partial or incomplete" and there is "no direct access to data without mediation through complex instrumentation or layers of interpretative software" (Kirschenbaum *et al.* 2010, 6). This general problem is not unique to the digital. But digital storage adds additional, specific complications. Copying or opening an archival file may modify or overwrite it based merely on what the software is designed to do, effectively corrupting the archive. Formats change, rendering original data unreadable. Hard drives go bad unless they are in use, and even then they only last around a decade or so, at best, before they start to fail. The energy required to maintain archives of digital information, likewise, is staggering. The problems go on and on.

Even though, as media archaeology tells us, the archive limits and determines our objects, our knowledge, and our bodies, we should be sure that the future of this archive is not also limited because of our own inability to acknowledge the material specificity of digital technology. The fragility of digital storage must be accounted for at a technical level, in which we do not uncritically celebrate the power of digital devices to store information, but we address their limitations for the inscription of the present. The inscriptions of communication media are the ghosts we leave behind. But, with digital media, unless we account for the fragility of storage and the specificity of the digital, the ghosts will perish as well. Our current fascination with the haunting of media would reveal itself to be a desire for a lost past of spiritualism, as the fragility of digital storage has exorcised our demons, finally.

References

Barad, K. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press. http://dx.doi.org/10.1215/9780822388128

Boellstorff, T. 2008. *Coming of Age in Second Life: An Anthropologist Explores the Virtually Human*. Princeton, NJ: Princeton University Press.

Chun, W. H. K. 2011. *Programmed Visions: Software and Memory*. Cambridge, MA: MIT Press. http://dx.doi.org/10.7551/mitpress/9780262015424.001.0001

Ebiri, B. 2014. "In an All-Digital Future, It's the New Movies That Will Be in Trouble." *Vulture*, 17 December. Available online: http://www.vulture.com/2014/12/perils-of-an-all-digital-movie-future.html.

Foucault, M. 1972. *The Archaeology of Knowledge*. Translated by A. M. Sheridan Smith. New York: Pantheon Books.

Harrison, R. 2009. "Excavating *Second Life*: Cyber-Archaeologies, Heritage and Virtual Communities." *Journal of Material Culture* 14(1): 7–106. http://dx.doi.org/10.1177/1359183508100009

Huhtamo, E. 2013. *Illusions in Motion: Media Archaeology of the Moving Panorama and Related Spectacles*. Cambridge, MA: MIT Press.

Kirschenbaum, M. G. 2008. *Mechanisms: New Media and the Forensic Imagination*. Cambridge, MA: MIT Press.

____. R. Ovenden and G. Redwine. 2010. *Digital Forensics and Born-Digital Content in Cultural Heritage Collections*. Washington, DC: Council on Library and Information Resources.

Kittler, F. A. 1990. *Discourse Networks 1800/1900*. Translated by M. Metteer with C. Cullens. Stanford, CA: Stanford University Press.

____. 1999. *Gramophone, Film, Typewriter*. Translated by G. Winthrop-Young and M. Wutz. Stanford, CA: Stanford University Press.

____. 2013. *The Truth of the Technological World: Essays on the Genealogy of Presence*. Translated by E. Butler. Stanford, CA: Stanford University Press.

Mauss, M. 1992 [1934]. "Techniques of the Body." In *Zone 6: Incorporations*, edited by J. Crary and S. Kwinter, 455–477. New York: Zone Books.

Parikka, J. 2012. *What is Media Archaeology?* Cambridge: Polity.

Winthrop-Young, G. 2013. "Cultural Techniques: Preliminary Remarks." *Theory, Culture & Society* 30(6): 3–19. http://dx.doi.org/10.1177/0263276413500828

Zielinski, S. 1996. "Media Archaeology." *CTheory* ga111. Available online: http://www.ctheory.net/articles.aspx?id=42

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Surveying New Sites: Landscapes and Archaeologies of the Internet

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Whilst archaeology has been revolutionized by computational applications, the development of digital technology, and the growth of the internet, the contributions of the discipline to the study of this new media have been largely explored from beyond the subject area (see Huhtamo and Parikka 2011). A distinct area of enquiry termed "media archaeologies" has emerged within communication and cultural studies (see Parikka 2007; 2012). Media archaeology has taken as its core concerns the material and immaterial relationships between society, technology, and the media (Elsaesser 2004); drawing upon Foucault's (1972) "archaeology of knowledge", the metaphor of excavation has featured prominently as a guiding intellectual principle to describe how these analysts uncover the layers of accumulated media and technological practices (Ernst 2005). The actual engagement of disciplinary archaeology within this movement has been reduced to a series of convenient illustrations for practice rather than constituting a practice of examination in itself. However, a subject concerned with process, stratigraphy, and change across time and space should not be not demoted through its concern with the material world (after Graves-Brown 2009; Harrison 2009, 2010). Rather, it constitutes a highly significant means of understanding the place and function of digital technologies (after Harrison 2011). This contribution of archaeology to the realm of this new media environment can be demonstrated in the application of another mode of study which analyzes the interface between human/technological interactions: critical code studies (Marino 2006; Wardrip-Fruin 2009).

Media archaeologies and archaeologies of the media

The development of "critical code studies" stems from a concern within the humanities that the assessment of digital or computational models was based upon a premise that the medium was entirely objective (Kittler 1995). The use of programming and coding languages such as HTML, Java, JavaScript, C, C++, and PHP had appeared to be so prevalent in structuring and supporting the digital world that a critical engagement with

these areas was largely absent (see Sample and Vee 2012; Ridolfo and Hart-Davidson 2015). The development of critical code studies emerged from a recognition that these tools can be examined on the basis of how they interact with and frame knowledge and experience within society (Marino 2006). Indeed, one may now speak of the "hermeneutics" of computer languages, as analysts have described the metaphors, relationships, and allusions present within computer codes (Fuller 2008). Critical code studies also bears similarities with the studies from literary scholars during the early 1990s who applied post-structuralist theories to the study of the internet (Ulmer 1989; Poster 1990; Landow 1992). These studies drew attention to how elements of the internet's structure, especially hyperlinks, operated in close association with theories of the structure of language (Bolter 2001; Mehler 2006). Therefore, the approach of critical code studies, which encompasses a variety of methods from the social sciences and humanities, is founded upon the application of a hermeneutical understanding of the codes and commands that facilitate the new media environment (after Latour 1996, 217).

For archaeology, this area of research reveals how an approach concerned with the arrangement of material in space and time can serve as a critical mode of inquiry to assess the digital landscape. As a distinct subject, archaeology from its emergence as a modern discipline has been focused upon the retrieval of past contexts to understand the formation of sites (see Thomas 2004). Rather than merely serving as a metaphor, this specific type of enquiry can be applied to examine the use and function of coding and programming languages. An archaeological process can reveal the layers through which information has accumulated and has been disseminated. Code offers an important arena for the archaeologist, with its own particular objects and structures, its emphasis on layering and chronology, the circulation of types and forms, the forming and shaping of societies and the interdependency of actors, objects, and agency. Code offers a new site for archaeological fieldwork.

The tools for the digital archaeologist operate on the same premise as they do for the archaeologist in the field: to reveal and to understand past and present formation processes. For the digital archaeologist this can be undertaken by analysing the source codes for the website. In most browsers, such as Internet Explorer, Chrome, Safari, and Firefox, the HTML source codes can be accessed by selecting F12 on the keyboard, or "View>Source" or "View>Page Source" on the toolbar. Examining these codes reveals the particular characteristics of the website. For example, a common opening on a website is the following code:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
```

This code indicates to the browser that the webpage is written in HTML 4.01, a version of the markup language that was first published in 1999. Subsequent developments have sought to standardize and improve HTML, with programmatic languages such as XHTML, PHP, or Javascript contributing to the advancement of dynamic, interactive websites. An important part of this process was the use of Cascading Style Sheets (CSS) which have websites, as information on presentation is "cascaded" through a website from external files. Therefore, if the coding of websites reveals the processes

by which these sites have been constructed, then by exposing these codes the digital archaeologists can then begin to excavate the formation of online sites and landscapes.

Excavating the Site of Stonehenge

To demonstrate the potential of this approach the presence of the physical site of Stonehenge within the digital landscape can be studied. Applying a survey of the spaces, places, and objects of this online environment reveals a considerable presence across the most popular search engines: in January 2015, over 16 million results were listed for "stonehenge" on Google and over 2 million results listed on Yahoo! and Microsoft's Bing. The application of an archaeological technique can begin with this initial result as the search engines themselves reveal how sites are prominent in this landscape. The source code for Google's results page has the line of code, "http://schema.org/SearchResultsPage". This reference to "schema.org" indicates the presence of a shared system of extracting data from websites which is used by all major search engines and was developed in tandem by Google, Microsoft, and Yahoo! (Schema.org 2015). This technique works by the use of markup data on webpages which details the information on those sites for the search engines. Website developers can use these terms to ensure their site is optimized for prominent placing in the results of searches. A presence within the digital landscape is enabled through the formation of specific structures in the coding and markup language of particular sites. The markup elements and tags involved in this process identify value, significance, and notable features:

- Itemscope
- Itemtype
- Itemid
- Itemprop

Through the common cultural attributes of Schema.org the sites within the online landscape find expression (after Tilley 1994). In this manner, cultural identifiers exist within this environment as a means of drawing together similar types and attitudes (Hodder 1982). This "cultural package", therefore, provides a mode of communication across a range of sites, providing a demonstration of how single sites interact within a wider whole (Layton and Ucko 1996). This shared attribute ensures that the first two results in all search engines for the term 'stonehenge" are English Heritage (2015) and *Wikipedia* (2015). The experience of the environment is thereby structured through this specific orientation of these locales.

These sites can be explored through a further examination of the coding. For example, looking at the source codes for *Wikipedia*, whilst nominally this research tool is "open-source" and "user-generated", the page for Stonehenge has been classified as 'semi-protected". This can be observed in the coding line, "{{pp-semi-indef}}{{pp-move-indef}}" (*Wikipedia* 2015). This guards the site from potentially unwanted edits or additions that do not meet regulations and requirements. Such a status is awarded to *Wikipedia* sites that are regarded as significant so that any potential disruption might cause offence. As such, the protection afforded to the virtual site mirrors the means by which the monument is physically protected under the operation of the scheduling system in Britain for sites of

national significance (Bender 1993; Bender and Aitken 1998). Viewing the source code as an excavated site, detailing the formation processes that have occurred, enables an assessment of the changes both at this locale and in the wider landscape that have occurred:

> [[Archaeology|Archaeologists]] believe it was built anywhere from 3000 BC to 2000 BC. [[Radiocarbon dating]] in 2008 suggested that the first stones were raised between 2400 and 2200 BC,<ref name="news.bbc.co.uk">{{cite news|o-authors=Tim Darvill and Geoff Wainwright|title=Dig pinpoints Stonehenge origins |publisher=BBC|date=21 September 2008|url=http://news.bbc.co.uk/1/hi/sci/tech/7625145.stm|accessdate=22 September 2008|first=James|last=Morgan}}</ref> whilst another theory suggests that [[bluestone]]s may have been raised at the site as early as 3000 BC.<ref name="Guardian"/><ref name="Independent"/><ref name="BBC News"/>
>
> (*Wikipedia* 2015)

By examining the interjections made in the text and the dates associated with them, the layers of code reveal the individuals who have altered the appearance of the site as well as how changes within the research and academic environment have shaped practices at this one location in the online landscape (after Thomas 1993).

A similar process can be observed with the English Heritage site. An assessment of the spaces, places, and objects of its coding reveals the presence of cultural forces that shape practices and habits within this site and thereby the formation processes (see Schiffer 1983). For example, the use of stylesheets within the English Heritage website ensures a greater degree of homogeny within this space:

> rel="stylesheet" type="text/css" href="/static/css/style.css"><link rel="stylesheet"
>
> (English Heritage 2015)

In this manner, all objects and items within this site are rendered into this one particular cultural identity. The diversity of the site is thereby limited and expression is confined to this singular vision. The formation processes of this locale, therefore, do not share the same connections within the wider landscape as the *Wikipedia* (2015) page and the points of connection to the external environment are organized and placed at specific junctures:

>
>
>
>
> (English Heritage 2015)

A distinct culture can be observed to have emerged here which controls expression within this space. This culture can be assessed for its traits, ideals, and practices through the coding of the site. Essentially, this demonstrates the ideas, values, and culture that have created and formed this particular sense of place; the site is ordered upon the

principle of ownership, driven by a capitalist model of consumption. In this manner, this site's formation processes reveal how objects and images are formed as a mode of conspicuous display. For example, the appearance of one particular section of coding, "#scrollerBoxForHighlightGallery img" (English Heritage 2015), enables the display of a slideshow of images to ensure all aspects of Stonehenge are presented on the site. The formation processes demonstrate a focus towards consumption with the prominent appearance of the HTML elements enabling the function of "booking" and providing functions to "buy". Through examining the layers of coding, the stratigraphy of the site indicates how objects are embedded at particular spaces to ensure their prominence as an object of ownership. The culture that has structured the site is evidenced in the insertion into the code of an object referred to as "doubleclick.net":

> document.write("<iframesrc="https://3684123.fls.doubleclick.net/activityi
>
> (English Heritage 2015)

The presence of "Doubleclick" on the site provides further evidence of the site's structuring principle of consumerism (Google n.d.). This is a subsidiary of the search engine Google and it tracks the interaction of the user with the site as a means of directing future advertising across a range of other sites that also use "Doubleclick". The English Heritage (2015) site is thereby connected across the virtual landscape with other sites which also possess the same function. The appearance of this particular part of the code is dated on the site as being part of this online locale from October 2013, a period when plans for the new visitor centre at the physical Stonehenge were revealed. The use of a cultural influence from Google is also apparent in the appearance in the site's stratigraphy:

> var google_remarketing_only = true;
>
> […]
>
> i["GoogleAnalyticsObject"]
>
> (English Heritage 2015; square brackets in last line in original)

The remarketing tag and the use of Google Analytics provide user-tracking data to enable the development of more accurate advertising campaigns as well as usable statistics on visitor interactions with the site. Therefore, following Berger (1972), the extra functional significance of this code is to heighten the commercial value of that which it represents. The connections with the wider environment are centred upon consumption and the sense of place that is developed through the coding of this online locale is one of possession. The character of the site is revealed in this analysis through archaeology serving not as a metaphor, but using the practice of the discipline to understand the formation and use of online spaces.

Conclusions

Within recent scholarship, the mantle of "archaeology" has been deployed by an ever-growing field of media specialists who apply the term to illustrate the practice of revealing or uncovering techno-social change. However, the value of an archaeological approach

to the study of digital media or online applications is more than a convenient simile. The subject's distinctive agenda of understanding process through the study of time, objects, and space can be applied to the analysis of modern media ecologies. This demonstration of value is not achieved through a radical reorientation of the discipline but by a reuse of existing ideas and approaches. Within this framework, archaeology and archaeologists can take a critical perspective to the spaces, places, and objects of the online landscape. This analysis can be functional, disruptive, humorous, or dissonant, but it remains a mode of engagement which is archaeological in practice not merely in conception.

Bibliography

Bakhtin, M. 1981. *The Dialogic Imagination*. Austin: University of Texas.

Bender, B. 1993. 'Stonehenge – Contested Landscapes (Medieval to Present Day).' In *Landscape: Politics and Perspectives*, edited by B. Bender, 245–279. Oxford: Berg.

____. and P. Aitken. 1998. *Stonehenge: Making Space*. Oxford: Berg.

Berger, J. 1972. *Ways of Seeing*. London: BBC/ Penguin Books.

Bolter, J. 2001. *Writing Space: Computers, Hypertext and the Remediation of Print*. Mahwah, NJ: Lawrence Erlbaum Associate Publishers.

Elsaesser, T. 2004. "The New Film History as Media Archaeology." *Cinémas* 14(2–3): 71–117. http://dx.doi.org/10.7202/026005ar

English Heritage. 2015. Stonehenge. Available online: http://www.english-heritage.org.uk/daysout/properties/ stonehenge/

Ernst, W. 2005. "Let There Be Irony: Cultural History and Media Archaeology in Parallel Lines." *Art History* 28(5): 582–603. http://dx.doi.org/10.1111/j.1467-8365.2005.00479.x

Foucault, M. 1972. *The Archaeology of Knowledge*. Translated by A. M. Sheridan Smith. New York: Pantheon Books.

Fuller, M. 2008. "Introduction." In *Software Studies: A Lexicon*, edited by M. Fuller, 1–14. Cambridge, MA: MIT Press.

Google n.d. "Doubleclick." Available online: http://www.google.co.uk/doubleclick/

Graves-Brown, P. 2009. "The Library of Babel: Origins of the World Wide Web." In *Defining Moments: Dramatic Archaeologies of the Twentieth-Century*, edited by J. Schofield, 123–134. Oxford: Archaeopress.

Harrison, R. 2009. "Excavating Second Life: Cyber-Archaeologies, Heritage and Virtual Communities." *Journal of Material Culture* 14(1): 75–106. http://dx.doi.org/10.1177/1359183508100009

____. 2010. "Exorcising the 'Plague of Fantasies': Mass Media and Archaeology's Role in the Present; or, Why We Need an Archaeology of 'Now'." *World Archaeology* 42(3): 328–340. http://dx.doi.org/10.1080/00438243.2010.497339

____. 2011. "Archaeologies 'Now': Creative Interventions in the Present for the Future." *Archaeological Dialogues* 18(2): 180–196. http://dx.doi.org/10.1017/S1380203811000250

Hodder, I. 1982. *Symbols in Action: Ethnoarchaeological Studies of Material Culture*. Cambridge: University of Cambridge Press.

Huhtamo, E. and J. Parikka. 2011. "Introduction: An Archaeology of Media Archaeology." In *Media Archaeology: Approaches, Applications, and Implications*, edited by E. Huhtamo and J. Parikka, 1–21. Berkeley: University of California Press.

Kittler, F. 1995. "There is No Software." *CTheory* a032 Available online: http://www.ctheory.net/articles.aspx?id=74

Landow, G. 1992. *Hypertext: Critical Theory and New Media in an Era of Globalisation*. Baltimore, MD: Johns Hopkins University Press.

Latour, B. 1996. *Aramis, or the Love of Technology*. Translated by C. Porter. Cambridge, MA: Harvard University Press.

Layton, R. and P. Ucko. 1996. "Introduction: Gazing on the Landscape and Encountering the Environment." In *Archaeology and Anthropology of Landscape: Shaping Your Landscape*, edited by R. Layton and P. Ucko, 1–20. London: Routledge.

Marino, M. 2006. "Critical Code Studies." *Electronic Book Review, Electropoetics*. Available online: http://www.electronicbookreview.com/thread/electropoetics/ codology

Mehler, A. 2006. "Text Linkage in the Wiki Medium – A Comparative Study. In *Proceedings of the EACL 2006 Workshop on New Text – Wikis and Blogs and other Dynamic Text Sources*, edited by J. Karlgren, 1–8. Trento, Italy: EACL. Available online: http://www.sics.se/jussi/newtext/working_notes/01_mehler.pdf

Parikka, J. 2007. *Digital Contagions: A Media Archaeology of Computer Viruses*. New York: Peter Lang.

____.2012. *What is Media Archaeology?* Cambridge: Polity.

Poster, M. 1990. *The Mode of Information: Poststructuralism and Social Context*. Chicago: University of Chicago Press.

Ridolfo, J. and W. Hart-Davidson. 2015. "Introduction." In *Rhetoric and the Digital Humanities*, edited by J. Ridolfo and W. Hart-Davidson, 1–15. Chicago: University of Chicago Press. http://dx.doi.org/10.7208/chicago/9780226176727.001.0001

Sample, M. and A. Vee. 2012. "Introduction to 'The Role of Computational Literacy in Computers and Writing'." *Enculturation* 14. Available online: http://enculturation.net/computational-literacy

Schema.org. 2015. Homepage. Available online: http://schema.org/.

Schiffer, M. B. 1983. "Toward the Identification of Formation Processes." *American Antiquity* 48: 675–706. http://dx.doi.org/10.2307/279771

Thomas, J. 1993. "The Politics of Vision and Archaeologies of Landscape." In *Landscape: Politics and Perspectives*, edited by B. Bender, 19–48. Oxford: Berg.

____. 2004. *Archaeology and Modernity*. London: Routledge.

Tilley, C. 1994. *A Phenomenology of Landscape: Places, Paths and Monuments*. Oxford: Berg.

Ulmer, G. 1989. *Teletheory: Grammatology in the Age of the Video*. London: Routledge.

Wikipedia, 2015. Stonehenge. Available online: http://en.wikipedia.org/wiki/Stonehenge

Wardrip-Fruin, N. 2009. *Expressive Processing: Digital Fictions, Computer Games and Software Studies*. Cambridge, MA: MIT Press.

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Archaeologies of Electronic Waste

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Media Studies and New Materialisms

Examining the material impacts and legacies associated with the technological infrastructure required for there to be digital media largely falls outside of conventional approaches to media studies, which have primarily focused upon questions surrounding representation, ideology, and identity; that is to say, questions of how the content of mediated communications affect audiences and how the political economy of the culture industries introduce systemic biases into media content. Particularly within the British university system, the brand of cultural materialism derived from Raymond Williams was foundational, and alongside Williams's (1973) refinement of the base/superstructure dynamic of early Marxist economic determinism, to account for ways that cultural activity and communication itself constituted a material phenomenon which could not be dismissed as mere superstructural detail, came an unequivocal rejection of technological determinism as advanced through the works of Marshall McLuhan, with the statement that "we have to reject technological determinism, in all its forms" (Williams 2003 [1974], 133). This form of social constructivism remained dominant within media studies until the late twentieth century, when the rapid rate of technological change associated with the widespread adoption of personal computers and the internet seemed to produce sociocultural shifts which evidenced precisely the changes in scale, pace, and pattern which McLuhan (1994, 8) argued were the primary effects of any medium.

Whilst noting the prescience of these observations does not equate to support for McLuhanite positions which proclaim the necessarily decentralizing effects of electrical

technology or that electrical technologies herald a return to sensory harmony within a global village, they have led many within media and cultural studies to re-evaluate questions surrounding technological determinism, materiality, and mediation, following Friedrich Kittler's declaration at the outset of *Gramophone, Film, Typewriter* that "media determine our situation" (Kittler 1999, xxxix). Consequently, recent years have seen the development of numerous methods and practices within media studies which have pursued various materially-inflected approaches to the field. These methods, which resonate with broader movements within humanities and social science research towards non-representational theory (Thrift 2008; Dewsbury 2010) and new materialism (Coole and Frost 2010; Dolphijn and van der Tuin 2012; Parikka 2012a), include media ecologies (Fuller 2005; Goddard 2011; Taffel 2013), software studies (Thrift and French 2002; Mackenzie 2006; Fuller 2008; Kitchin and Dodge 2011), and hardware studies (Cubitt *et al.* 2011; Gabrys 2011; Parikka 2011a; Maxwell and Miller 2012; Taffel 2012). Closely linked to these materialist approaches to media, we find media archaeology, whose genealogy contains two related lineages of scholarship.

Analogue Wastes and Zombie Media

The first strand, exemplified by authors such as Erkki Huhtamo (1999) and Thomas Elsaesser (1990, 2004), largely focuses upon non-teleological models of technocultural discourse, contending that:

> [Media archaeology] emphasizes cyclical rather than chronological development and recurrence rather than unique invention. In doing so, it runs counter to the customary way of thinking about technoculture in terms of a constant progress proceeding from one technological breakthrough to another and making earlier machines and applications obsolete along the way. (Huhtamo 2011, 67)

This version of media archaeology draws heavily upon Michel Foucault's (1972) *The Archaeology of Knowledge* in its focus upon discursive practices, discontinuity, and cyclicality rather than a teleological march towards technological perfection. Consequently, these media archaeologies present a counterpoint to the cyberutopian discourses common to popular technology-focused media such as *Gizmodo* or *Wired*, and academic commentators such as Clay Shirky (2009) and Pierre Lévy (1999), where, as in the marketing and advertising of contemporary software and hardware platforms, technological innovation is typically presented as transformative, revolutionary, and leading society towards progress and prosperity. By excavating forgotten technologies of the past which preceded and pre-empted contemporaneous developments in numerous ways, these media archaeologists seek to undermine the metanarrative of technological progress, instead drawing attention to the "deep time" (Zielinski 2006) and cyclical patterns of technological development which see forms surfacing and resurfacing at different times, in differing places.

As regards waste and toxicity, a historical antecedent to the human impact of microelectronics manufacture is the impact of substances such as lead in previous technological assemblages. A century ago, in 1914, "18 percent of American battery workers had

lead poisoning" (Penrose 2003, 3). Whereas the relatively recent focus on media waste, and e-waste in particular, may suggest a historically novel situation, the externalization of deleterious health impacts onto workers associated with technological production and disposal is a phenomenon with links back (at least) as far as the industrial revolution. Whilst the globalized spatial elements, and current volumes of e-waste may be (relatively) unique, the fact that impoverished workers and nonhumans have effectively been poisoned whilst creating technologies whose usage and benefits accrue to other, economically privileged actors is a dynamic which long pre-dates the digital revolution and can be argued to be a consequence of the tendency within capitalist enterprise to generate negative externalities whose costs are borne by social and ecological systems. Situating the issue of media waste in this way thus presents a potent antidote to claims that harms relating to media waste are merely a fleeting contemporary phenomenon, or an apolitical design issue to be overcome by the juggernaut of technological progress.

The second strand of scholarship surrounding the term "media archaeology" is associated with German media theory, and the works of Kittler (1999, 2010) and Wolfgang Ernst (2012), the latter of whose works have been brought to Anglophone attention through the work of the Finnish media archaeologist Jussi Parikka (2011b, 2012b, 2013). Whilst Ernst's and Kittler's particular perspectives upon media archaeology feature significant departures from one another, there is a collective concern with the materiality of media technologies, alongside claims that the material constitution of media affect culture in ways which have been traditionally downplayed by media studies' focus upon content. The practice of media archaeology in these cases turns from excavating forgotten technological histories and uncovering the deep time relations of media, towards conceptualizing technology itself as an archive, which in contemporary digital forms is reliant upon a series of temporal dynamics and processes within computational hardware such as RAM timings and latency, CPU/GPU clock speeds, networked packet switching, and Ethernet traffic routing. As Parikka surmises:

> Media archaeologists have started to look at time-critical processes *inside* the machines and in the circuits of contemporary technology. Media archaeology goes *under the* hood, so to speak, and extends the idea of an archive into actual machines and circuits […] this new kind of media archaeologist moves from historical time to machine time.
>
> (Parikka 2012b: 83 emphases in original)

This denotes a posthumanist move away from a temporal perspective dominated by human experience and perception, to one which recognizes not only the multiple forms of machine-based temporality which are critical to the functioning of digital assemblages and digital cultures, but also the complex manner by which such temporalities have always fed back into and been constitutive factors in human comprehensions of time. Such a perspective, which mandates that human and cultural knowledge have always been meshworks of nature of culture, thereby corroborates the types of technological determinisms we find in the works of Kittler and of Bernard Stiegler (1998, 2011), which are centrally concerned with the complex and nonlinear ways that the rhythms of technics affect culture and social structures.

With regards to e-waste, one example of pertinent work in this area is the circuit-bending practices of media artist Garnet Hertz. Circuit bending is the modification of circuits within (primarily) low voltage microelectronics, usually audio-based devices such as guitar fx pedals or toy instruments, which is achieved by connecting otherwise discrete locations within the device with a jumper wire, thus altering the signal flow in a chance-based way which can produce interesting and unforeseen sounds which are then employed within experimental electronica and noise-based musical forms (Ghazala 2004). By exploring the creative affordances of what would otherwise be classified as toxic waste, circuit bending explores the intersection of planned obsolescence (London 1932), the materiality of media technologies, and e-waste through artistic practice, and Hertz challenges the conception that media "die" once discarded. This concern with material transformations which emphasize temporal relations that undermine and problematize fixed points of death or origin presents a useful connection to contemporary themes within the field of archaeology. Hertz and Parikka (2012, 430) explore how digital technologies have a life after obsolescence through the ways that media "decays, rots, reforms, remixes, and gets historicized, reinterpreted and collected." These various ways of resurrecting discarded and supposedly obsolete technologies are termed "zombie media" by Hertz and Parikka, drawing a distinction with Bruce Sterling's (1995) Dead Media Project, whose similar focus on forgotten technologies instead emphasizes the finitude of their status.

Drawing attention to the manner by which discarded media technologies decay, break down, and circulate as flows within ecosystems thus connects this variant of media archaeology to media ecology, which has a similar focus upon materiality, cyclicality, and nonlinear relations within media assemblages. Ecology as the study of flows of energy and matter through multiscalar systems here stresses the material processes which manifest as consequences of planned obsolescence and e-waste recycling, such as highlighting the way that the process of burning the plastic casings of wires – carried out to retrieve the valuable copper contained within – releases hazardous materials including dioxins and furans, and the types of damage that these organically persistent substances wreak upon humans and other biotic systems. Circulation and cyclicality are central here, and thus from an ecological perspective the very notion of waste becomes an oxymoron: materials and energy re-circulate within ecological systems, even if the specific modes of circulation are toxic or cancerous to living systems. Focusing upon cyclicality, process, and flow in this manner demarcates a departure from the approach championed by object-orientated ontology (Harman 2010; Bogost 2012; Morton 2013), for whom a focus on becoming and transformation requires subjugation to objects.

The breadth of methodological practice within media archaeology arguably runs the risk of appearing incoherent. From deep-time approaches to histories of technology, through to approaching technology as an archive, tracing the life-cycle of specific materials used within microelectronics, and the artistic approaches exemplified by circuit bending, we see a diverse array of modes of scholarship which are broadly interested in critical approaches to the material culture of mediation. What connects these disparate methods is a concern with understanding the way that technocultural systems evolve over time in ways which defy linear narratives of progress.

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The multiplicity of methods found within media archaeology can be understood within the context of media and cultural studies' development as a field interested in synthesizing disparate disciplinary practices surrounding the media. Media and cultural studies have long included methodological practices such as empirically-led approaches to political economy, qualitative audience research, critical/theoretical approaches, discursive analyses, textual analyses, and experimental modes of practice-as-research. What media archaeology and associated forms of materialist media scholarship bring to the table is combining this interdisciplinarity and methodological pluralism with an attentiveness to material culture in ways which resemble elements of the longstanding relationship between archaeology and materiality.

From Media Archaeologies to Archaeologies of Media

An additional archaeological approach that is pertinent to discussions surrounding e-waste is the archaeology of the contemporary past (Buchli and Lucas 2001; Harrison and Schofield 2009, 2010; Holtorf and Piccini 2011; Graves-Brown *et al.* 2013), which seeks to mobilize the apparent contradiction between the past and present in order to explore material cultures of the present from a position which

> emphasizes archaeology not only as a creative act in the present—a process of assembling and reassembling—but as a discipline which is concerned explicitly with the present itself. This present is not fixed or inevitable, but is still in the process of becoming; it is active and ripe with potential. (Harrison 2011, 12)

Thematically, two key aims advanced by these archaeologists have been the creation of a sense of alienation from material culture which resembles the Brechtian notion of *verfremsdungeffekt*, making "the familiar unfamiliar and ironically by defamiliarising taken for granteds, making what is too well known almost less known" (Buchli and Lucas 2001, 13), and an explicit focus on subaltern groups whose histories tend to be concealed by hegemonic discourses.

Both these notions can be productively employed when thinking about e-waste. Reconceptualizing microelectronics devices as toxic trash with a pathologically short use-time rather than the sleek and shiny objects of desire which we see in advertising campaigns, storefronts, and in our daily lives immediately removes us from our habitual engagement with these technologies. Perceiving digital technology as toxic waste thus can be understood as a way of making familiar media technologies estranged from our typical intra-actions with them, and by doing so, compelling us to pose questions about the sustainability of technological consumption within neoliberal consumer culture. Rather than viewing these devices as sealed and seamless objects of consumption and desire, we see the array of materials which constitute their anatomy, and begin to move towards understanding the ecology of material relations which surrounds what happens when our digital devices break down and interface in harmful ways with ecological systems.

The practice of uncovering relationships between subaltern groups and digital technology is equally relevant when focussed upon e-waste. The manual "recycling" and

recovery processes enacted in locations within China, Pakistan, Nigeria, and Ghana bring together our high-tech products with deeply impoverished people, whose health and futures (alongside those of many of the nonhuman actants within those geographical zones) are seriously compromised through their material encounters with our digital detritus. These individuals often earn around $1.50 per day (Roman and Puckett 2002, 2) whilst conducting work whose numerous harms are not understood by the labourers themselves, and who often lack any formal education and are often children (Basel Action Network and Silicon Valley Toxics Coalition 2002, 26). Considering the deleterious impacts of technological consumption upon subaltern groups far removed from the privileged spaces of the attention economy (Beller 2006) connects high-tech global capitalism with enduring legacies of colonialism (Cubitt 2014), and points towards the geopolitical challenges faced in meaningfully altering these systems. Equally, drawing attention towards the inequitable impacts of e-waste upon subaltern groups further undermines the association between digital technologies and a smart, green, and sustainable future. As Jonathan Crary (2013, 88) has recently outlined, amongst many contemporary social movements there is the cyberutopian misconception that Facebook, Apple, and Google are useful platforms with which to fight to mitigate climate change, promote egalitarian social inequality, and leave the short-term econocentricism of neoliberal consumer capitalism. Highlighting the ways that the infrastructure required for digital media platforms is entangled with the exploitative practices of globalized neoliberalism delineates that current iterations of digital technologies are part of contemporary geopolitical problems, rather than a panacea for them.

This is not to say that these technologies cannot be integral in addressing some of these issues, playing the pharmacological role of both poison and cure as outlined by Stiegler (2010), but that the misguided belief in the abilities of the allegedly "virtual" technologies of "cognitive capitalism", which are supposedly fuelled by "immaterial labour" and thus transcend material inequalities, poverty, and suffering, is exposed as a chimera by paying attention to the materiality of digital architectures. The emphasis upon investigating the political and ethical stakes of material culture, using the artefacts of the (contemporary) past as the means of entering a dialogue about the present which is designed to affect the future, is common to both media archaeologies and archaeologies of the media. The example of e-waste foregrounds precisely why such work is crucial if we wish to understand and address urgent issues pertaining to sustainability, social justice, and technoculture.

References

Basel Action Network. 2012. *Turn Back the Toxic Tide: 2012 Annual Report*. Seattle, WA: Basel Action Network.

____ and Silicon Valley Toxics Coalition. 2002. *Exporting Harm: The High-Tech Trashing of Asia.* Seattle, WA: Basel Action Network. Available online: http://www.ban.org/E-waste/technotrashfinalcomp.pdf

Beller, J. 2006. *The Cinematic Mode of Production: Attention Economy and the Society of the Spectacle*. Lebanon, NH: University Press of New England.

Bogost, I. 2012. *Alien Phenomenology, or What It's Like to be a Thing*: Minneapolis: University of Minnesota Press.

Buchli, V. and G. Lucas. 2001. *Archaeologies of the Contemporary Past*. London: Routledge.

Coole, D. and S. Frost, eds. 2010. *New Materialisms: Ontology, Agency, and Politics*. Durham, NC: Duke University Press. http://dx.doi.org/10.1215/9780822392996

Crary, J. 2013. *24/7: Late Capitalism and the Ends of Sleep*. London: Verso.

Cubitt, S. 2014. "Decolonizing Ecomedia." *Cultural Politics* 10(3): 275–286. http://dx.doi.org/10.1215/17432197-2795669

Cubitt, S., R. Hassan and I. Volkmer. 2011. "Does Cloud Computing have a Silver Lining?" *Media, Culture & Society* 33(1): 149–158. http://dx.doi.org/10.1177/0163443710382974

Dewsbury, J. D. 2010. "Performative, Non-Representational, and Affect-Based Research: Seven Injunctions." In *The SAGE Handbook of Qualitative Geography*, edited by D. DeLyser, S. Herbert, S. Aitken, M. Crang and L. McDowell, 321–334. London: SAGE. http://dx.doi.org/10.4135/9780857021090.n20

Dolphijn, R. and I. van der Tuin. 2012. *New Materialism: Interviews and Cartographies*. Ann Arbour, MI: Open Humanities Press. http://dx.doi.org/10.3998/ohp.11515701.0001.001

Electronics TakeBack Coalition. 2011. Facts and Figures on E-Waste and Recycling. Available online: http://www.electronicstakeback.com/wp-content/uploads/Facts_and_Figures_on_EWaste_and_Recycling.pdf

Elsaesser, T. 1990. "Early Cinema: From Linear History to Mass Media Archaeology." In *Early Cinema: Space, Frame, Narrative,* edited by T. Elsaesser and A. Barker, 1–8. London: BFI Publishing.

____. 2004. "The New Film History as Media Archaeology." *Cinémas: Revue d'études cinématographiques / Cinémas: Journal of Film Studies* 14(2–3): 75–117.

Ernst, W. 2012. *Digital Memory and the Archive*. Minneapolis: University of Minnesota Press.

Faber, D. 2013. "The Unfair Trade-off Globalization and the Exportation of Environmental hazards." In *Environmental Sociology: From Analysis to Action*, edited by L. King and D. McCarthy Auriffeille, 237–252. Lanham, MD: Rowman and Littlefield.

Foucault, M. 1972. *The Archaeology of Knowledge*. Translated by A. M. Sheridan-Smith. London: Routledge.

Fuller, M. 2005. *Media Ecologies: Materialist Energies in Art and Technoculture*. Cambridge, MA: MIT Press.

____. 2008. *Software Studies: A Lexicon*. Cambridge, MA: MIT Press. http://dx.doi.org/10.7551/mitpress/9780262062749.001.0001

Gabrys, J. 2011. *Digital Rubbish: A Natural History of Electronics*. Ann Arbor: University of Michigan Press. http://dx.doi.org/10.3998/dcbooks.9380304.0001.001

Ghazala, Q. R. 2004. "The Folk Music of Chance Electronics: Circuit-Bending the Modern Coconut." *Leonardo Music Journal* 14: 97–104. http://dx.doi.org/10.1162/0961121043067271

Goddard, M. N. 2011. "Towards an Archaeology of Media Ecologies: 'Media Ecology', Political Subjectivation and Free Radios." *Fibreculture Journal* 17: FCJ-114. Available online: http://seventeen.fibreculturejournal.org/fcj-114-towards-an-archaeology-of-media-ecologies-%E2%80%98media-ecology%E2%80%99-political-subjectivation-and-free-radios/

Graves-Brown, P., R. Harrison and A. Piccini. 2013. *The Oxford Handbook of the Archaeology of the Contemporary World*. Oxford: Oxford University Press. http://dx.doi.org/10.1093/oxfordhb/9780199602001.001.0001

Harman, G. 2010. *Towards Speculative Realism: Essays and Lectures*. Ropley, UK: John Hunt Publishing.

Harrison, R. 2011. "Surface Assemblages: Towards an Archaeology in and of the Present." *Archaeological Dialogues* 18(2): 141–161. http://dx.doi.org/10.1017/S1380203811000195

Harrison, R. and J. Schofield. 2009. "Archaeo-ethnography, Auto-archaeology: Introducing Archaeologies of the Contemporary Past." *Archaeologies* 5(2): 185–209. http://dx.doi.org/10.1007/s11759-009-9100-5

____. 2010. *After Modernity: Archaeological Approaches to the Contemporary Past*. Oxford: Oxford University Press.

Hertz, G. and J. Parikka. 2012. "Zombie Media: Circuit Bending Media Archaeology into an Art Method." *Leonardo* 45(5): 424–430.

Holtorf, C. and A. Piccini. 2011. *Contemporary Archaeologies: Excavating Now*. Frankfurt am Main: Peter Lang.

Huhtamo, E. 1999. "From Cybernation to Interaction: A Contribution to an Archaeology of Interactivity." *In The Digital Dialectic: New Essays on New Media*, edited by P. Lunenfeld, 96–111. Cambridge, MA: MIT Press.

____. 2011. "From Kaleidoscomaniac to Cybernerd: Notes Towards an Archaeology of the Media." In *The New Media and Technocultures Reader*, edited by S. Giddings and M. Lister, 296–303. Abingdon, UK: Routledge.

Kitchin, R. and M. Dodge. 2011. *Code/Space: Software and Everyday Life.* Cambridge, MA: MIT Press. http://dx.doi.org/10.7551/mitpress/9780262042482.001.0001

Kittler, F. A. 1999. *Gramophone, Film, Typewriter.* Stanford, CA: Stanford University Press.

____. 2010. *Optical Media: Berlin Lectures 1999*. Cambridge: Polity Press.

Lévy, P. 1999. *Collective Intelligence: Mankind's Emerging World in Cyberspace*. New York: Perseus Publishing.
London, B. 1932. *Ending the Depression through Planned Obsolescence*. New York: self-published.
Mackenzie, A. 2006. *Cutting Code: Software and Sociality*. Digital Formations 30. New York: Peter Lang.
Maxwell, R. and T. Miller. 2012. *Greening the Media*. Oxford: Oxford University Press.
McLuhan, M. 1994. *Understanding Media: The Extensions of Man*. Cambridge, MA: MIT Press.
Morton, T. 2013. *Hyperobjects: Philosophy and Ecology After the End of the World*. Minneapolis: University of Minnesota Press.
Parikka, J. 2011a. *Medianatures. The Materiality of Information Technology and Electronic Waste*. Bletchley, UK: Open Humanities Press.
____. 2011b. "Operative Media Archaeology: Wolfgang Ernst's Materialist Media Diagrammatics." *Theory, Culture & Society* 28(5): 52–74. http://dx.doi.org/10.1177/0263276411411496
____. 2012a. "New Materialism as Media Theory: Medianatures and Dirty Matter." *Communication and Critical/Cultural Studies* 9(1): 95–100. http://dx.doi.org/10.1080/14791420.2011.626252
____. 2012b. *What is Media Archaeology?* Cambridge: Polity.
____. 2013. "Media Zoology and Waste Management: Animal Energies and Medianatures." *NECSUS: European Journal of Media Studies* 2(4): 527–544.
Penrose, B. 2003. "Occupational Lead Poisoning in Battery Workers: The Failure to Apply the Precautionary Principle." *Labour History* 84: 1–19. http://dx.doi.org/10.2307/27515898
Roman, L. S. and J. Puckett. 2002. "E-scrap Exportation: Challenges and Considerations." In *Electronics and the Environment, 2002 IEEE International Symposium on Electronics and the Environment*, 79–84. Piscataway, NJ: IEEE. http://dx.doi.org/10.1109/isee.2002.1003243
Shirky, C. 2009. *Here Comes Everybody: How Change happens When People Come Together*. London: Penguin.
Sterling, B. 1995. *The Dead Media Manifesto*. Paper presented at the International Symposium on Electronic Arts, Montréal, 19 September.
Stiegler, B. 1998. *Technics and Time*. Stanford, CA: Stanford University Press.
____. 2010. *For A New Critique of Political Economy*. Cambridge: Polity.
____. 2011. *Technics and Time, 3: Cinematic Time and the Question of Malaise*, *Meridian, Crossing Aesthetics.* Stanford, CA: Stanford University Press.
Taffel, S. 2012. "Escaping Attention: Digital Media Hardware, Materiality and Ecological Cost." *Culture Machine* 13. Available online: http://www.culturemachine.net/index.php/cm/article/viewArticle/468
____. 2013. "Scalar Entanglement in Digital Media Ecologies." *Necsus: European Journal of Media Studies* (Spring). Available online: http://www.necsus-ejms.org/scalar-entanglement-in-digital-media-ecologies/
Thrift, N. 2008. *Non-representational Theory: Space, Politics, Affect*. Abingdon, UK: Routledge.
____. and S. French. 2002. "The Automatic Production of Space." *Transactions of the Institute of British Geographers* 27(3): 309–335. http://dx.doi.org/10.1111/1475-5661.00057
Vidal, J. 2013. "Toxic 'E-waste' Dumped in Poor Nations, says United Nations" *Observer* 14 December. Available online http://www.theguardian.com/global-development/2013/dec/14/toxic-ewaste-illegal-dumping-developing-countries
Williams, R. 1973. "Base and Superstructure in Marxist Cultural Theory." *New Left Review* 82: 3–16.
____. 2003 [1974]. *Television: Technology and Cultural Form*. London: Routledge.
Zielinski, S. 2006. *Deep Time of the Media: Toward an Archaeology of Hearing and Seeing by Technical Means*. Translated by G. Custance. Cambridge, MA: MIT Press.

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Excavating Atari: Where the Media was the Archaeology

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"Archaeogaming" is a neologism I made up and first published on my eponymous blog[1] on 9 June, 2013, as I began to think seriously about the intersection of archaeology and video games (Reinhard 2013). I am both a "classically trained" archaeologist specializing in ancient Greek pottery, and have also been a lifelong gamer with over 30 years of experience on first-generation consoles, MS-DOS computers, and the original Macintosh. I had originally thought of *Archaeogaming* as a framework around studying how archaeology and archaeologists are portrayed by game developers, and how they are received by gamers. I was also curious to see how (or even if) I could apply real-world archaeological methods to virtual spaces, studying the material culture of the immaterial.

Exactly two days after launching the blog, I learned that the Canadian entertainment company Fuel had been granted permission to excavate the "Atari Burial Ground" in Alamogordo, New Mexico (Orland 2013). All of a sudden my ideas on video-game archaeology had been turned upside-down. Here was the chance to perform a real-world excavation on video games dumped in a landfill in 1983. It would be the first dig of its kind.

To briefly summarize the story, in 1982 Atari purchased the rights to turn the film *E.T.* (dir. Spielberg 1982) into a video game, having been successful with the adaptation of *Raiders of the Lost Ark* (dir. Spielberg 1981). Atari asked their *wunderkind* developer Howard Scott Warshaw to create the game in five weeks in order to meet the Christmas demand. The game flopped and history (perhaps unfairly so) granted it the notoriety of being the worst video game of all time. In 1983, Atari decided to dump the unsold cartridges, trucking them two hours from its El Paso, Texas warehouse to the Alamogordo landfill where a special, 30-foot deep trench (or cell) had been dug to receive the games. The games were reportedly crushed and deposited under cement over which refuse continued to be piled for the next 10–15 years. The *Alamogordo Daily News* and the *New York Times* both carried stories on the day of the dumping, but in the pre-Internet era, these were lost to time (McQuiddy 1983; *New York Times* 1983). Years later, the dumping of *E.T.* became an urban legend hotly debated in chatrooms and forums. When the news of the planned excavation was announced in the spring of 2013, the Internet renewed the debate over whether or not the dumping had occurred, and if it had, what was really underground.

I immediately wrote to Fuel to ask them how they planned to conduct the excavation, and if archaeologists would be involved. I assumed that Fuel would treat this as a proper

1. http://archaeogaming.com/

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dig with the Atari material as artifacts in an assemblage of potentially millions of games. I did not ask to be the archaeologist on-site, but instead was hoping to fly out for a few days to record what was happening and to document the dig for the blog.

A reply finally came a few months later from a producer at Fuel who then put me in touch with Lightbox Entertainment, the (now defunct) content developer for original programming for Xbox Live. I was asked how I would conduct the excavation. I consulted with my friend and colleague Richard Rothaus, who owns his own Cultural Resource Management (CRM) firm, Trefoil Cultural and Environmental, for assistance, and we were able to pitch the dig plan. We were happy to give some free consulting to the documentary filmmakers from Lightbox Entertainment, and were surprised when they asked us to come out and be an integral part of the project. When asked to put my team of archaeologists together, I chose Richard, and also Bill Caraher of the University of North Dakota, who had done fieldwork in Greece and Cyprus, but who had begun to study the archaeology of the contemporary past, or, as he put it, of "late capitalism", specializing in the mancamps of the Bakken Oil Patch, temporary settlements by migrant workers drawn to North Dakota's oil boom. Bill brought Bret Weber, a UND sociology professor, to observe and document the nature of the human and media presence surrounding what would become a global event. I also invited Lindsay Eaves, a gamer and archaeologist who had been a part of National Geographic's *Rising Star* expedition and who specialized in removing, cleaning, and assembling human remains. I brought Eaves in because we did not know what the condition of the artifacts would be, and needed her expertise in removing, cleaning, and assembling destroyed cartridges. On the day of the dig, Eaves took ill and was hospitalized, so we were without her talents.

The team had only a few weeks to plan for the excavation, and we needed to create a methodology and workflow, plus a shopping list of gear for the film company to buy for us in town: buckets, tarps, tables, shovels, plastic bags, markers, and more. We were paired with a video game historian, Raiford Guins of SUNY Stony Brook, who would interpret what we found (if we were to find anything). We agreed that all Atari material was to be understood as being artifacts (without ironic quotation marks), material evidence of 1980s consumer culture that ultimately became rubbish. We knew that we would probably find something Atari-related, but it was a question of whether the dump would contain only *E.T.* games or other titles; if there would be hardware; and if the material was in a state of destruction or decomposition. We were also curious—as the filmmakers and general public were—to see if the urban legend was true (even though it had been documented in 1983). Would there be cement? Would the games be crushed or playable? What was the extent of the deposit?

None of us had excavated a landfill before, but that inexperience is common among most archaeologists. We studied the work of the renowned archaeologist and garbologist William Rathje (Rathje and Murphy 2001). Although this excavation accelerated the timeline, I wanted to treat it as if we were conducting a salvage excavation through a massive pottery dump. The goal was to identify where we thought the heart of the assemblage would be and dig a cross-section through it to expose as much material as possible for documentation. When asked how long I thought it would take to excavate the "Atari Tomb", I thought maybe two or three weeks non-stop. We were given

three days: one to excavate the overburden, the top layers of soil and trash; one to excavate the "Atari level"; and a third day to document what had been recovered. The city, Microsoft, and others had paid tens of thousands of dollars to hire city workers and to pay local and state safety and environmental officials, plus to cover the costs of equipment rental and a fleet of dump-trucks. A three-week excavation might have cost close to one million dollars to complete.

As we developed our plan, Richard was prepared to use a jackhammer to punch through the concrete cap (if it existed), and then we wanted to have a bucket brigade of volunteers to begin to ferry five-gallon buckets of Atari material up to tables for sorting, counting, and photography. We wanted to keep diagnostic artifacts for future study not just from an archaeological perspective, but also from an environmental standpoint: what happens to video game e-waste when it is buried in the desert for 30 years? The games were artifacts, but were also garbage.

We had wanted to conduct remote sensing over the surface of the landfill to discover where the Atari material lay, but instead, Joe Lewandowski, the manager of the landfill in the 1980s, had completed an astonishing feat of amateur photogrammetry, pinpointing the location of the Atari cell with old pictures of the area. On 24 April, 2014, Joe and some of the city's workers, along with Richard and Bill, used a bucket auger to sink 30-ft-deep test holes, searching for anything with a date in the early 1980s—or better yet, Atari games. New Mexico had given permission to drill 20 test holes, but luckily the Atari material was found after drilling only a few.

25 April saw the removal of tons of earth and trash by massive excavation machinery operated by a city worker. At first we were kept outside of a perimeter fence for safety, but were ultimately granted access to photograph the stratigraphy of trash, a parfait of dirt and junk, and to examine the garbage being removed. We had originally wanted to dig a 1:3 stepped trench, but the matrix was too unstable for anything but a very deep hole. No one was permitted by the New Mexico safety personnel to go below ground-level for fear of being trapped or injured under collapsing walls. Near the end of the day, the digger had nearly maximized its depth of 30 ft, and we decided to quit until the following morning.

The archaeology team met that evening to revise our work plan considering the fact that we would not be allowed into the trench, and that there would be no bucket brigade. We decided to ask the digger driver to dump piles of earth and trash at the side of the trench for us to examine (Figure 1). We would take bucket cores for more fine analysis, recording to video, still photographs, notebooks, and MP3 audio (Figure 2). If we found anything, we would carry it in buckets to the sorting tables for additional study, ultimately bagging it for the final day.

After about four hours of additional digging on 26 April, the Atari level was reached, and bucket-load after bucket-load of games were retrieved and then dumped for us to review (Figure 3). Rothaus found the first Atari game, an *E.T.* cartridge still in the box with its instruction manual and a coupon for *Raiders of the Lost Ark*. I walked it up with film director Zak Penn to show the crowd of a few hundred gamers and residents, and then the team began to work in earnest, attempting to get through as much of the Atari deposit possible in the time we had. Over the course of the afternoon, a sandstorm blew in—the

FIGURE 1. Richard Rothaus (l) and Andrew Reinhard (r) record the contents of a five-gallon bucket core (image courtesy of the Punk Archaeology Collective).

FIGURE 2. Richard Rothaus examines a pile of Atari material (image courtesy of the Punk Archaeology Collective).

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FIGURE 3. Raiford Guins surveys a bucket-load of Atari material from the digger (image courtesy of the Punk Archaeology Collective).

fiercest of the year—and ultimately forced us to abandon the dig, shutting the machinery down. We turned to focus on collecting examples of the more than 40 different game titles recovered (Figure 4). City workers were tasked with collecting anything Atari and putting it into trash bags that were then loaded into a tractor trailer for transport to a garage within the city's Department of Public Works (Figure 5). All of the games were from the same deposit and context, but we only scratched the surface of what was there.

The archaeologists spent the final day cataloguing games and hardware (Figure 6). Atari 2600 consoles and controllers were part of the excavated rubbish, and we noticed that the cables to the controllers had been snipped before burial. We also inventoried over 40 separate game titles for the Atari 2600 and 5200 systems—much, much more than what we'd expected to find, thinking it would be mostly *E.T.* Many of the games were still in their boxes, unsold, and there were also multiple examples of cardboard boxes containing six copies each of the same game, packed for big box stores such as Walmart and Target. Mixed in with the new merchandise were games flagged as customer returns. The El Paso warehouse had dumped a lot more than anyone had expected, going against Atari's corporate claim that it had buried only returned or broken stock.

In all, just over 1300 games were recovered. Of these, we boxed several for the city to distribute to museums for conservation, preservation, and display. The city then attempted to sell the balance of what was recovered on eBay in order to raise money for the historical society. The first auctions brought prices upwards of $700 for boxed

FIGURE 4. *Ms. Pac Man* appears out of the excavation rubble (image courtesy of the Punk Archaeology Collective).

FIGURE 5. Richard Rothaus records piles of excavated games prior to sorting and photography (image courtesy of the Punk Archaeology Collective).

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FIGURE 6. Andrew Reinhard documents some of the significant finds from the excavation (image courtesy of the Punk Archaeology Collective).

E.T. games. Some of the buyers approached me via the blog to anonymously answer questions about why they bought the artifacts. The Smithsonian Institution purchased a copy for its collection. We have asked Joe Lewandowski for a list of the buyers so that we can conduct additional interviews to determine the nature of collecting these video games. As Caraher pointed out to us, our being on-site during the excavation validated the project and turned it from being just a media stunt into something imbued with historic and scientific meaning.

Parikka wrote that

> media archaeology needs to insist *both* on the material nature of its enterprise—that media are always articulated in material, also in non-narrative frameworks whether technical media such as phonographs, or algorithmic such as databases and software networks—*and* that the work of assembling temporal mediations takes place in an increasingly varied and distributed network of institutions, practices and technological platforms.
>
> (Parikka 2010)

I believe our project fits within all of these frameworks and networks. Ours was a hands-on enterprise informed by both newsmedia and Web culture, driven by the public interest in proving or debunking an urban legend, initiated with photography and memory, and conducted under a global eye of television and Internet media as well as by networks of gamers, historians, pop culture mavens, and archaeologists via social

media. We trended globally on Twitter and Facebook for a day, and were lampooned on *Late Night with Conan O'Brien* and in the *Onion* satirical newspaper. We initiated a public dialogue on what archaeology is, and what it could be. We tried (and failed) to get the games to play on-site via consoles and TVs brought for testing purposes. And after the dig was over, we began to publish for general readers about why we did what we did in the desert, in the *Atlantic*, *Archaeology* magazine, and elsewhere, getting further attention in *Harper's* and across the blogosphere. This is archaeology, media archaeology, and public archaeology all in one.

Erkki Huhtamo defined "media archaeology" as "a particular way of studying media as a historically attuned enterprise" that involves researchers "'excavating' forgotten media–cultural phenomena that have been left outside the canonized narratives about media culture and history" (Huhtamo 2010, 203). For us, that media archaeology was quite real and done without any framework of theory. Instead, we took a straightforward CRM archaeological approach to the very real excavation of the games, (almost) forgotten media–cultural phenomena. This excavation falls right at the border of what is perceived to be archaeology. As we continue to identify future projects that examine the archaeology of the recent past, perhaps the Atari Dump Site will serve as an example of what became the norm in how we understand consumer culture and a culture of planned obsolescence and electronic waste.

As "dirt" archaeologists, perhaps we have taken the first step in contributing a new (or adapted) set of methods to understanding and documenting media technology. The project begs for further examination as our field methods are pulled apart and scrutinized with the hope of creating something better and more useful to the materials being excavated and published, which is exactly what I hoped to do in creating the sub-discipline of archaeogaming one year prior to digging Atari.

References

Huhtamo, E. 2010. "Natural Magic: A Short Cultural History of Moving Images." In *The Routledge Companion to Film History*, edited by W. Guynn, 3–15. Abingdon, UK: Routledge.

McQuiddy, M. 1983. "City to Atari: 'E.T.' Trash Go Home." *Alamogordo Daily News* 27 September.

New York Times, 1983. "Atari Parts are Dumped." 28 September. Available online: www.nytimes.com/1983/09/28/business/atari-parts-are-dumped.html

Orland, K. 2013. "Film Crew to Dig Up Atari Landfill Site, maybe Score 3.5 Million Copies of *E.T.*" *Ars Technica*, 1 June. Available online: http://arstechnica.com/gaming/2013/06/01/film-crew-to-dig-up-atari-landfill-site-maybe-score-3-5-million-copies-of-e-t/

Purikka, J. 2010. "What is Media Archaeology? – Beta Definition 0.8." *Cartographies of Media Archaeology*, 1 October. Available online: http://mediacartographies.blogspot.co.uk/2010/10/what-is-media-archaeology-beta.html

Rathje, W. and C. Murphy. 2001. *Rubbish!: The Archaeology of Garbage*. Tucson: University of Arizona Press.

Reinhard, A. 2013. "What is Archaeogaming?" *Archaeogaming* 9 June. Available online: http://archaeogaming.com/2013/06/09/what-is-archaeogaming/

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Materializing Media Archaeologies: The MAD-P Hard Drive Excavation

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Archaeologists and antiquarians have been innovators, assemblers, critical interrogators, and re-makers of media and media technologies for at least 500 years. Their outputs have been drawn into broader programmes of social theorizing about modes of engagement, and they are often pioneers in the application of new media. Their concern for the artefact—the quintessential communication technology—testifies to their deep-rooted implication in making, theorizing, experimenting with, and deconstructing the complicated legacies behind the media of humans from all periods of time, across all geographic spaces. More recently, the field of "media archaeology" has emerged, a multi-disciplinary academic project that draws on the trope of excavation and on the Foucauldian discourse of the archaeological to make enquiries into modern media phenomena.

Despite commonalities in subject, however, rarely do archaeologists or heritage specialists attempt to overtly insert themselves into the media archaeological discourse (Pogačar 2014 is arguably one exception), and neither do media archaeologists typically reach out to archaeology for intellectual or methodological contributions to their research endeavour (but see Mattern 2012, 2013; Nesselroth-Woyzbun 2013). Indeed, the media-archaeological literature has explicitly distanced itself from archaeology:

> Media archaeology should not be confused with archaeology as a discipline. When media archaeologists claim that they are "excavating" media-cultural phenomena, the word should be understood in a specific way. Industrial archaeology, for example, digs through the foundations of demolished factories, boarding-houses, and dumps, revealing clues about habits, lifestyles, economic and social stratifications, and possibly deadly diseases. Media archaeology rummages textual, visual, and auditory archives as well as collections of artifacts, emphasizing both the discursive and the material manifestations of culture. Its explorations move fluidly between disciplines […]. (Huhtamo and Parikka 2011)

Although Huhtamo and Parikka (2011) merely seek to establish a distinction in practice, such a distinction stands as a misconceptualization of the nature of both archaeology and the expertise of the archaeologist. It disregards the dynamic, poly-method, multi-sited work that has long-characterized the field (e.g. Shanks and McGuire 1996; Perry 2014).

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Moreover, it neglects the fact that archaeologists can be understood as *the* prototypical media archaeologists—studying media (in their broad conception, as discursive and material means to a plurality of different ends/processes), inventing and tinkering with media to progress such studies, and skilfully deploying other media to circulate this work. We look to the archaeological toolkit, then, for resources to address some of the instabilities with the media-archaeological enterprise itself (see e.g. Goddard 2014 for a comprehensive critique). Similarly, archaeology's concern for fieldwork, situated learning, and collaborative knowledge generation through teamwork, often including collective practice over extended periods of time across multiple seasons, suggests a way to further enhance media-archaeological research.

Yet archaeologists themselves are often unaware of the media-archaeology scholarship and seemingly culpable of many of the same faults in their research designs and interpretations. In particular, recent archaeological studies of contemporary material culture (including contemporary media) repeatedly demonstrate methodologies that are no more circumscribed than in media archaeology, with minimal duty of care for accessible archives, few (if any) standardized recording procedures, and little evidence of systematized analysis of all media components, comprising hardware (the material culture of the media object), discursive content, interfaces, and—if digital—code. This predicament removes a productive, uniquely archaeological mode of disciplining materiality that provides transparency and comparability to the process of excavation.

Archaeologists have variously been involved in work that might broadly be conceived as "media archaeology", from virtual excavations (e.g. Reilly 1990; Getchell *et al.* 2010) to literal excavations of dumps of media artefacts (e.g. Klein 2014; Reinhard 2014), to studies of archaeology's engagement with the media (e.g. Ismail and Finn 2001; Clack and Brittain 2007; Schablitsky 2014), to surveys of the digital landscape of Silicon Valley (Finn 2001). However, the number of projects that take the media artefact itself as the site of study, and then subject it to robust excavation and documentary recording, is negligible. Research that moves beyond these analyses—that extends outwards to the physical media devices, interfaces, and computational code which house, enable, and deploy the digital content—is virtually non-existent in archaeology. One of the few such studies in the published literature is Moshenska's (2014) excavation of a USB stick uncovered during routine excavation work in London. The stick was shipped to a conservator, then plugged into a computer to assess its content, which included a mix of schoolwork, pornography, and music, probably belonging to a male school student. As Moshenska writes:

> I predict that in the near future we will, by necessity, look to the specialist field of digital data recovery for skills, analogies and analytical concepts to borrow, just as we have already borrowed from fields such as forensic science and performance art […]. Archaeologists studying the digital world will need to draw on these [librarianship, archiving] fields of expertise, as well as the experience and abilities of computer scientists and data recovery experts, if we want to even begin to make sense of this vast and intricate body of knowledge (Moshenska 2014, 259).

Indeed, these peripheral fields have already taken the lead with respect to rigorous digital data archaeologies, including methodologies for excavating electronic "traces" from social media sites (e.g. Akoumianakis *et al.* 2012). We argue, however, that archaeologists and media archaeologists are well suited for this sort of (digital) media theorizing and practice in the future. What is missing, still, is a robust research process and an adapted methodological toolkit.

Accordingly, we introduce here a larger, ongoing effort—MAD-P, or the Media Archaeology Drive Project—to enunciate a formal procedure for the excavation of media objects (see our posts on the anthropological blog *Savage Minds* for a fuller description of the project[1]). Using a discarded hard drive as our inaugural site of study (Figure 1), we tease out the connections between Foucauldian media archaeologies and archaeological practice as understood by archaeologists. In so doing, we demonstrate the promise of an "archaeological media archaeology", wherein the process of enquiry and interpretative outcomes trigger critical examination of both fields of practice, and heighten our capacity to think meaningfully about the past, present, and future.

MAD-P Background and Methodology

There are several key questions that prompt the excavation of a hard drive. Is an archaeological fieldwork methodology useful for understanding the contents and structure of a hard drive? Can archaeological methodology be adapted in a way that is useful for media archaeologists? What does the archaeological investigation of a hard drive tell us that a

FIGURE 1. 40GB Samsung Hard Drive model SP0411C, recovered from the University of York's Department of Archaeology (MAD-P Image #1535; photograph by Colleen Morgan).

1. http://savageminds.org/2014/09/03/what-archaeologists-do/

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more historiographical approach cannot? Can the excavation of a hard drive build on the previous work of contemporary archaeologists that productively makes the familiar unfamiliar (Buchli and Lucas 2001)? While Kirschenbaum (2008) produced a *grammatology* of the hard drive, can archaeological techniques bring a broad discussion of technology into focus through materiality? To address these questions we designed a program of research that involved excavating a hard disk drive. By discussing the methodology that we employed, we show how formalized archaeological investigation through documentation can be productive when applied to media archaeology projects.

Hard drives have been used to store diverse data since their introduction by IBM in 1956. Since that time, hard drives have become progressively smaller and less expensive. Even as they become pervasive in daily life, they are not visible until they stop functioning, sometimes resulting in a catastrophic loss of data. The term "Data Archaeology" has been created to characterize the attempt both to recover data after the failure of a hard drive and to investigate extant and obsolete data formats (e.g. Brachman *et al.* 1993; Finn 2003). Similarly, the term "Digital Archaeology" is used both to characterize the investigation of old, out-of-date websites, and the growing body of digital practices in archaeology. Until recently there has been relatively little overlap between these fields (Law and Morgan 2014; Pogačar 2014).

We identified several potential hard drive candidates for excavation. We selected a 40GB Samsung hard drive, made in South Korea in September 2004 and bought by the archaeology department shortly after. Since the time of purchase, the history of ownership of the hard drive has been lost. This was ideal, as MAD-P wanted to approach the hard drive as an unfamiliar landscape; as Buchli and Lucas suggest, alienation from familiar objects exposes the transgressiveness of archaeology, an "almost perverse exercise in making familiar categorizations and spatial perceptions unfamiliar—a translation from an everyday perceptual language into an archaeological one" (Buchli and Lucas 2001, 9). The drive had been rendered obsolete after a decade and had been discarded.

The excavation of this hard drive was modeled on the Museum of London Archaeology Service (MoLAS) recording system. Each stratigraphic event was given a context number, photographed, recorded in a standardized form, drawn by hand, and then removed/excavated to reveal the next event. MAD-P employed a sampling strategy that involved following folder structures of the hard drive, drilling "down" through the layers and recording their contents. After the folder structure was explored, MAD-P commenced the physical excavation of the hard drive, disassembling it piece by piece (Figure 2). As this is an irreversible process, a departmental computer technician, Neil Gevaux, attempted to back up the hard drive to preserve any data, yet permissions on the drive prevented the storage of some material. After consideration, MAD-P decided to proceed, as this irreversible process more closely reflected the affordances of archaeological methodology as a destructive investigation. Each component of the excavated drive was labeled and stored for further analysis, and a report detailing our strategy was posted on *Savage Minds*.[2] A future repository for both the excavation material and the archive has not yet been determined, but they are currently in storage at the University of York.

2. http://savageminds.org/2014/09/30/what-it-means-to-excavate-a-hard-drive/

FIGURE 2. Colleen disassembling the hard drive as part of Phase 1 of MAD-P (MAD-P Image #1585; photograph by Sara Perry).

Discussion

The formalized strategy employed during our MAD-P excavation led to several unexpected problems and insights that may be productive for future research. First, the anchors of archaeological investigation—temporality and spatial distribution—were slippery and indistinct during the excavation. For example, the excavation of the user interface allowed for some reconsideration of understanding the hard drive as a stratigraphic sequence. Our method, "drilling down" through the folder structure of the user interface, mimicked our expectations of archaeological excavation, by moving down or deeper into the folder structure. Yet at "depth" the icon that represented the goal of our excavation might have been temporally older or younger than the folder that contained it and our investigation itself changed the time stamp to the day of excavation. Further complicating this excavation was the concept of depth as applied to a user interface. To record depth, MAD-P decided to use the "doubleclick" (DC) as a unit of measurement. This decision to measure depth in DC added some coherence to the idea of folder stratigraphy, but it is untested as a relative measure for evaluating the overall folder hierarchy and would require more investigation. As noted in discussions of our process with colleagues, the legibility and longevity of the DC as a unit of measurement is debatable. This adds to the complexity of the apparent entanglement of the contents of the drive, the operating system, the computer that framed our investigation, and the shifting temporality highlighted by the technology.

MAD-P also revealed the ambivalence of archaeological definitions of artefacts, contexts, sites, and sequences. During the investigation of both of the phases—the hard drive and the user interface—we moved back and forth between our understanding of how

to evaluate an artefact and how to record an archaeological site. The hard drive seemed compact, relatively easy to reduce to its component parts, and was more like an artefact than a site, whereas the user interface was more akin to a large landscape that must be judiciously sampled. That this landscape was within an artefact recalled a popular fantasy trope, that of a bag of holding, wherein a small exterior belied a vast inner capacity. The destabilization of these definitions was an unexpected resistance to archaeological investigation from these media, and now resonates through our subsequent archaeological practice. This ambivalence can also count as one of the benefits of the investigation.

Perhaps the most instructive aspect of MAD-P was the application of formal archaeological recording methods to an unorthodox subject of investigation. It has been difficult to determine the extent of use of formal archaeological methods in contemporary archaeology. One example is the 2001 investigation of the Francis Bacon Studio, during which contexts were recorded and scientifically bagged, precise provenience labelled and archived, and elevations drawn of the bookshelves (O'Connor 2014, 132–134). While the extensive and meticulous nature of this excavation may be due to the project requirement to reconstruct the studio in a different location, O'Connor discussed "the ease with which archaeological processes could be so readily applied in this unusual context—the smooth conceptual shift required, and yet the strangeness and theatre of archaeology as a discipline that the project revealed to me; archaeology as a performance event" (O'Connor 2014, 132). Formalized investigation and recording practice both structure and push this performance, while creating a documentary trail that can be used to compare with and inform other investigations.

As previously stated, MAD-P used single-context recording in our investigation of the hard drive. In this we employed forms modeled on the standard MoLAS system. These included several prompts asking for "texture", "inclusions", and "execution", that work well for layers of dirt but can be difficult to translate to a user interface (Figure 3). What is the texture of a file folder? Is a file folder a cut? Is it a feature? Can a file be considered a deposit? Are there negative and positive features in digital technology? These prompts required us to consider different material affordances of the hard drive, which proved to be a productive decentering. Similarly, our efforts left us both unsettled and simultaneously inspirited by the continued usefulness of drawing in archaeological recording. In addition to our formal scale drawing of each context on permatrace, a semi-transparent tracing paper, the forms required a sketch of each context. Sketching icons was jarring, and felt silly, but became immediately compelling. Drawing the object of your research encourages a depth of involvement, forcing your attention on its complete visualization and how it interacts with the surrounding context. The scale drawings on permatrace allowed us to overlay the sheets to understand the relationships of the hard drive components to one another (Figure 4).

Another affordance of the archaeological investigation was the separation of the components of the hard drive into finds bags (Figure 5). This contrasted with the relative ephemerality of the "finds" of the user interface investigation (folders and music files), though they were contained on the platter of the hard drive. These user interface artefacts, although not as apparently present or sortable into bags, were actually more omnipresent: one "find" during the investigation was a David Byrne song hidden under a generic label

FIGURE 3. Sara recording Phase 2 with MAD-P context sheets (MAD-P Image #1549; photograph by Colleen Morgan).

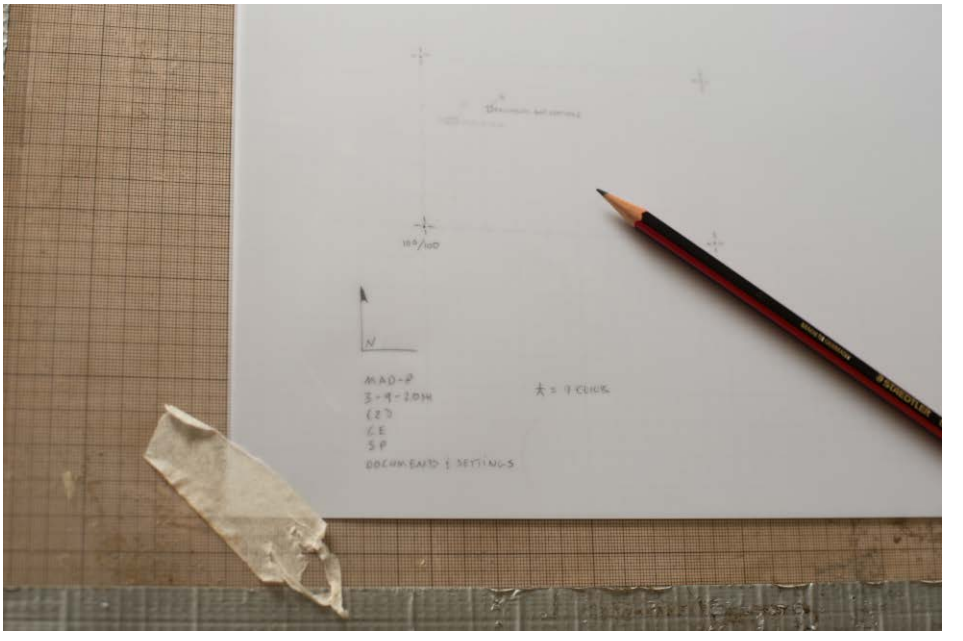

FIGURE 4. MAD-P Phase 2 contexts on permatrace (MAD-P Image #1548; photograph by Colleen Morgan).

FIGURE 5. MAD-P artefacts in bags (MAD-P Image #1620; photograph by Colleen Morgan).

in an unremarkable folder structure (Figure 6). The song, "Like Humans Do", was included in Windows XP to demonstrate the Windows Media Player, leading us to wonder: was it the most ubiquitous song in the world?[3]

Finally, formalized recording strategies revealed a critical flaw in our research design. A Harris Matrix is a method to visually organize and present the stratigraphic sequence of archaeological excavations. In the MAD-P Harris Matrix (Figure 7) there is nothing to connect Phase I and Phase II of the excavations, because we did not excavate the code that connects the hard drive with the user interface. This would have added considerable depth and complexity to our analysis, and is a priority for future investigations.

MAD-P was conceived as a critical, creative exploration of the intersections between media archaeology and archaeology, but it was also fun. Applying archaeological methods to a hard drive was the best kind of mischief: it encouraged us to reconfigure our approach to research. This mode of critical play, growing out of a larger interdisciplinary scholarship on "makers", craft, DIY production, and participatory citizenship (e.g. Dissanayake 1995; Gauntlett 2011), is part of a broader series of questions that we are exploring around the relationship between doing, making, knowing, learning, and the crafting of expertise.

Looking Towards the Future

The excavation of a hard drive revealed the utility of a recording strategy for media archaeology projects. This strategy created a reproducible record that allowed a critical review of our observations, de-centered our understanding of the spatial and temporal relatedness of media, and required close observation through the illustration of the contexts of our project. Most importantly, it has offered us a documentary baseline against

3. We later learned that it instead may be the Nokia Tune, as explored by Jeff Thompson (n.d.).

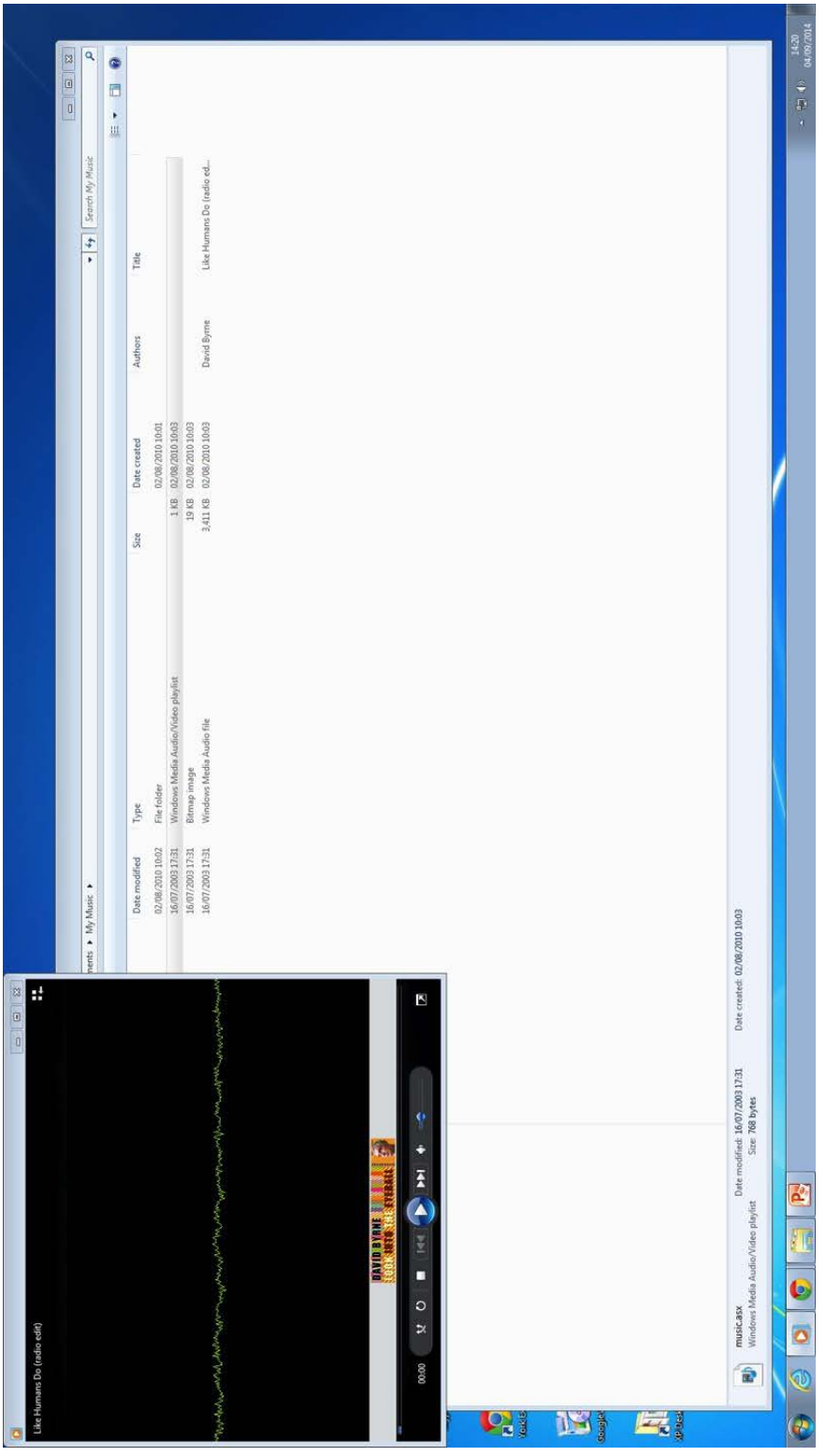

FIGURE 6. Screenshot of David Byrne music file.

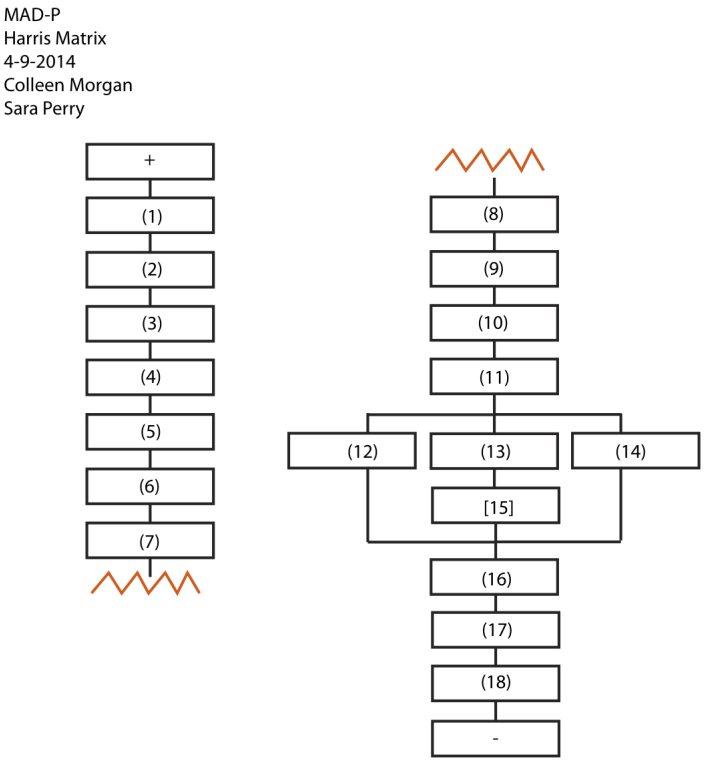

FIGURE 7. MAD-P Harris Matrix (image by Colleen Morgan).

which future enquiries into media artefacts and other unorthodox sites of study might be systematically compared.

We look ahead to honing the approach: developing methodical code excavation practices, officially archiving our project outputs, and producing a conventionalized contemporary archaeology recording sheet that might be deployed in a variety of modern contexts. From our perspective, the productivity of such work should not be underestimated in terms of its potential both to critique the past and to speculate about possible futures. It makes obvious the individual material constituents of the artefacts, their assemblages, the labour behind their composition, and their various manifestations in both computer code and in complex virtual, discursive, and physical spaces. Accordingly, we invite archaeologists of all kinds to use formal investigation strategies to structure their engagements, providing a record that can be used both for comparative research and as a creative disruption to discourse.

Bibliography

Akoumianakis, D., N. Karadimitriou, G. Vlachakis, G. Milolidakis and N. Bessis. 2012. "Internet of Things as Virtual Settlements: Insights from Excavating Social Media Sites." *4th International Conference on Intelligent Networking and Collaborative Systems (INCoS), Bucharest, 19-21 September*, 132–139. http://dx.doi.org/10.1109/incos.2012.121

Brachman, R., P. Selfridge, L. Terveen, B. Altman, A. Borgida, F. Halper, T. Kirk, A. Lazar, D. L. McGuinness and L. A. Resnick. 1993. "Integrated Support

for Data Archaeology." *International Journal of Cooperative Information Systems* 2(2): 197–211. http://dx.doi.org/10.1142/s0218215793000083

Buchli, V. and G. Lucas. 2001. "The Absent Present." In *Archaeologies of the Contemporary Past*, edited by V. Buchli and G. Lucas, 3–18. New York: Routledge.

Clack, T. and M. Brittain. 2007. *Archaeology and the Media*. Walnut Creek, CA: Left Coast Press.

Dissanayake, E. 1995. "The Pleasure and Meaning of Making." *American Craft* 55(2): 40–45.

Finn, C. 2001. *Artifacts: An Archaeologist's Year in Silicon Valley*. Boston, MA: MIT Press.

____. 2003. "Bits and Pieces: A Mini Survey of Computer Collecting." *Industrial Archaeology Review* 25(2): 119–128. http://dx.doi.org/10.1179/iar.2003.25.2.119

Gauntlett, D. 2011. *Making is Connecting: The Social Meaning of Creativity, from DIY and Knitting to YouTube and Web 2.0.* Cambridge: Polity Press.

Getchell, K., A. Miller, J. R. Nicoll, R. Sweetman and C. Allison. 2010. "Games Methodologies and Immersive Environments for Virtual Fieldwork." *IEEE Transactions on Learning Technologies* 3(4): 281–293. http://dx.doi.org/10.1109/TLT.2010.25

Goddard, M. 2014. "Opening up the Black Boxes: Media Archaeology, 'Anarchaeology' and Media Materiality." *New Media & Society*, Published online before print 28 April: http://dx.doi.org/10.1177/1461444814532193

Huhtamo, E. and J. Parikka. 2011. *Media Archaeology: Approaches, Applications, and Implications*. Berkeley: University of California Press.

Ismail, S. and C. Finn. 2001. "The Valley of Lost Data: Excavating Hard Drives and Floppy Discs." Paper presented at Archäologie und Computer conference at Forschungsgesellschaft Wiener Stadtarchäologie, Vienna, Austria, 5–6 November.

Kirschenbaum, M. G. 2008. *Mechanisms: New Media and the Forensic Imagination*. Cambridge, MA: MIT Press.

Klein, C. 2014. "Archaeologists Unearth Giant Sphinx – in California." *History in the Headlines* 21 October. Available online: http://www.history.com/news/archaeologists-unearth-giant-sphinx-in-california

Law, M. and C. Morgan. 2014. "The Archaeology of Digital Abandonment: Online Sustainability and Archaeological Sites." *Present Pasts* 6(1): Art. 2 (online edition). http://dx.doi.org/10.5334/pp.58

Mattern, S. 2012. "Dirty Media Archaeology." *Words in Space*, 23 April. Available online: http://www.wordsinspace.net/wordpress/2012/04/23/dirty-media-archaeology/

____. 2013. "Ear to the Wire: Listening to Historic Urban Infrastructures." *AMODERN* 2. Available online: http://amodern.net/article/ear-to-the-wire/

Moshenska, G. 2014. "The Archaeology of (Flash) Memory." *Post-Medieval Archaeology* 48(1): 255–259.

Nesselroth-Woyzbun, E. J. 2013. "Dematerializing Digital Objects: Denial, Decay, Detritus and Other Matters of Fact." *Theses and Dissertations*, Paper 1446. Available online: http://digital.library.ryerson.ca/islandora/object/RULA%253A1530

O'Connor, B. 2014. "Dust and Debitage: An Archaeology of Francis Bacon's Studio." In *Art and Archaeology: Collaborations, Conversations, Criticisms*, edited by I. Russell and A. Cochrane, 131–139. London: Springer. http://dx.doi.org/10.1007/978-1-4614-8990-0_10

Perry, S. 2014. "Professionalisation: Archaeology as an 'Expert' Knowledge." In *The Encyclopedia of Global Archaeology*, edited by C. Smith, 6150–6159. New York: Springer. http://dx.doi.org/10.1007/978-1-4419-0465-2_1002

Pogačar, M. 2014. "Digital Heritage: Co-Historicity and the Multicultural Heritage of Former Yugoslavia." *Dve Domovini – Two Homelands* 39: 111–124.

Reilly, P. 1990. "Towards a Virtual Archaeology." In *Computer Applications in Archaeology*, edited by K. Lockyear and S. Rahtz, 133–139. Oxford: British Archaeological Reports.

Reinhard, A. 2014. "The Video Game Graveyard." *Archaeology* 9 June. Available online: http://www.archaeology.org/issues/139-1407/trenches/2189-new-mexico-atari-dump-site-excavation

Schablitsky, J. 2014. "Media and Archaeology." In *Encyclopedia of Global Archaeology*, edited by C. Smith, 4730–4736. New York: Springer. http://dx.doi.org/10.1007/978-1-4419-0465-2_1059

Shanks, M. and R. McGuire. 1996. "The Craft of Archaeology." *American Antiquity* 61(1): 75–88.

Thompson, J. n.d. "Every Nokia Tune." Available online: http://jeffreythompson.org/every-nokia-tune.php

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A Giant on the Shoulders of Dwarfs: Archaeology and Recursion in Friedrich Kittler's Works

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Das K fiel auf die Wiese,
da kam ein dicker Riese.
Dann ging der Riese weiter
und machte es zur Leiter.
Die Leiter ward zur Brück,
drauf ging der Ries' zurück.
Die Brücke ward zum Kreise.
Drin schließt des Riesen Reise
Friedrich Kittler. Kindervers[1]

Asked about the position of media archaeology in his work, the late Friedrich Kittler answered that what media archaeology and his own work had in common was "to stop narrating the history of writing, computing, mathematics or music as linear history". He conceived his method as "recursive history", where "the same issue is taken up again and again but with different connotations and results" (interview in Armitage 2006, 32–33).[2]

Kittler is perceived as one of the founders of media archaeology. He inspired a material turn through which technologies, media, and textuality uncover material-discursive practice and hidden infrastructures. In what ways did the founding father undertake a media archaeology, and how was that related to archaeology of media? Why was his work such an inspiration to other scholars across the disciplines?

1. Unpublished verses c. 1965–1974 from the *Nachlass* of Friedrich Kittler at the Deutsches Literaturarchiv Marbach (Handschriftenarchiv Kittler, DLA, Box 48, Folder 2). Translation: "The K fell on the meadow,/a chubby giant came along./The giant he went on,/and turned the K into a ladder./The ladder became a bridge,/on it the giant went back/The bridge became a circle./In it the giant's journey ends./ Friedrich Kittler. Children's Verse". A selection of Kittler's early unpublished texts, to be edited by the authors under the title *Baggersee: Frühe Schriften aus dem Nachlass*, will be published by Wilhelm Fink in autumn 2015.
2. Interview conducted in 2003.

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Kittler produced two works containing the word "archaeology" in the title. The first—"Archäologie der Psychologie des Dramas"—was probably written around 1976.[3] At that time it was rejected by German studies, but later gained attention in a "tame" version entitled "Carlos als Carlsschüler" (Kittler 1984). The "wild" version, dedicated to "the Manes of Jim Morrison 'Artiste Poète Compositeur 1943'", claims that "the discursive event that bourgeois drama speaks in the language of psychology can only be deciphered by excavating the three superimposed layers of the derelict single-family house erected by this very discourse" (Kittler 1991, 47, translated).

In contrast to the predominant methods of hermeneutics and Marxist literary analysis, Kittler perceived literature as a control element related to the conditions of reproduction: love, marriage, family. Literary forms and media display *interaction* and therefore have a crucial impact on the transformation of the Middle European family system. Furthermore, they themselves were transformed to propagate and multiply the nuclear family lifestyle: bourgeois drama, romantic poetry, *bildungsroman*. According to Kittler, literary change and social change run strictly in parallel. Control is executed in three layers: (1) propagation of the bourgeois nuclear family as the only humane way of life (Enlightenment: Gotthold Ephraim Lessing); (2) analysis of the internal relationships between family members resulting in the emergence of a psychological knowledge of the "so-called man", an analysis that uncovers human beings in their controllability and as objects of study (Weimar Classicism: Friedrich Schiller); and (3) discovery of early childhood and the absolutization of psychology in the form of the phantasmagory of a universal mother (*Allmutter*), representing the individual's unconscious and replacing the father as the center of the family (Romanticism: Novalis, Ludwig Tieck, E. T. A. Hoffmann).

Kittler excavated these three layers by correlating bourgeois drama with non-literary texts and text from frivolous genres. In so doing, he coined the notion of "discoursive connivance". Moreover, his archaeology placed primary literature, secondary literature, and his preferred theories side by side, dispensing annotations in favour of a list of speakers. Thus, bourgeois drama is identified as a "semiotechnique" that fabricates human beings (Kittler 1991, 79). As Kittler put it: "Literature is no 'Owl of MINERVA', but actively takes part in the transportation and dispute of discourses" (Kittler 1991, 92, translated).

The concept of literary forms as nodes in a communication network is inspired by the theory of graphs, as used in organizational sociology for analysis of communication patterns with respect to power structure, team performance, and conflict management.[4] Figure 1 shows Kittler's analysis of the communication patterns in Gotthold Lessing's *Emilia Galotti*.

3. We quote from Kittler, 1991, 47–102. The typescript (DLA, Box 98, Folder 2) is undated. We conclude it was written between 1974 and 1976. Our conclusion is based on an outline of an unrealized book, *Familienszenen. Die literarische Machart der Menschen 1770-1880* (DLA, Box 112, Folder 4), in which this essay was to be the centerpiece. The assumed date is strengthened by notes about *Emilia Galotti* and bourgeois drama on the back of two seminar preparations from 1974 (DLA, Box 34, Folder 1).

4. Kittler's reference is Rolf Ziegler's study *Kommunikationsstruktur und Leistung sozialer Systeme*, (Ziegler 1968). There he might have discovered Claude Shannon's and Warren Weaver's *The Mathematical Theory of Communication* (1949); the bibliography includes Niklas Luhmann's *Folgen und Funktionen formaler Organisation* (1964) and Talcott Parsons's writings. Ziegler briefly mentions graph theory's venerable history, dating back to Leonhard Euler and its application in Claude Lévi-Strauss's studies *Les Structures élémentaires de la parenté* (1947) and *Anthropologie structurale* (1958).

FIGURE 1. Kittler's graphs of communication patterns in Lessing's Emilia Galotti (Box 34, Folder 1).

The first graph and its matrix determine the index of centrality of the *dramatis personae*. In order to clarify problems arising in the procedure of information transmission, an index of centrality measures the group member's degree of centrality with respect to leadership over the messages transmitted within the network. The second graph and its matrix display the circulation of the drama's three main messages: (a) the encounter of Emilia with wicked Hettore Gonzaga in the chapel, (b) the assassination of Emilia's virtuous fiancé Count Appiani on behalf of Gonzaga's chamberlain Marinelli, and (c) Emilia's and Appiani's prospective conjugal life. The channels through which these messages are transmitted are thus revealed.

The early Kittler created such graphs for most objects of his literary study. This topological approach aims to overcome the understanding of literature as bearer of meaning in favour of an understanding of literature as communication network. From this point of departure, literature can be identified as a node in the communication network of discourses, institutions, and architectures. According to Kittler, Foucault stripped archaeology of its "proper" meaning, as he "was not digging in Orchomenus or Memphis" but in libraries and archives (Kittler 1999, 7, translated). So did Kittler. His own archaeology navigated through discourses and attempted to mathematize literary analysis, foregoing excavation in favour of archaeological assemblage.

Kittler used the notion "archaeology" again in his late work. In a talk from the lecture series *Archäologie als Kulturwissenschaft* (Archaeology as Cultural Studies), given at Humboldt-University in 2002, he introduced his project of an "acoustic archaeology" (Kittler 2004, 260, translated). Two years later Kittler, Wolfgang Ernst, and a group of researchers undertook a "sound-archaeological expedition" (Ernst 2004, 257). According to Kittler:

> April 2004. […] Two singers, one woman, nine men on Gallo Lungo, the larger Siren Island. […] Like the Sirens, our singers sat or stood on a meadow—which reveals itself as such only ashore and not from the sea. […] The two sirens sang what their conductor requested. We heard, clear and distinct, […] vowels radiating, but not the slightest trace of consonants.
>
> (Kittler 2006a, 57–58, translated)

Kittler found evidence here that Odysseus had entered the island (Figure 2)—otherwise he could not have heard the Sirens' song. Sirens were meaningful to Kittler as they represent the most crucial apparatus within his acoustic archaeology, further developing Barry Powell's thesis that the Greek vowel alphabet was invented to write down Homer's epos (Powell 1991). In archaic Greece, Sirens were unmarried young women (nymphs) who performed kitharodic singing and dancing during ritual ceremonies in the service of the gods. During their performances these actual women turned into *daimonic* creatures affecting the audience. As fictional characters, the Sirens incorporate the lyrical choral song. They represent the *musikè téchne,* an art that requires long-term training in singing, as well as, subordinately, in reading and writing (Koller 1963, 46). While Homer's verses were preserved, only fragments of the Sirens' songs survived. According to Kittler, it was the Pythagoreans who lifted the curse of Odysseus's lies in order to celebrate the Sirens in the form of *harmonia* (the octave) as one of the first formal principles of the Occident (Kittler 2006a, 165).

FIGURE 2. Siren lands (photograph by Tania Hron, taken during Kittler's excursion to Li Galli, the Siren lands).

FIGURE 3. Modules of Kittler's synthesizer (photograph by Tania Hron).

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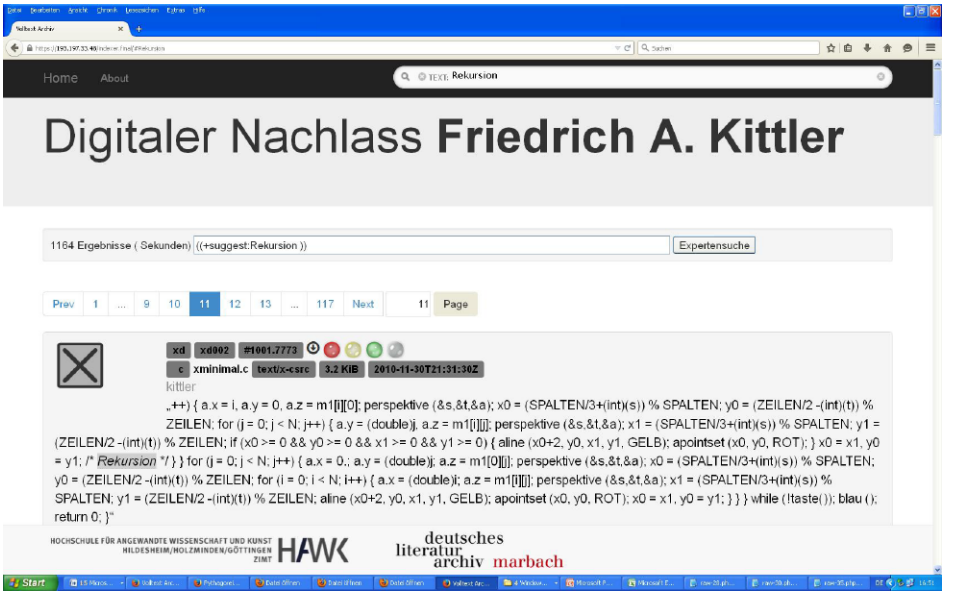

FIGURE 4. Screenshot of the Indexer, searching in full text for "Rekursion" reveals 117 pages of entries, texts as well as source code (courtesy of the DLA Marbach).

The recursive progression from singing sirens to signal processing became a central motive in Kittler's work (Figure 4) and the term *Rekursion* occurs in Kittler's historical investigations as well as in his computer studies. Recursion entered Kittler's work via his occupation with mathematics and computer programming. The term itself has not been part of cultural studies for long, even though the mathematical practice, for example in Fibonacci algorithms, is much older.[5] In the mathematical sense, a recursion is a procedure defined at least partially in terms of itself. The calculation of a recursion is therefore a process in which the same operation is repeated, and the result of each calculation must be used to find the result of the next. A recursive function, basic to computer science, requires an instruction that ends it. The recursive repetition does not just reproduce but culminates in a previously defined variation (Krajewski 1998, 4; Winkler 1999, 235; see also Kittler 2009).

Navigating through Kittler's digital storage device with the Indexer,[6] we encounter C programs in which Kittler labeled the recursive functions with the comment *Rekursion* (Kittler feared infinite loops recursing without a programmed halt point). Kittler extensively

5. Recursion, as a mathematical term, was coined in the nineteenth century as "*recurrens series*". For further detail see Krajewski 1998, 2–5; Kittler, compute4.doc.
6. The Indexer is a digital tool for searching among the over 1.7 million files in the digital assets of Kittler, stored at the DLA. The basic components of the Indexer combine several tools into an identification cascade (see the developers of the tool, Tabea Lurck: Enge and Kramski 2014, 57) The search can be limited to specific terms, i.e. full text or filetype. The results contain additional data crucial for research. The Indexer is still in the beta-testing phase and not open to the public. It will be accessible only inside the DLA. For further description see Enge and Kramski 2014.

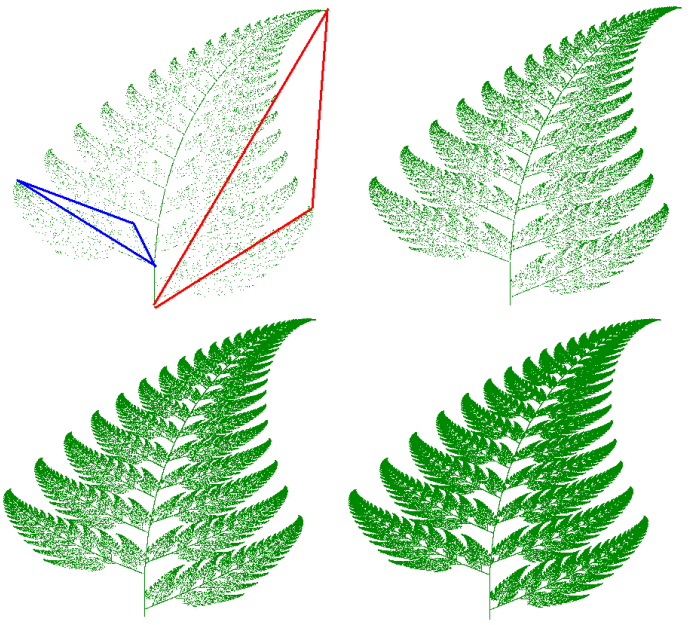

FIGURE 5. Barnsley Fern.

documented his graphic programming.[7] Code is a text, belonging to the oeuvre of an author like Kittler as much as his books and articles.[8]

Programming was a way of thinking for Kittler. With Assembler and C, he instructed the machine to recursively generate graphical images such as surfaces, ferns (Figure 5), labyrinths, and fractals, as well as a self-programmed address book.[9] The concept of recursion entered Kittler's texts when he started to think through the mathematics of programming—and recursive functions.

Kittler's main programming interest was algorithms, especially recursive algorithms, and he identified them in contexts other than computer science or "graphical programming

7. Namely in a file called manual.doc.
8. Kittler wanted his his collected works to include not only his books and articles but also his thousands of lines of C and Assembler. The collection consists of (1) *Gesammelte Schriften* (Collected Writings), a series published by Wilhelm Fink under the editorship of Martin Stingelin (who has also edited Nietzsche); (2) *Stimmen* (Voices), an internet platform for lectures, talks, and seminars in audio, video, and text, edited by Moritz Hiller, Tania Hron and Sandrina Khaled; (3) "Programmierwerk" (Programs), consisting of Kittler's code and an internet-based application for running it on an emulator of Kittler's machine, edited by Peter Berz and Paul Feigelfeld; and (4) "Schaltungen" (Curcuits), which presents the schematics of the synthesizer that Kittler built, edited by Sebastian Döring and Jan-Peter E.R. Sonntag. This analyses the actual modules of the synthesizer, because, as Wolfgang Ernst puts it, media artefacts are different from vases: they cannot be understood by being looked at, they must be analysed in their processing of input, their storage, and their transmissions (Ernst 2011, 241). Döring and Sonntag have also undertaken a media archaeology of Kittler's schematics and circuitry in their project "Apparatus Operandi." They allowed us to publish some of their photographs, see Figure 6.
9. For how Pythagoreism and Barnsley's Fern are connected in that "everything is number", see Berz 2012.

in 32 Bit systems",[10] going from—as he apologetically put it—"Nur was schaltbar ist, ist überhaupt" (Kittler 1993, 182: "Only that which is switchable, is at all") to something that could be summarized as "what is must be computable".

As his graph-theoretical literary analysis shows, mathematical concepts played an important role in Kittler's interpretations of literature and, therefore, in his conceptions of archaeology. In his famous 1985 habilitation work *Aufschreibesysteme 1800/1900* (later published in English as *Discourse Networks 1800/1900* [Kittler 1990]), Kittler described the rise of German poetry, beginning with Faust's well-known sigh, as an effect of programming: mothers program their children with the sweet sound of lullabies and with sound exercises in order to teach reading and writing (*Lautiermethode*); the children, grown up, search for the sound of the mother, the "mother's mouth", and transform it into poetry that mothers-to-be—young women—read, and program into children themselves: "The pedagogic movement took the curiosities and ephemera of contemporary technology […] and from them fashioned a functioning feedback-control system." (Kittler, 1990, 49)

One might well describe this as a recursive procedure, but Kittler didn't at this time. Recursion appeared in his writing only after an intensive phase of programming and study of information theory in the nineties.

In their commentary on the German translation of a collection of papers by Alan Turing, Dotzler and Kittler remarked that Turing materialized mathematics and mathematized matter by designing a universal discrete machine that used computable numbers to replace any other machine (Dotzler and Kittler 1987). In his unfinished project on music and mathematics—from "Hellas" via "Roma Eterna" and "Hesperien" to "Turingzeit"[11]—Kittler turned the wheel further, identifying programs that recall themselves in the history of technologies, and then, in what he called, after Heidegger, "*Seinsgeschichte*", or history of being. Here, the term *Rekursion* served as a key concept that enabled Kittler to demonstrate how mathematics and music, systems of notation, systems of thinking, technological inventions and techniques, notions of sexuality and relations, gods and arts, all have recursive character. In Kittler's words: "For this new way of writing history there is only one way, one name: recursion" (Kittler 2009, 245, translated in Winthrop-Young 2015, 73). Recursion is a productive operational notion of a program recalling itself (and sometimes getting caught in a loop or a Möbius strip) to describe a history that neither focuses on the compilation of data nor searches only for the discontinuities. It intends to describe the self-referential processes of technologies and ideas throughout a manifold history of knowledge and science, without man as acting force (see Ofak and von Hilgers 2010).

In the file "recursio.utf",[12] Kittler stated that the notion underlying his history of knowledge was that all of European science and media derived from ancient Greek thinking,

10. The subtitle of the programming seminar for academics that Kittler taught at Humboldt University from 1993 to 2011.
11. Kittler planned about nine books in the four volumes mentioned, and he only finished the first two. Fragments of the second volume were printed in Kittler 2012. More will be published in 2016 by Wilhelm Fink (ed. Gerhard Scharbert).
12. "recursio.utf" is a file from Kittler's computer containing the preface to a grant application for an unrealized project named "Harmonia", covering the history of harmony from Ancient Greece to modern times.

or more precisely, the medium of the Greek vowel alphabet. The history of music, mathematics, and sexuality cannot be explained by words like "progress" or "development": "The project transferred a concept from mathematics and computer science to the history of knowledge: that of recursion" (Kittler recursio.utf, 1, translated; see also 2006b, 59). The history of Europe—for Kittler, the world he could and wanted to describe—is "an infinite possibility of recalls, of recursions […]. A recursion is not literally a return but a repetition under a different *Vorzeichen*" (arithmetic sign; Kittler, minne.lat).

Recursion as the key term for his historiography of Greek thought, techniques, and knowledge legitimizes his narration; it is bound up with his personal life as well.[13] Kittler explained in *Musik und Mathematik I(2)*:

> our history of being [*Seinsgeschichte*] plays out in such recursions. It returns to the alphabet in order to ground it ever more deeply: the two Sirens turn into an octave, octaves into polyphony, polyphonies into overtones, overtones into Fourier series—and so on to today's signal processing. (Kittler 2009, 80, translated)

And there we have entered the realm of media archaeology, grounding it in thorough analysis of the unfolding of being.

According to Kittler, the computer itself is a recursion of the Greek alphabet, a single notation system for letters, numbers, and tones. Every output is produced by binary code: "for the second time in history, a universal medium of binary numbers is able to encode, to transmit and to store whatever will happen, from writing or counting to imaging and sounding" (Kittler 2006a, 24. translated).

While Kittler inspired a media archaeology, Kittler's paper files, still smelling of cigarettes, his synthesizer (Figure 6), computer, and digital files have themselves become the object of media archaeology. Kittler's media history in its focus on code, structures, and technology has much influenced media archaeological theories such as those of Wolfgang Ernst or Jussi Parikka. While Kittler's project was not archaeological or even media archaeological in the strictest sense, the work is a highly significant element of these material-discursive networks. Simply put, they have something in common: deconstructing and reconstructing from a material-oriented point of view to uncover hidden infrastructures and technologies and studying media as a historical enterprise that tends to haunt us in recursions.

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13. Note the various evocations of an undefined "Du" (You) in *Musik und Mathematik*, which contains countless insertions of Kittler's memories of vacation trips, music concerts, and private moments.

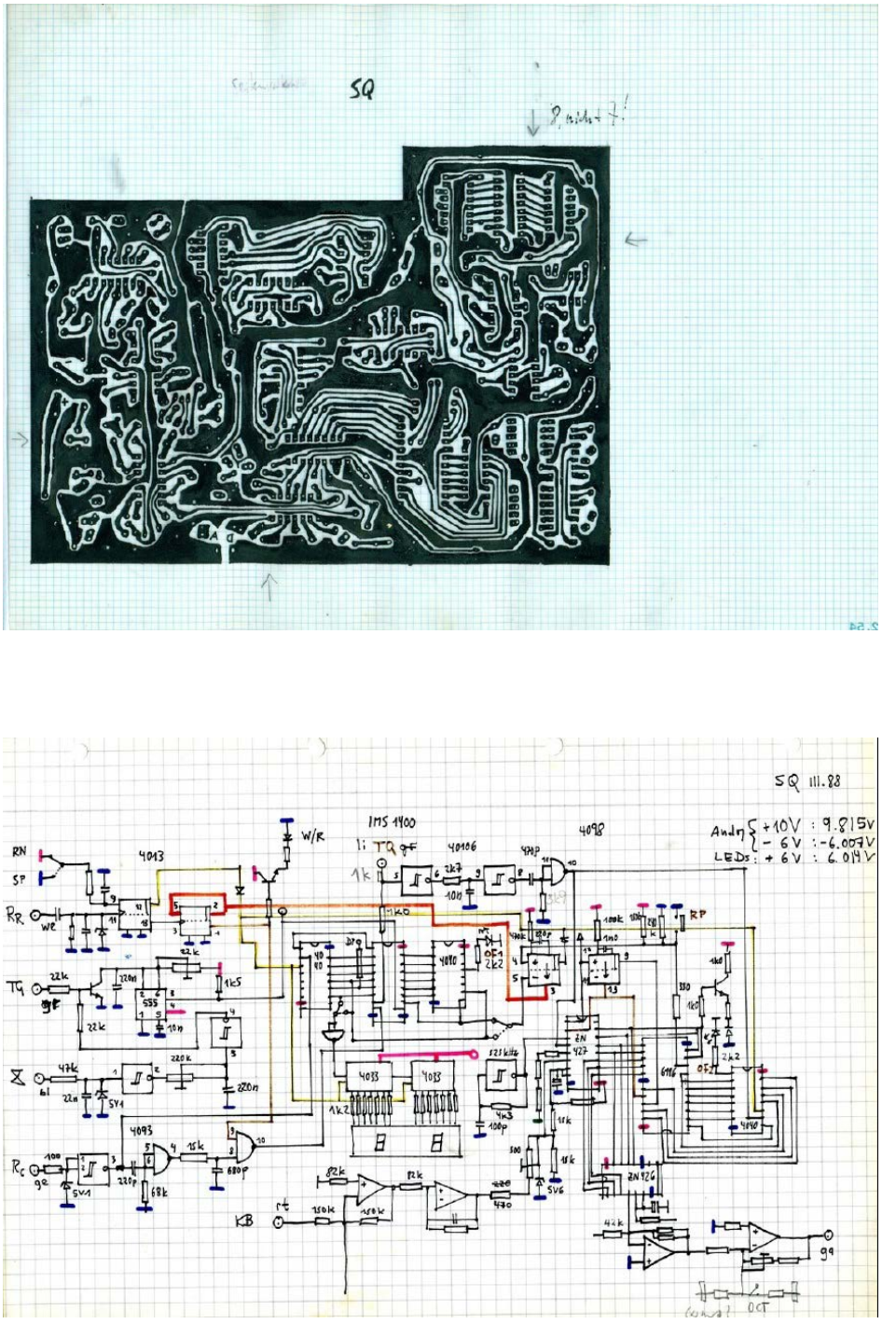

FIGURE 6. (top) Etching template sequencer board from Friedrich Kittler's self-built synthesizer; (bottom) circuit diagram of Kittler's synthesizer from 1988 (photographs used by permission of Sebastian Döring and Jan-Peter E.R. Sonntag).

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Bibliography

Armitage, J., 2006. "From Discourse Networks to Cultural Mathematics: An Interview with Friedrich Kittler." *Theory, Culture & Society* 23(7–8): 111–134. http://dx.doi.org/10.1177/0263276406069880

Berz, P. 2012, "Pythagoräismus." In *Tumult. Zeitschrift zur Verkehrswissenschaft*, edited by W. Seitter and M. Ott, 57–69. Wetzlar, Germany: Büchse der Pandora.

Dotzler, B. and F. Kittler. 1987. "Vorwort." In *Alan Turing. Intelligence Service. Schriften*, by A. Turing and edited by B. Dotzler and F. Kittler, 5. Berlin: Brinkmann und Bose.

Enge, J. and H. W. Kramski. 2014. "'Arme Nachlassverwalter…' Herausforderungen, Erkenntnisse und Lösungsansätze bei der Aufbereitung komplexer digitaler Datensammlungen." In *Von der Übernahme zur Benutzung. Aktuelle Entwicklungen in der digitalen Archivierung. 18. Tagung des Arbeitskreises 'Archivierung von Unterlagen aus digitalen Systemen' am 11. und 12. März 2014 in Weimar*, edited by J. Filthaut. Schriften des Thüringischen Hauptstaatsarchivs Weimar 6: 53–62. Weimar: Thüringisches Hauptstaatsarchivs.

Ernst, W. 2004. "Lokaltermin Sirenen oder Der Anfang eines gewissen Gesangs in Europa." *Phonorama: Eine Kulturgeschichte der Stimme als Medium,* edited by B. Felderer, 257–266. Berlin: Matthes and Seitz.

____. 2011. "Media Archaeography: Method and Machine versus History and Narrative of Media." *Media Archaeology: Approaches, Applications and Implications*, edited by E. Huhtamo and J. Parikka, 239–255. Berkeley: University of California Press.

Kittler, F. 1984. "Carlos als Carlsschüler." In *Unser Commercium: Goethes und Schillers Literaturpolitik*, edited by W. Barner, E. Lämmert and N. Oellers, 241–273. Stuttgart: Cotta.

____. 1990. *Discourse Networks 1800/1900.* Translated by M. Metteer and C. Cullens. Stanford, CA: Stanford University Press. 1990.

____. 1991. "Archäologie der Psychologie des Dramas," In *Dichter, Mutter, Kind*, edited by F. Kittler, 47–102. München: Wilhelm Fink.

____. 1993. "Real Time Analysis, Time Axis Manipulation." In *Draculas Vermächtnis*, edited by F. Kittler, 182–206, Leipzig: Reclam.

____. 1999. "Zum Geleit." In *Botschaften der Macht. Der Foucault-Reader Diskurs und Medien*, by M. Foucault and edited by J. Engelmann, 7–9. Stuttgart: Deutsche Verlags-Anstalt.

____. 2004. "Das Alphabet der Griechen. Zur Archäologie der Schrift." In *Die Aktualität des Archäologischen in Wissenschaft, Medien und Künsten*, edited by K. Ebeling and S. Altekamp, 252–260. Frankfurt am Main: Fischer.

____. 2006a *Musik und Mathematik I. Hellas 1: Aphrodite*. München: Wilhelm Fink.

____. 2006b. "Number and Numeral," *Theory, Culture & Society* 23(7–8): 52–61. http://dx.doi.org/10.1177/0263276406069882

____. 2009. *Musik und Mathematik I. Hellas 2: Eros*. München: Wilhelm Fink.

____. 2012. "Zu den Römern. Auszug aus dem nachgelassenen Text zu *Musik und Mathematik II: Roma Aeterna. Römer und Christen*." In *Tumult. Zeitschrift zur Verkehrswissenschaft*, edited by W. Seitter and M. Ott, 139–147. Wetzlar, Germany: Büchse der Pandora.

____. compute4.doc. "Computer als Medium 4" lecture, Berlin 1999/2000 #2008.349917, application/x-ole-storage (1999-12-17T17:41:16Z). compute4.doc. In: Bestand A:Kittler/DLA Marbach. hd04-p01:/root/texte_89-99/kittler/dmk [hd, 47 KiB].

____. recursio.utf. "Präambel." #1001.8818, text/plain (2010-08-21T09:41:48Z). recursio.utf. In: Bestand A:Kittler/DLA Marbach. xd002:/kittler/utf [xd, 3.09 KiB].

____. minne.lat. Talk at Stuttgart 4/30/2004. #1001.1971, text/plain (2010-08-21T09:38:15Z). minne.lat. In: Bestand A:Kittler/DLA Marbach. xd002:/kittler/lat [xd, 2.24 KiB].

Koller, H. 1963. *Musik und Dichtung im Alten Griechenland*. Bern, Switzerland and München: Francke.

Krajewski, M. 1998. "Die Rose. Vorstudie zu einer kleinen Geschichte der Rekursion." Available online: http://www.verzetteln.de/Rose.pdf.

Ofak, A. and P. von Hilgers. 2010. *Rekursionen: Von Faltungen des Wissens.* München: Wilhelm Fink.

Powell, B. 1991. *Homer and the Origin of the Greek Alphabet*. Cambridge: Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511552700

Winkler, H. 1999. "Rekursion: Über Programmierbarkeit, Wiederholung, Verdichtung und Schema." *c't Magazin* 9: 234–240.

Winthrop-Young, G. 2015. "Siren Recursions." In *Kittler Now: Current Perspectives in Kittler Studies*, edited by S. Sale and L. Salisbury, 71–94. Cambridge: Polity.

Ziegler, R. 1968. *Kommunikationsstruktur und Leistung sozialer Systeme.* Meisenheim am Glan, Germany: Hain.

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AnArcheology for AnArchives: Why Do We Need—Especially for the Arts—A Complementary Concept to the Archive?

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Translated by Geoffrey Winthrop-Young

We have read it *ad nauseam*, and Michel Foucault has spelled it out in all theoretical brilliance with his collective singular *archive*: as the ideal totality of the formulations of the conditions of our existence, as the ultimate happiness on earth,[1] the archive serves to organize mental and enforced orders in the shape of appropriate structures and to preserve, with a tremendous amount of effort, the memory of past orders. Its first and foremost medium is language, especially in the shape of grammatically correct texts. This is the type of mediation through which we learned both the art of critique and the linear depiction of history. The classic archive is the externalization of historical consciousness, thereby documenting a consciousness fundamentally tied to power.

The utterances, objects, and artefacts produced by artists and thinkers closely involved with the arts are liable to end up in these archives. Once this happens, archivists, librarians, and curators transform heterogeneous objects into structures to whom they are and will remain profoundly alien.

The dismantling of Harald Szeemann's working and thinking laboratory Fabbrica in the Swiss village of Maggia for the archival and library-related purposes of the Californian Getty Research Institute represents a special type of deconstruction. The extremely "individual methodology" (Derieux 2007) with which Szeemann invented, developed, and arranged his exhibitions and artistic objects, has been dissolved into the general and universal

1. An expression I owe to the German writer Heinrich Böll.

FIGURE 1. AnArchive Fabbrica, Harald Szeemann, Feuilleton Süddeutsche Zeitung (photograph by Siegfried Zielinski).

order of a hygienically organized, representative cultural research archive (Figure 1). In even more extreme fashion than Szeemann, Peter Weibel switches between theoretical and artistic production, the organization of museums and research undertakings, installations, and books. This opaque material chaos is, under his own supervision, currently being transferred into neatly labelled transparent containers, gigantic file folders, and digital storage systems (Figure 2). In the hands of museums and collectors, Dieter Roth's legacy of early generative art and his anarchic sub-archives, such as his chocolate and mould museums as well as his equally obsessively compiled video diaries, have turned into aesthetic arrangements, as if, from the very beginning, they had been created with archival index cards in mind. (On occasion Roth himself ironically anticipated this practice, for instance by exhibiting his art in Leitz folders.) Paradoxically, the 140 monitors on display at the 2013 Venice Biennale showing his daily life were only able to exert a certain irritation when some of the screens malfunctioned and went black like the square in Robert Fludd's famous history of the micro- and macrocosm: *et sic in infinitum* (Figure 3)! Three hundred years before Kazimir Malevich, this boldly printed black square weighing down on the paper and surrounded by four captions, refers to the infinite depths of (yet) unformed matter, the physical and sensual chaos.

To a certain extent it is up to artists and associated theorists to determine how effectively we may oppose this alienating hegemony of order. Already in the 1960s, the young Korean Nam June Paik, a student of Arnold Schoenberg's in the US with a profound knowledge of Zen philosophy, and whom I rank as one of the outstanding philosophers of time and media artists, anticipated the will to order that would descend upon energetically

FIGURE 2. AnArchive Peter Weibel (photograph by MONO KROM 2010, used with permission).

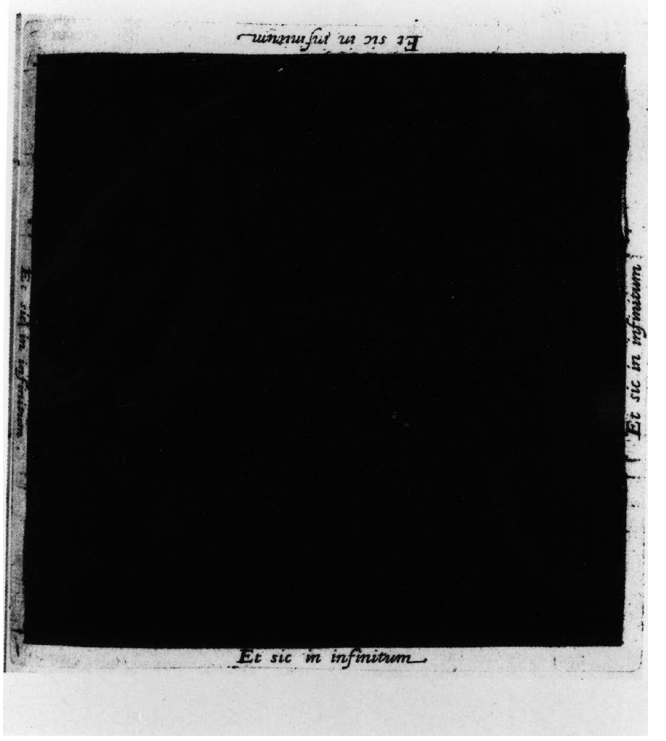

FIGURE 3. Robert Fludd's graphical black square representing, for him, eternal and unlimited unstructured matter (Fludd 1617, 27).

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FIGURE 4. Werner Nekes, filmmaker, collector, dealer, anarchaeologist in his garage and laboratory in Muehlheim/Ruhr in Germany (photograph by MONO KROM 2012).

rebellious Fluxus intermedia pioneers. In a 1963 interview he critically reflected on the close proximity between musicians, composers, and publishers. Citing the example of John Cage, he addressed issues of historical consciousness and material utilization relevant to our discussion:

> Why do all musicians and music publishers believe that everything must result in something of importance to the history of music? That's crazy. I told Cage: Destroy your manuscripts and tapes when you die! He thought that was too dramatic. I think it's a crime that Cage makes tapes at all.

Gottfried Michael König, his interviewer at the time, pursued the issue: "So your own works are only intended for the moment? They have no significance afterwards? Not even for you? […] Your work only exists as long as it is being performed?" Nam June Paik responded: "Yes, that is beautiful. When I die there's nothing left. I am not producing a child" (quoted in König 1963: 32, 34).

Once they fall into the hands of curators, anarchic depots and legacies of artists (and certain scientists), arranged in *quod libet*, arbitrarily structured atelier containers, tell different sub-stories (Figure 4). It still amounts to the narrative of the unique and ingenious subject that preserves itself for the memory of others, or issues the order for preservation. "We shall survive in the memories of others,"[2] said Vilém Flusser, the cultural philosopher from Prague, in an interview with Hungarian art theorists László Beke and Miklós Peternák

2. Also the title of a DVD with Flusser's last interviews, produced by the Vilém Flusser Archiv at the University of Arts Berlin in cooperation with the Center of Culture and Communication (C^3) Budapest.

FIGURE 5. Catalogue title page for VALIE EXPORT's big archive-exhibition in Bregenz (Austria), October 2011 to January 2012.

shortly before his tragic accidental death. That is both wish and directive. Flusser composed his letters for posterity; even when writing to his closest friends and relatives he used a mechanical typewriter equipped with thin copy paper. Whatever responses he received he rarely kept. When it came to posterity his own text was of primary importance: epistolary communication as monological utterances dedicated to the archive.

A few years ago I discussed with the Viennese artist VALIE EXPORT the gigantic dimensions of the extremely heterogeneous material she had accumulated in more than five decades of artistic production: Super 8-, 16-, and 35-mm films, countless photos, open reel videos, cassettes in all different formats, LPs, objects such as genital panic trousers (*Action Pants: Genital Panic*, 1968), installation materials, technical gadgets… Exhibit it the way it is, I recommended, in sections, in this seeming disorder of a multifold logic that serves only your particular interests as an artist, your idiosyncrasies (Figure 5). The *Archiv* exhibition organized by the renowned Austrian Kunsthaus Bregenz, however, followed a diametrically opposed logic. The extremely heterogeneous biographic fragments were squeezed into 150 identical or very similar standing and lying display cases framed by white-lacquered wood, which appeared to subject all the material to

homogeneous uniformity. At the time I thought we were, unwillingly, witnessing how already during her lifetime a protesting female artist was being transformed into a conformist historical figure. But during a public discussion VALIE EXPORT surprised me with a very interesting alternative interpretation. To her, the arrangement of formally similar frames with such different content recalled film sequences (Irrgang, forthcoming). The montage, the assembly of heterogeneous materials, moves to the forefront, allowing the fantasy of the observer to play with particularities.

From the perspective of a logic of the manifold, but also in the tradition of the Nietzschean genealogical thought praised by Foucault, the fruitless search for the one origin is as meaningless as the definition of a future, which according to Emmanuel Levinas always embodies that Other we cannot know. However, to work on the conceptualization and further development of exciting utopian spaces of possibility does not necessarily involve the abandoning of established archives. Nonetheless, I do want to make a plea for effective complements, which could also involve unusual, thought-provoking nomenclatures.

Archein (ἀρχεῖν) means "to begin"—but also: to be the first, to lead something or somebody. *Archos* stands for the origin, the beginning; but it also contains the leader. In the wake of Derrida and Foucault it has been frequently emphasized that *archeío(n)* refers to the space, the official seat of the government as well as to its administrative buildings. By placing the prefix *an* in front of this construct, with its will to order and claim to leadership, we semantically unhinge the latter. The result resembles the simple opposition between collection (*Sammlung*) and cluster (*Ansammlung*). However, the prefix does not—as in German—serve to indicate a prior state; rather, as in Greek, it implies a counterdraft. It gestures toward liberating the archive from the most important institutional entanglements history has imposed in it. Anarchy—proclaimed the anarcho-pacifist and philosophical writer Gustav Landauer (1870–1919)—is the liberation of man from the idols of the *state*, of the *church*, and of *capital*. The way I view the arts, there is no reason for them to worship any of these idols, let alone all three.

In his recently published late Paris lectures, Michel Foucault makes use of an anarchic pun. At the end of a critical passage about his own work as a historian he remarks that he had a method in mind which makes no more use of power than is acceptable: "So I will say that what I am proposing is rather a sort of anarcheology" (2014: 79).[3] Connotations of anarchy, though politically up to date, would be socially inappropriate, so he passed on them.

To me, *anarchives* are a complementary opposite and hence an effective alternative to archive. I consciously refer to them in the plural (Giannetti 2012).[4] Following a logic

3. The semantic proximity to the political contexts of anarchy from which this attractive word developed does not preclude its commercial abuse. In 1999 the French media theorist and curator Ann-Marie Duguet named her wide-ranging 1999 collection of artist DVDs *Anarchive – Archives numérique sur l'art contemporain.* So far, editions of Michael Snow, Antonin Muntadas, and Thierry Kuntzel, among others, have been published (see http://www.anarchive.net/). *D'Anarchive* is a label specializing in predominantly black and white fashion. See also *The Valaco Archive*: http://valacoarchive.com/an-archaeologue/

4. The entries on "Archive" and "Anarchive" were written by Moritz Hiller, who is currently writing his PhD dissertation on Friedrich Kittler's estate under Wolfgang Ernst and me.

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of plurality and wealth of variants, they are particularly suited to handle events and movements; that is, time-based sensations. Just as the anarcheological sees itself first and foremost as an activity, anarchives are principally in an active mode. They do not, however, lay claim to leadership. Nor do they claim to truthfully know where things come from and where they may be headed to. The origin is and remains a trap. Anarchives do not follow any external purpose; they indulge in waste and offer presents. Basically, they are indebted to a single economy, that of friendship. And friendship, as Georges Bataille would have it (1971), is characterized by an acute feeling of strangeness in the world, which we occasionally share with others.

Artists and researchers need both: archives that collect, select, preserve, restore, and sort in accordance with the logic of a (dispositive) whole, and the autonomous, resistant, continually reactivated *anarchives* geared toward individual needs and work methods. It is the utopia, the non-place, which in an ongoing process reshapes and reinterprets the materials from which memories are made. Anarchives necessarily challenge, indeed provoke, the archive: otherwise, they would be devoid of meaning. Caring for anarchives may help prevent the many idiosyncratically designed particular collections from changing into a rule-bound administrative apparatus. It may even enable us to celebrate the past as a regained present. The artist and philosopher David Link is currently demonstrating with his *Archaeology of Algorithmic Artefacts* how this may be achieved (cf. Link, forthcoming).[5] The reconstruction of the missing parts of the source code for Turing and Strachey's love letter program and the restarting of this impossible communication by means of a simulated hardware of the Manchester Ferranti Mark I garnered him the prestigious Tony Sale Award of the British Computer Restoration Society.[6]

The philosophical director Jean-Luc Godard belongs to a select group of late twentieth-century artists who not only had a discernible aesthetic impact but also collaborated in the discourse about their artistic work. As a recording technology cinema itself exhibits features of the archive, he noted in a book-length interview. It is "made from the same raw material as History"; it is "the registrar of History" (Godard and Ishaghpour 2005, 83, 88). Yet in his own legacy, the *Histoire(s) du cinéma* (dir. 1988–1998), Godard steadfastly pursues an alternate anarcheological path. "Cinema Truth … Factory of Dreams":[7] The immense depot of one hundred years of cinematic history assembled from billions of individual images, Godard declares, is a factory for the manufacture of emotions; an implicit reminiscence of Ilya Ehrenburg's *Factory of Dreams* (1931), but also of René Fülöp-Miller's legendary *Fantasy Machine*, which as scandalously early as 1931 linked the commodity analysis of the cinema industry to psychoanalytic ideas. Godard as an analyst of the dream factory or *Fantasy Machine*—that is a role he assumed with great passion and knowledge even before the *Histoire(s) du cinéma*. Godard is the Aby Warburg of the time-based image. The archives and vaults of the Paris Cinematheque and many other

5. One form of publishing this project is David Link's forthcoming book with the same title.
6. See Ward 2012. The work was exhibited in 2010 in the Bristol Arnolfini arts centre (cf. Giannetti 2014). In the essay "Künstlerische Anarchive - Herkünfte als Ressource für Zukünfte" (Zielinski 2015) I discuss a few examples, like the huge containers of David Larcher, Werner Nekes, or Dieter Roth. There will be an adaptation of this text in English ("Artistic Anarchives – Derivations [Herkünfte] as Resources for Futures") in Buckley and Conomos (forthcoming).
7. My translation of one of the text inserts used by Godard in the first part of the film.

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FIGURE 6. "cinemasurplus": caption by David Larcher underneath this photograph taken in his anarchivic depot in Kensington, London, 2012 (used with permission).

depots, his own immense collection of electronically stored films and classical, modern, and popular music, are assembled and condensed in fleeting, minimal fragments, as if in a magic ball of memory and incantation. In the course of this audio-visual reconstruction of cinema history the filmmaker himself turns into an object of analysis: "I imagined […] that, starting from this past, I could see my own once more, like a psychoanalysis of myself and my space within the cinema" (Godard 1980, 22). And like a reminder, a phrase from *Le gai savoir*—Godard's explicit 1968 cinematographic homage to Nietzsche—thrusts itself into the first colliding image and sound combinations of the *Histoire(s) du cinéma*: "Chance is structured like the subconscious."

The result of this anarchaeological image and sound analysis is a *Poetics of Relation* (a beautiful term borrowed from the philosophico-poetical tool box of Martinique poet-philosopher Édouard Glissant). It is not a history that raises any claims to generalization—

FIGURE 7. "drumsort rustydusty-w" (caption and photograph by David Larcher 2012, used with permission).

which is precisely why it represents it so well. Godard's anarchaeology of past presents of the cinema is supremely idiosyncratic. It is both testament and manifest: a firm plea for the production of one's own history from the material surrounding the individual in the midst of which he is able to move with competence. "Every eye mediates for itself", to quote a phrase from the beginning of the video film, which is inserted like an appeal into the first part of the *Histoire(s)*. The latter word, in turn, is decomposed into its syllables and rhythmically rearranged: *His toi toi toi re …* History is your business! Recount it according to your aesthetic abilities and your knowledge! Film turns history, a matter of thought, into an extended thing whose temporal structure, too, may be worked on.

The *Histoire(s)* do not represent *the* history of film. They turn it into a Heisenbergian *potentia*—the wave function of film history, as it were. In order to become the 1 objectified history (Godard prefers to use the numeral designation) it has to pass through the act of recording: "No recording, no measurement," notes Nick Herbert in his proposal for a "Really New 'New Physics'": "Only those interactions in nature that leave permanent traces (records) count as measurements. […] Only record-making devices have the power to turn multivalued possibilities in single-valued actualitis" (Herbert 1999, 102).

At the beginning of parts 2A & 2B of his *Histoire(s) du cinema*, Godard writes the title of the film with a hideously squeaky felt marker onto a white carton of his production firm Sonimage. Then the first sentence—a slightly abridged Oscar Wilde quote—appears: "To give an accurate description of what has never occurred is the proper occupation of the historian." That is the open secret of anarchives and anarcheological practice. Both insist on the utopian potential within archaeology. As well, it refers to the search for a world not identical to the one we experience(d). Essentially, this means to oppose the factual space of past presents with—to use Winnicott's term—a *potential space* and let both, however tensely, approach each other. We know this from psychology and philosophy. Not only is the freedom of the individual will compatible with the notion of a preordained world, it inhabits it. One is unthinkable without the other. *Organizzar il trasumanar* (to organize transgression)—with this beautiful paradox Pier Paolo Pasolini described the essential dimensions of his work as poet, painter, and director. The free artistic will evolves from the insight and the sentiment, that the factual, experienced world is limited and full of ruptures, incompletion, and dissonance. It is one of the privileges of art to productively transform the resulting suffering by means of the creative process. Creative energy amounts to the ability to transgress the finitude of our existence into a more open pluriverse.

Bibliography

Blanchot, M. 1971. *L'Amitié*. Paris: Gallimard.

Buckley, B. and J. Conomos, eds. Forthcoming. *Erasure: The Spectre of Cultural Memory*. London: Libris.

Derieux, F., ed. 2007. *Harald Szeemann: Individual Methodology.* Zürich: JRP Ringier and Grenoble: Le Magasin.

Fludd, R. 1617. *Utriusque Cosmi Maioris scilicet et Minoris, Metap(h)ysica, Physica atque Technica Historia. Tomus Primus: de Macrocosmi Historia in duos tractatus divisa.* Oppenheim: Johann.-Theod. de Bry.

Foucault, M. 2014. *On the Government of the Living: Lectures at the Collège de France, 1979-1980.* Translated by G. Burchell. Basingstoke, UK: Palgrave Macmillan. http://dx.doi.org/10.1057/9781137491824

Giannetti, C., ed. 2014. *AnArchive(s) – eine minimale Enzyklopädie zur Archäologie und Variantologie der Künste und Medien.* Köln: Verlag der Buchhandlung Walther König und Edith-Russ-Haus für Medienkunst Oldenburg.

Godard, J.-L. 1980. *Introduction à une véritable histoire du cinéma.* Volume 1. Paris: Albatros.

____.and Y. Ishaghpour. 2005. *Cinema: The Archaeology of Film and the Memory of a Century.* Translated by J. Howe. Oxford: Berg.

Herbert, N. 1999. "Werner Alone Has Looked on Reality Bare: Proposal for a Really New 'New Physics'." In *Ars Electronica: Facing the Future: A Survey of Two Decades*, edited by T. Druckrey with Ars Electronica, 101–106. Cambridge, MA: MIT Press. First published in 1990.

Irrgang, D., ed. Forthcoming. *Forum zur Genealogie des Mediendenkens. Volume 3: Siegfried Zielinski im Gespräch mit Nils Roeller, Knut Ebeling, VALIE EXPORT, Otto Roessler, Hans-Jörg Rheinberger*. Berlin: Kadmos Publishers.

König, G. M. 1963. "Interview with Nam June Paik." *Magnum* 47: 32–34.

Link, D. Forthcoming. *Archaeology of Algorithmic Artefacts.* Minneapolis, MN: Univocal.

Ward, M. 2012. "Restoration Award for Love Letter Writer." *BBC News*, 12 October. Available online: http://www.bbc.co.uk/news/technology-19922414

Zielinski, S. 2015 "Künstlerische Anarchive—Herkünfte als Ressource für Zukünfte." In *Am Rande der Archive*, edited by F. Schmieder and D. Weidner. Paderborn: Wilhelm Fink.

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Collective Re-Excavation and Lost Media from the Last Century of British Prehistoric Studies

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> The archive is traumatic, testimony not to a successful encounter with the past but to a […] "missed encounter with the real"—that is, an allegory of the impossible bridging of a gap. (Ernst 2013, 114)

As we approach the "media" used to record and store archaeological data over the last century or so, Huhtamo's (2010) definition of *media archaeology* as a "historically-attuned enterprise" that involves "excavating forgotten media-cultural phenomena" certainly seems apt to describe the types of processes involved. How do we begin to contemplate the thousands of forgotten archaeological archives hidden away in repositories (for example, see Figure 1) all over the world? These lost worlds where many scholars have toiled away for years, trying to record every detail and bit of information (Figure 2) available about rare and precious archaeological objects in an attempt to bring order and understanding to an almost incomprehensible past seems now like a most Sisyphean task.

The physical "media" of choice was often the index card, a type of heavy paper cut to a standard size, used for recording and storing small amounts of discrete data. Invented

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FIGURE 1. Card Index storage at the British Museum (© J. Wexler CC-BY).

British Association Committee on Bronze Implements

Dear Sir,

We wish to draw your attention to a line of research which we think may prove of interest to you. It has long been realised that various events that happened in the Bronze Age, such as movements of peoples and of trade, have had marked effect upon the subsequent history of Europe, and that it is by the study of these problems we may hope to solve many of the obscurities which meet us at the dawn of the Historic Age.

Experience has shown us that many of these difficulties may be cleared up by an exhaustive study of the distributions of certain types of implements and weapons used at this period. It is true that many of such objects have disappeared, while others lying in museums and private collections entirely lack evidence of the site of their discovery ; but there are quite a sufficient number of well-authenticated specimens to solve most, if not all of the problems involved.

The specimens are, however, scattered throughout a large number of museums and collections. In many cases no adequate description has been published. It has been felt that if a complete *corpus* could be formed, if only in manuscript, a great difficulty would be removed from the path of students of this period.

This Committee has decided, therefore, to compile such a *corpus* in the form of an illustrated card catalogue of all the "metal objects of the Bronze Age in the Museums and Collections in the British Isles," hoping that perhaps their example will be followed by students of the subject in other countries in Europe.

The Committee was formed at the Birmingham Meeting of the British Association in 1913, but owing to the war little progress could be made until 1919, though about 1,000 cards were completed during that period.

FIGURE 2. Newspaper clipping from 1920 calling for public assistance in setting up the National Bronze Age Implement Index (NBAI), by the British Association Committee.

by Carl Linnaeus, the father of modern taxonomy, in the mid-1760s (Müller-Wille and Scharf 2009), it is an Enlightenment tool for classifying the world that became ubiquitous in museums and archives by the Victorian era of extensive collecting.

While stored in a fixed, conventional order (Figure 3), often alphabetically, index cards could be retrieved and shuffled around at will to update and compare information at any time. This employment of a flat surface (a map, a list, a file, a census, the wall of a gallery, a card index, a repertory), has, as Latour has pointed out, commonly enabled one

FIGURE 3. Index cards at the Institute of Archaeology Archive, University of Oxford (© J. Wexler CC-BY).

to "master" a question or to "dominate" a subject (1986, 19). The standardized index card allowed for a "pliable combinability" of texts and objects, produced at a distance from their point of origin, which could be assembled into new networks and relationships (Bennett 2013, 39). This opened up new ways to compare and organize objects, collections, and cultures (see Harrison 2014 for further discussion). For archaeological archives, card indexes tended to be used to classify types of objects, which were then filed according to the typological and chronological information contained in the cards, certainly in the hopes of "mastering" a time period or object type.

The cards and documents illustrated here come from the National Bronze Age Index (NBAI) stored at the British Museum (BM), developed in 1913 as one of the first catalogues to document British and European prehistory on a large scale. Known as the "principal instrument of research in the British Bronze Age", the main concept behind the creation of the Index was the idea that by compiling a corpus of all Bronze Age

metal objects found in the various museums and collections across the UK, it would be possible for the first time for researchers to study "the movements of peoples and trade through the exhaustive study of the distributions of certain types of implements and weapons used in the period". This corpus took the form of an illustrated card catalogue (employing 25 × 18 cm Globe-Wernicke Co. standard filing cards), with each index card detailing object find spots and types, alongside detailed line drawings and a wide range of further information about the object's context of discovery, illustrated below. For over 80 years, it represented the highest standards of Bronze Age object studies, eventually containing around 30,000 double-sided cards, and was worked on by numerous well-known prehistorians and former BM curators, most famously Christopher Hawkes in the 1930s–1960s and Stuart Needham in the 1970s–1990s.

The amount of information contained on such cards could be extensive and intriguing. Often we see a tension exhibited in these cards between systematization (Figure 4) and free-form narrative (Figure 5), beautiful typological drawings and quick sketches (Figure 6), classification and creativity. The human hand, though, is always present in what we see, bringing to mind Harris's conception of an archive as

> *a crucible of human experience, a battleground for meaning and significance, a babel of stories, a place and a space for complex and ever-shifting power-plays. Here one cannot keep one's hands clean*.
>
> (Harris 2002, 85)

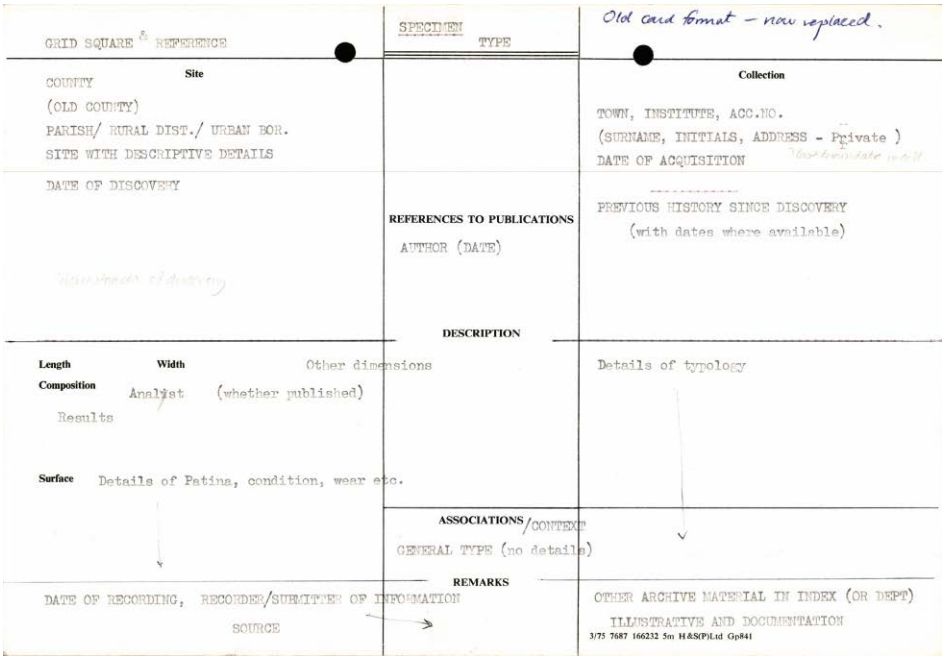
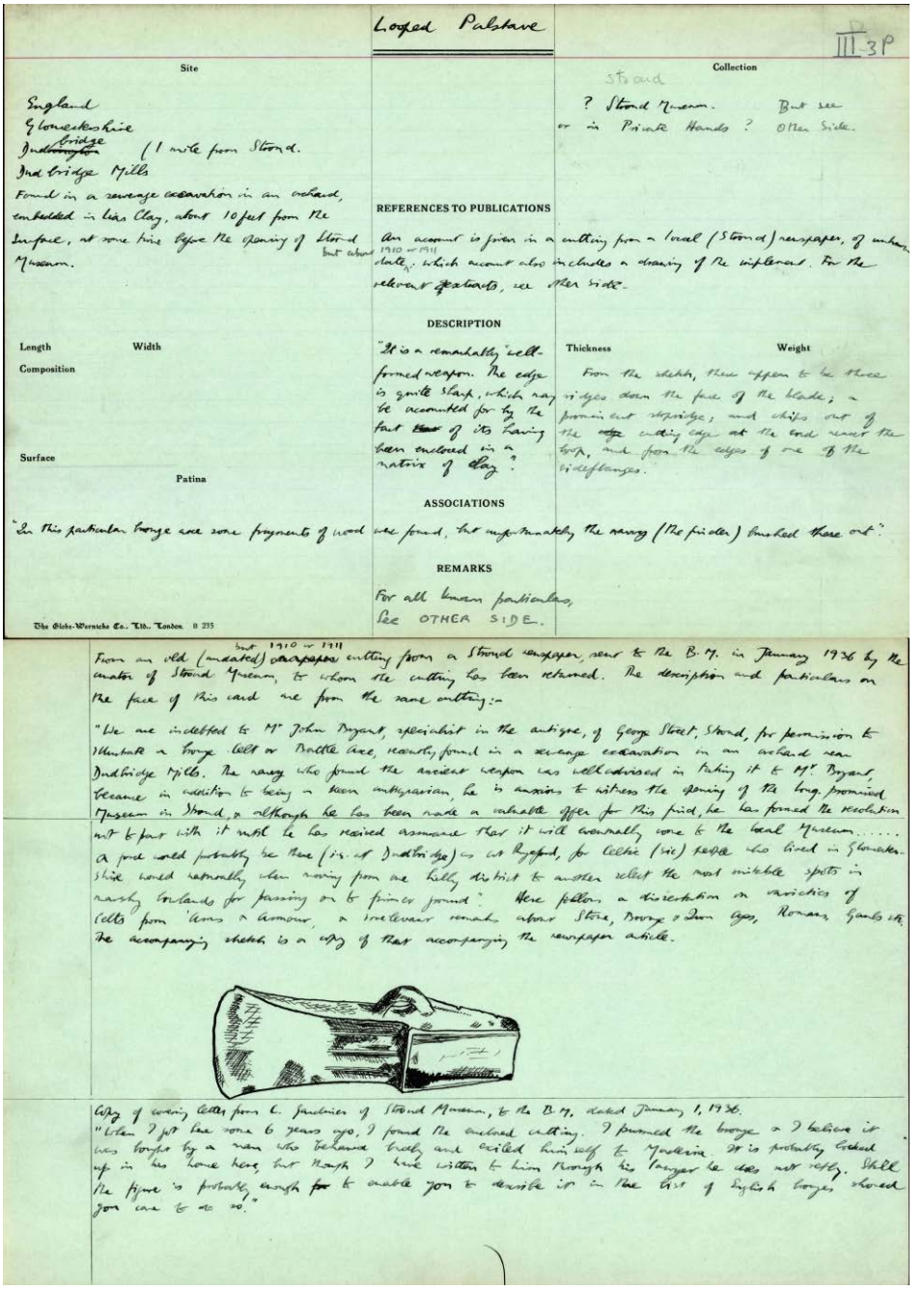


FIGURE 4. Systemized National Bronze Age Index (NBAI) card fields (© Trustees of the British Museum CC-BY).



Looped Palstave

III-3P

Site

England
Gloucestershire
Dudbridge (1 mile from Stroud.
Dud bridge Mills
Found in a sewage excavation in an orchard, embedded in Lias Clay, about 10 feet from the surface, at some time before the opening of Stroud Museum. but about 1910 or 1911

Collection

Stroud

? Stroud Museum. But see or in Private Hands ? Other Side.

REFERENCES TO PUBLICATIONS

An account is given in a cutting from a local (Stroud) newspaper, of undated; which account also includes a drawing of the implement. For the relevant extracts, see other side.

DESCRIPTION

Length Width

Composition

Surface

Patina

"It is a remarkably well-formed weapon. The edge is quite sharp, which may be accounted for by the fact that of its having been enclosed in a matrix of clay."

Thickness Weight

From the sketch, there appear to be three ridges down the face of the blade; a prominent stop-ridge, and skirts out of the cutting edge at the end near the loop, and from the edges of one of the side flanges.

ASSOCIATIONS

"In this particular bronze axe some fragments of wood were found, but unfortunately the sawing (the finder) touched these out."

REMARKS

For all known particulars, See OTHER SIDE.

The Globe-Wernicke Co., Ltd., London. B 235

From an old (undated) newspaper but 1910 or 1911 cutting from a Stroud newspaper sent to the B.M. in January 1936 by the curator of Stroud Museum, to whom the cutting has been returned. The description and particulars on the face of this card are from the same cutting:-

"We are indebted to Mr John Bryant, specialist in the antique, of George Street, Stroud, for permission to illustrate a bronze celt or battle axe, recently found in a sewage excavation in an orchard near Dudbridge Mills. The navvy who found the ancient weapon was well advised in taking it to Mr Bryant, because in addition to being a keen antiquarian, he is anxious to witness the opening of the long promised Museum in Stroud, & although he has been made a valuable offer for this find, he has formed the resolution not to part with it until he has received assurance that it will eventually come to the local Museum..... A find would probably be there (i.e. at Dudbridge) as at Rydeford, for Celtic (sic) people who lived in Gloucestershire would naturally when moving from the hilly district to another select the most suitable spots in marshy lowlands for passing on to primeval ground." Here follows a dissertation on varieties of Celts from 'Arms & Armour, & Intellectual remarks about Stone, Bronze & Iron Ages, Romans, Gauls etc. The accompanying sketch is a copy of that accompanying the newspaper article.

Copy of covering letter from C. Gardiner of Stroud Museum, to the B.M. dated January 1, 1936.

"When I got the one 6 years ago, I found the enclosed cutting. I promised the bronze & I believe it was bought by a man who behaved badly and exiled himself to Moscow. It is probably locked up in his home here but though I have written to him through his lawyer he does not reply. Still the figure is probably enough for to enable you to decide it in the list of English bronzes, should you care to do so."

FIGURE 5. One of the index card records with extensive narrative from the National Bronze Age Index (NBAI) (© Trustees of the British Museum CC-BY).

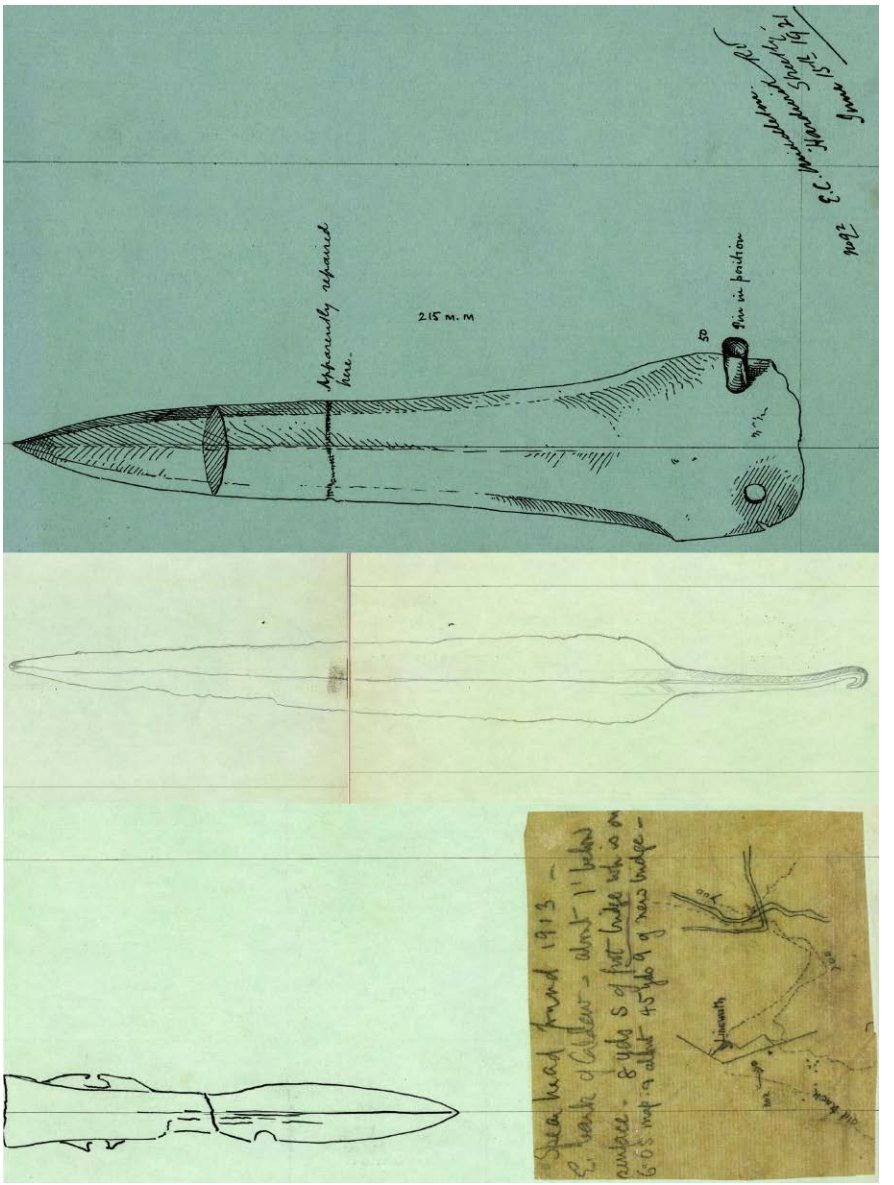


FIGURE 6. Variations in Index card illustrations from sketches to measured typographic drawings (© Trustees of the British Museum CC-BY).

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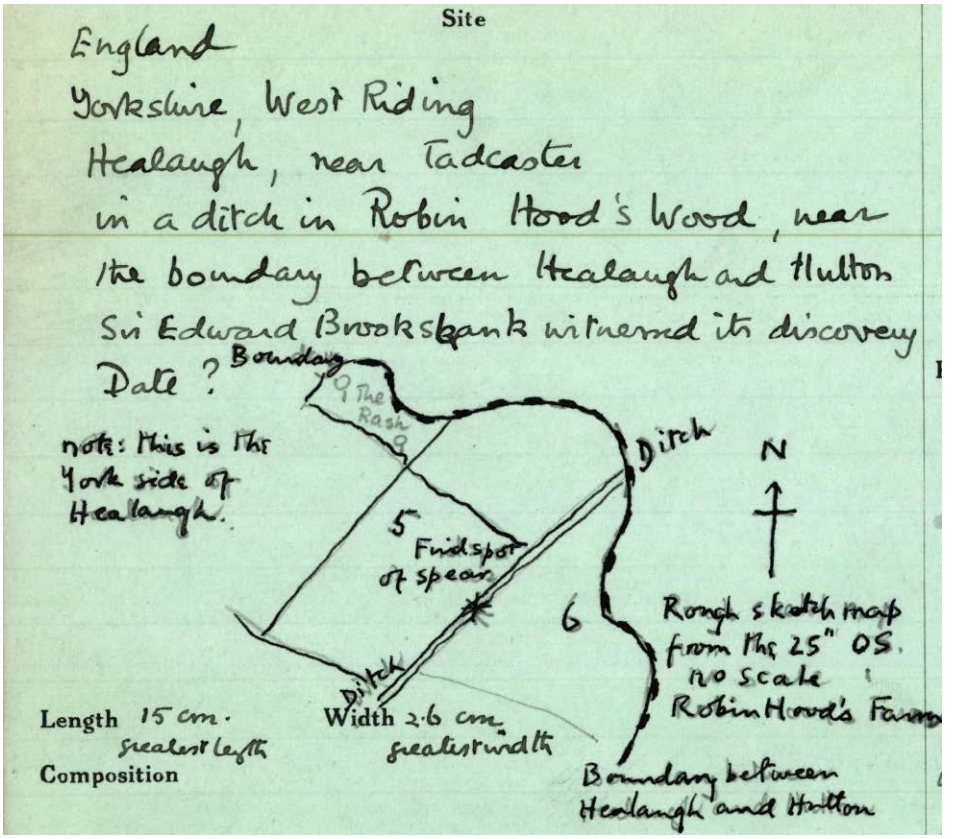

FIGURE 7. "X" marks the spot. Detail of a NBAI card, showing the findspot of a spearhead (© Trustees of the British Museum CC-BY).

Beyond recording typological data, often these cards contain additional information (Figure 7) offering fascinating insights into the circumstances of the object's discovery.

There is serendipity in the archives, as well. We have cards that record donations by Queen Victoria (Figure 8) to the BM of a bronze axe found in Windsor Great Park in 1866. Another card (Figure 9) records an object discovered in 1808 at Osmington Hill, Dorset whilst cutting a hill figure dedicated to King George III, who would often pass by on his way to his seaside residence at Weymouth. In these cases, and many others, the cards' record of historical moments or connections to significant personages seems to eclipse their primary function as a record of archaeological artefacts.

The cards also begin to act as a sort of proxy for the objects themselves, an idea of materiality. The records are descriptions of something material on a medium that is a "material" itself, but in reality it is the information itself that is the historical artefact and the main objects of study (Newman 2011, 9). Consequently, the record of the human interaction (Figure 10) with these archives proves to be just as fascinating to study as the information actually contained in the records, as contributors to the field of history of archaeology can certainly attest to (for example, see Murray 2014).

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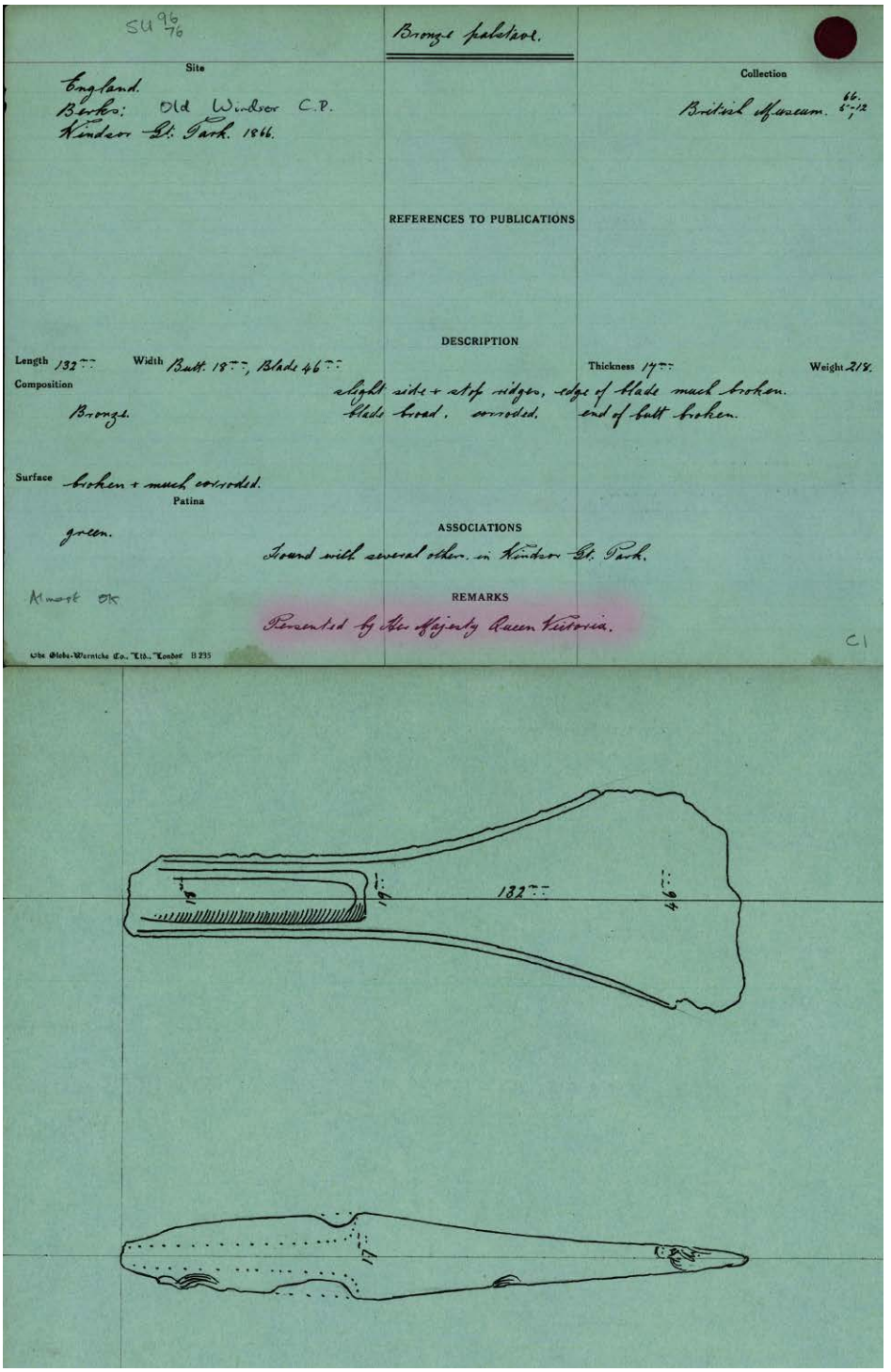

FIGURE 8. NBAI card recording the donation of a bronze palstave axe found in Windsor Park in 1866 and donated by Queen Victoria to the British Museum (© Trustees of the British Museum CC-BY).

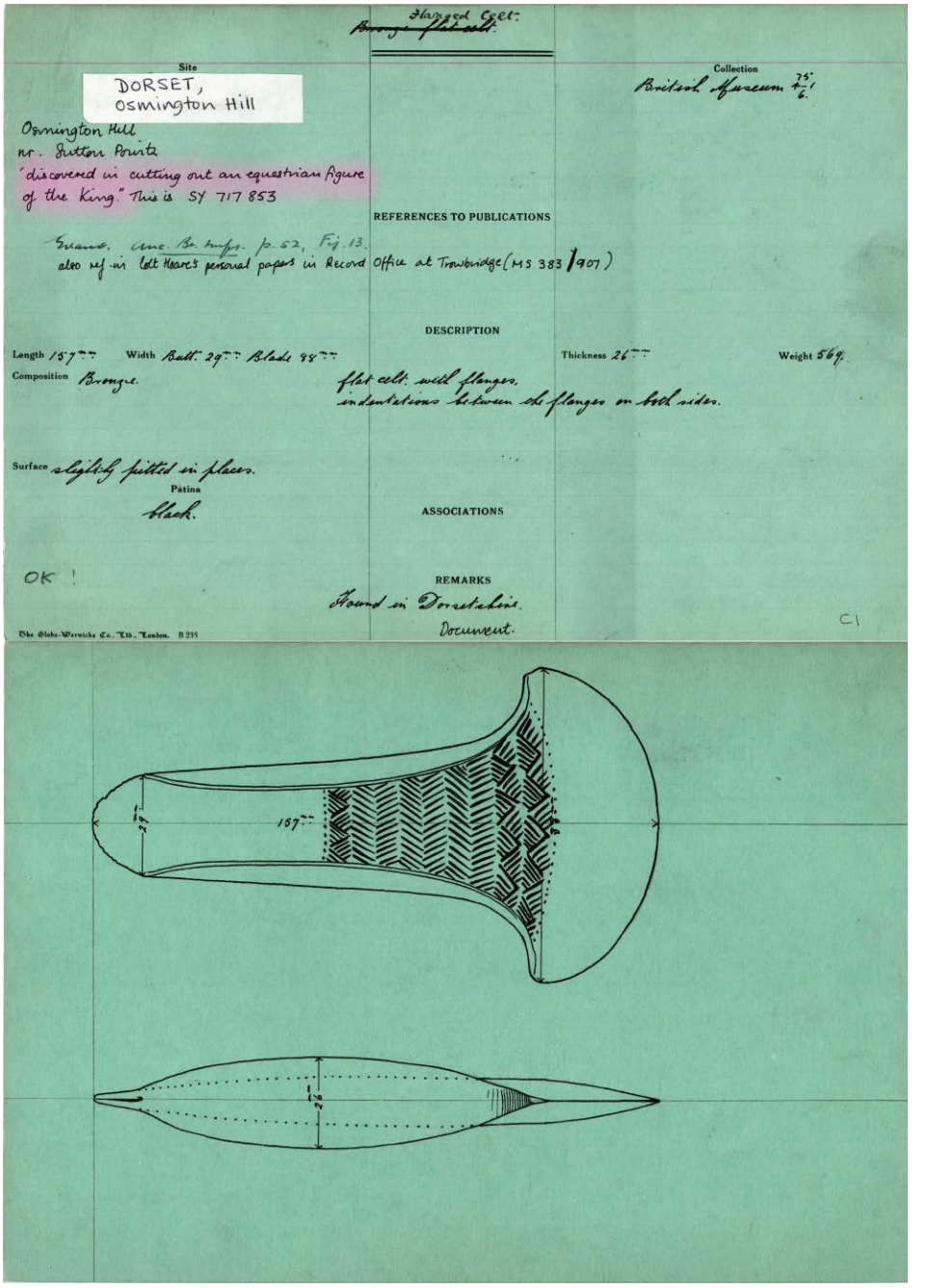

FIGURE 9. NBAI card recording a flanged axe "discovered in cutting out an equestrian figure of the king" from Osmington Hill, Dorset (© Trustees of the British Museum CC-BY).

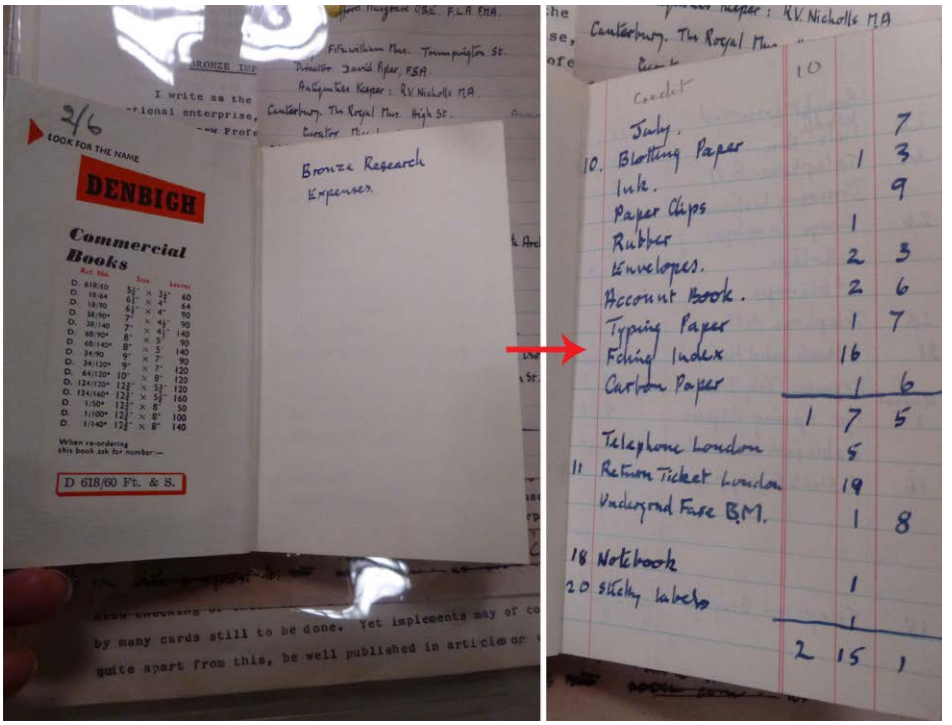

FIGURE 10. Hawkes's book recording "Bronze Research Expenses" in connection to his work on the Index at the Institute of Archaeology's Archive, University of Oxford (© J. Wexler CC-BY).

Along with the connected archival material, the cards exhibit the curatorial practices at the time of recording. Many have been altered numerous times as classification schemes and recording procedures have changed over time, documenting not only the basic archaeological information but also the history of shifting archaeological practices.

The Index varied between being a public reference collection to being a tool for private research largely depending on the whims of the person and institutions in charge of it. This is most obviously played out from 1955–1965, when the Index was loaned from the BM, where it was publically accessible, to the Institute of Archaeology, Oxford University under the supervision of Professor Christopher Hawkes, the new Chair of European Archaeology. The reasoning behind this move was that he had been in charge of the Index when he was an Assistant Keeper in the Department of British and Medieval Antiquities at the BM and he was "wishing to supervise its re-classifying, indexing, and augmentation".[1] While Hawkes did greatly enhance the Index, it very much became his personal research collection, kept away from both the public and other scholars, and which he used to pursue his theories of Bronze Age metalwork chronologies (see Bradley 2013 for further discussion). This is most visibly seen (Figure 11) in his reorganization of the entire Index

1. British Museum Bronze Age Index archive history file.

FIGURE 11. A box of index cards exhibiting Hawkes's schematic reorganization of the Index from 1954–1965 (© J. Wexler CC-BY).

according to his (unpublished) typological scheme, the particulars (Figure 12) of which have only recently been rediscovered and catalogued at the Institute of Archaeology's archive. The Index became a public reference collection once again after being returned to the BM in 1966, although it was not actively researched again until 1973 when Stuart Needham took over its stewardship, and was largely abandoned by the 1990s.

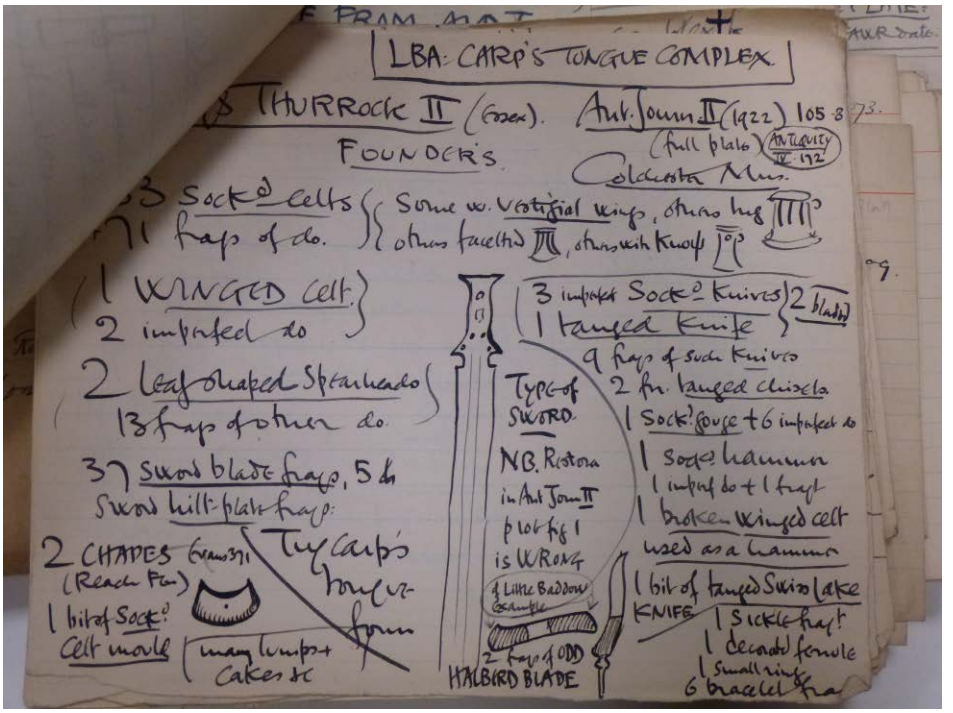

FIGURE 12. Hawkes's reworking of Late Bronze Age sword types, Institute of Archaeology's Archive, University of Oxford (© J. Wexler CC-BY).

Switching "Media" from Old to New

The multi-layered history of card indexes in archaeological studies is equally intriguing to study and complicated to deal with. How can we approach or, indeed, "excavate" these antiquated media sources to both draw meaning and data from these overlooked archives as well as make them relevant to modern communities?

Index cards continue to act as "mobilization devices", allowing access to information and data about a physical object without actual interaction with this object in the physical world (Latour 1986, 10). However, although indexes are a good example of a type of mustering technology in which dispersed items of knowledge are codified and brought into the centre for agonistic (e.g. academic, imperial, economic, nationalist) arguments, in reality the politics of aggregation and dispersal often makes these indexes largely inaccessible. The widespread notion that archives are, as Parikka (2013:1) states, "slightly obsolete and abandoned places where usually the archivist or the caretaker is someone swallowed up in the dusty corridors", often hidden away from the public is not completely false, unfortunately. In the case of the NBAI, for example, although it has been moved around over the last hundred years, as mentioned previously, it has remained for much of its existence in a largely inaccessible, off-site BM storage facility where its visitors' book records only six visitors over the course of 30 years (though conspicuously this does include everyone who has ever written significant books on

Bronze Age metalwork during that period). Even if this Index and others were more accessible, specialist knowledge would still be needed to even begin to approach such large behemoths of information. Wide-scale dispersal, therefore, has not been generally possible but new forms of media and digital engagement perhaps now offer us innovative inroads into some of these issues (for example, see Bonacchi 2012; Richardson 2013).

As part of the MicroPasts Project, the digitization of the entire Bronze Age Index has been undertaken. This project is focused on demonstrating how the interplay between reassessing archaeological archives and the employment of new technologies can open up new avenues of research and public engagement. The MicroPasts project employs an open-source crowd-sourcing platform (Figure 13) in order to solicit help from members of the public, also known as "citizen scientists" or "citizen archaeologists", to assist us with transcribing these cards (Bevan *et al.* 2014; Bonacchi, Pett and Keinan-Schoonbaert 2014; Bonacchi, Pett, Keinan-Schoonbaert *et al.* 2014; Doherty 2014; Keinan-Schoonbaert 2014).[2]

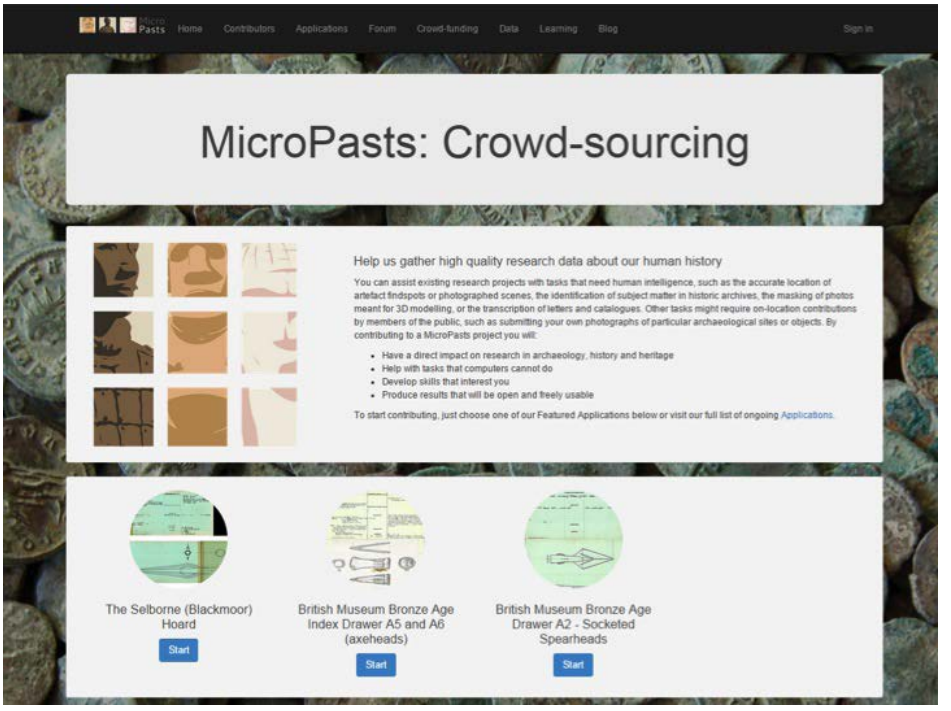

FIGURE 13. Crowd-sourcing platform for MicroPasts (http://micropasts.org), each new "app" represents one "drawer" of index cards.

Reflecting the existing physical organization of the Index, pictured in Figure 1, each "app" generally represents one "drawer" (e.g. Drawer A9: Palstaves) organized by object type and geographical location, and each individual card in the drawer is scanned at

2. For the MicroPasts Project and the crowd-sourcing programme see http://micropasts.org and http://crowdsourced.micropasts.org

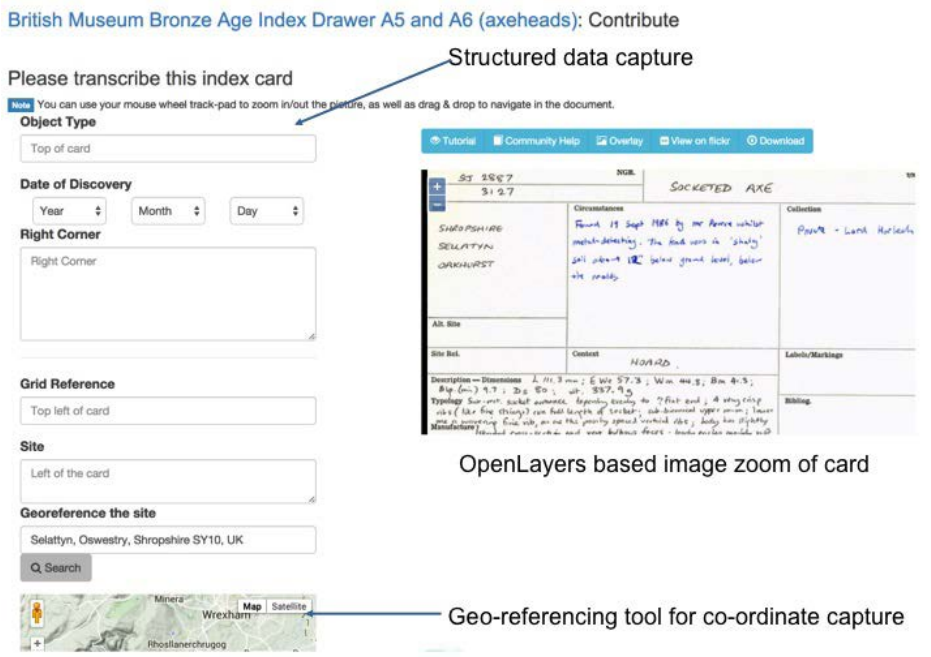

FIGURE 14. MicroPasts' interface for transcribing data from the digitized index card.

a high resolution, available via our Flickr site[3] and stored in three secure locations for backup integrity. For each transcription app, the MicroPasts collaborators are prompted to fill in a structured field interface (Figure 14) based on the contents of the cards, and the completed transcribed data is available for download from the project's website under an open license. These data will eventually be incorporated into the Portable Antiquities Scheme's database,[4] which on its own includes over one million objects (of which over 15,000 are attributed to the Bronze Age) discovered by the public in England and Wales, eventually making the NBAI records not only easily accessible to the public but also creating possibly the largest national database of prehistoric metal finds anywhere in the world.

In a way, we are attempting to fulfill the original intentions of the creators of the NBAI from the early twentieth century (Figure 2), by once again calling on the public's help with documenting and transcribing the archive as well as making the Index a fully renewed publicly-accessible resource. Crowd-sourcing, therefore, can be seen as an act of knowledge aggregation by the dispersed-many rather than the aggregated-few. These processes can be connected to the concept of the "collaborative museum", where the museum can be viewed as a series of "anthropological assemblages mobilized through existing and emerging scientific-administrative and public-civic apparatuses" creating

3. http://flickr.com/photos/micropasts
4. https://finds.org.uk

new social actions and networks (Bennett 2013; Harrison 2014, 231). By changing the medium of the Index via digital technologies, we are removing the institutional controls, for better or worse, and distributing the agency of this data.

Why are people so intrigued to help with this project? While this is something we will be looking at more closely in the future, perhaps it is because it removes the "remoteness" of the archives both symbolically and physically. By digitizing records formerly only accessible to a few experts and museum staff, they are suddenly becoming democratized, open-access resources for anyone to engage with, albeit with the existing but, arguably, progressively shrinking, limits of a digital divide. It took a new infrastructure of communicating realities—the impact of digital media—to put this critique of historical discourse into media-archaeological terms and practice. In an age of renewed archival fever, the re-aggregation and digital mustering of old archives, along with the virtual re-aggregation of object collections via 3D proxies (Figure 15), is also a very popular act. Co-production of archaeological data not only removes the traditional idea of "authority" (Richardson 2013), opening up the possibilities for multi-vocal engagement with the

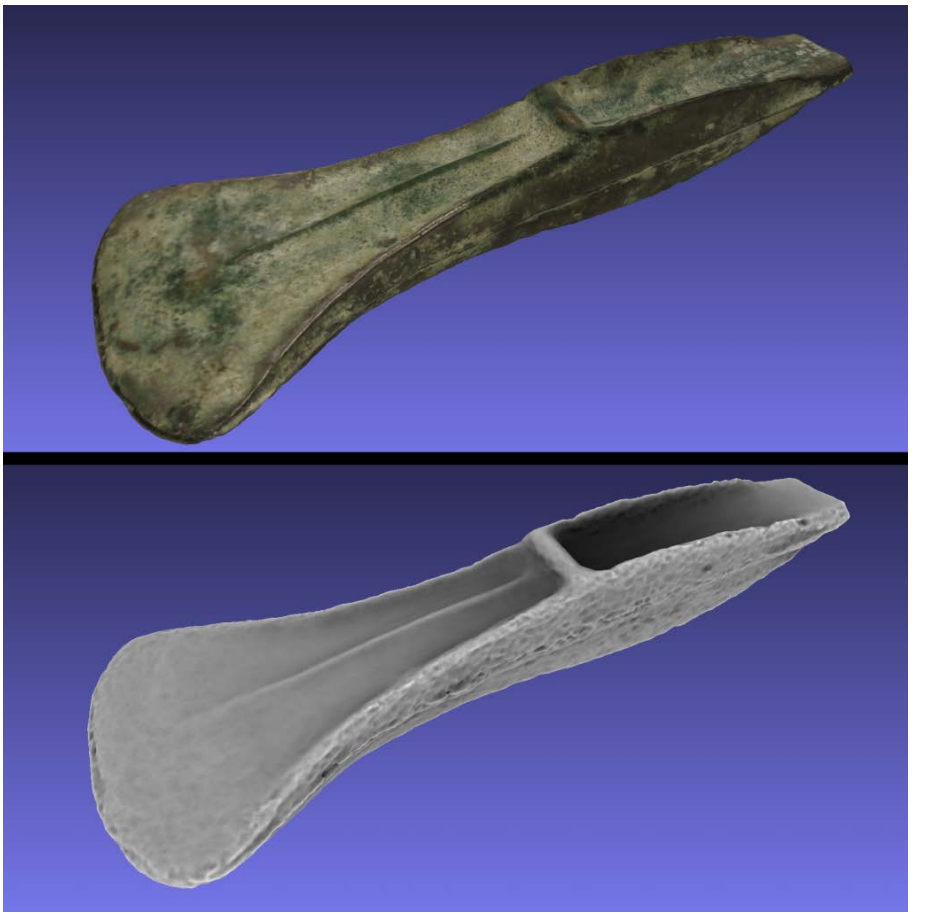

FIGURE 15. A 3D model of a Bronze Age palstave shown in the MicroPasts WebGL 3D viewer (©Trustees of the British Museum CC-BY).

archival record; it gives people a sense of what archaeologists and archivists actually do and the means to actively help them with their work. On the MicroPasts forum, one of the users, for example stated:

> Part of the appeal (of the transcriptions) for me is seeing how the original authors put a little bit of themselves into their record cards, and obviously took pride in analyzing and recording the artefacts. I'm just completing a card now in which the patina is described as "Beautiful apple green".
>
> (curiouscraig42 2014)

This engagement and ongoing dialogue about the Index also create new archival records of human interaction via social media (Twitter, Facebook), adding to our archival layer cake.

While this switch in media from a physical, paper format to a digital database for archiving archaeological data not only makes this information increasingly Cartesian—e.g. mathematical objects recorded using binary code—the forms in which data are stored and in which they are presented become distinct entities, unlike their paper antecedent (Ernst 2013, 83, 93, 115). Now the image on the screen is just a digital representation or surrogate of the data encoded within, useful as a tool for further research and data processing but far removed from its original format. With growing digital accessibility comes the increasing responsibility to preserve and update these digital archives as well as the paper ones they represent, especially if we view the digital record as a modern piece of material culture (Newman 2011, 9). Ultimately one type of media does not completely replace the other, but greater utilization of digital media simply changes and extends the terms of engagement, accessibility, and the flow of information from antiquated archaeological archives to the community and back again.

References

Bennett, T. 2013. "The 'Shuffle of Things' and the Distribution of Agency." In *Reassembling the Collection: Ethnographic Museums and Indigenous Agency*, edited by R. Harrison, S. Byrne, and A. Clarke, 39–60. Santa Fe, NM: School for Advanced Research Press.

Bevan, A., D. Pett, C. Bonacchi, A. Keinan-Schoonbaert, D. Lombraña González, R. Sparks, J. Wexler and N. Wilkin. 2014. "Citizen Archaeologists. Online Collaborative Research about the Human Past." *Human Computation* 1(2): 183–197.

Bonacchi, C., ed., 2012. *Archaeology and Digital Communication: Towards Strategies of Public Engagement*. London: Archetype Publications.

____., A. Bevan, D. Pett and A. Keinan-Schoonbaert. 2014. "Crowd- and Community-fuelled Archaeology. Early Results from the MicroPasts Project." *Proceedings of the 42nd Annual Conference on Computer Applications and Quantitative Methods in Archaeology, CAA 2014*, edited by L. Costa, F. Djindjian, F. Giligny and P. Moscati, 1–10. Amsterdam: Amsterdam University Press.

____., A. Bevan, D. Pett, A. Keinan-Schoonbaert, R. Sparks, J. Wexler and N. Wilkin. 2014. "Crowdsourced Archaeological Research: The MicroPasts Project." *Archaeology International* 17: 61–68.

Bradley, R. 2013. "Time Traveller: Montelius and the British Bronze Age after 100 Years." In *Counterpoint: Essays in Archaeology and Heritage Studies in Honour of Professor Kristian Kristiansen*, edited by S. Bergerbrant and S. Sabatini, British Archaeological Reports, International Series 2508: 649–653. Oxford: Archaeopress

curiouscraig42 [C. Horton] (2014) Comment on forum thread "Just a Silly Thought." 4 June. Available online: http://community.micropasts.org/t/just-a-silly-thought/140/6

Doherty, J. 2014. "Crowdsourcing the Bronze Age." *Pybossa* 5 June. Available online: http://pybossa.com/blog/2014/06/05/crowdsourcing-the-bronze-age/

Ernst, W. 2013. *Digital Memory and the Archive*. Minneapolis: University of Minnesota Press.

Harris, V. 2002. "The Archival Sliver: Power, Memory, and Archives in South Africa." *Archival Science* 2: 63–86.

Harrison, R. 2014. "Observing, Collecting and Governing 'Ourselves' and 'Others': Mass-Observation's Fieldwork Agencements." *History and Anthropology* 25(2): 227–245.

Huhtamo, E. 2010. "Natural Magic: A Cultural history of Moving Images." In *The Routledge Companion to Film History*, edited by W. Guynn., 3–15. Abingdon, UK: Routledge.

Keinan-Schoonbaert, A., 2014."MicroPasts – An Innovative Place for Progressing Research." *British Archaeology* 139: 50–55.

Latour, B. 1986. "Visualisation and Cognition: Drawing Things Together." In *Knowledge and Society: Studies in the Sociology of Culture Past and Present*, *Volume 6*, edited by H. Kuklick and E. Long, 1–40. Greenwich, CT: JAI Press.

Müller-Wille, S. and S. Scharf. 2009. *Indexing Nature: Carl Linnaeus (1707-1778) and his Fact-Gathering Strategies*. *Working Papers on The Nature of Evidence: How Well Do 'Facts' Travel?* 36/08. London: Department of Economic History, London School of Economics. Available online: http://www.lse.ac.uk/economicHistory/pdf/FACTSPDF/3909MuellerWilleScharf.pdf

Murray, T. 2014. *From Antiquarian to Archaeologist: The History and Philosophy of Archaeology*. Barnsley, UK: Pen & Sword Archaeology.

Newman, M. 2011. "The Database as Material Culture." *Internet Archaeology* 29. Available online: http://dx.doi.org/10.11141/ia.29.8

Parikka, J. 2013. "Archival Media Theory: An Introduction to Wolfgang Ernst's Media Archaeology." In *Digital Memory and the Archive*, edited by W. Ernst, 1–22. Minneapolis: University of Minnesota Press.

Richardson, L. 2013. "A Digital Public Archaeology?" *Papers from the Institute of Archaeology* 23: Art. 10 (online edition). http://dx.doi.org/10.5334/pia.431

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Hemerochronia, or, Take a Walk on the Wild Side of Time: Sideline Snippets on Media Archaeology

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Media archaeology presents the latest instalment in a 200-year sequence of illicit affairs pursued by restless disciplines eager to escape their domestic confinement. It is a lively story with all the trappings of a 19th-century boulevard comedy and a touch of Jane Austen:

> *Many years ago—in fact, as far back as Austen's gentry days—there was a stately manor called The Humanities. At the time (and many years thereafter) it was ruled over by a slightly Pompous Father known as History. Pompous Father did not start out in this exalted position. He had pushed aside Dotty Grandmother (a.k.a. Theology) and confined her to the basement; and his subsequent rise to lordly status relied on a steady stream of primarily German valets teaching him how to behave in more dignified fashion. In time, Pompous Father came to be surrounded by a bevy of spritely daughters and stepdaughters: all of them very bright and very ambitious, and therefore very bored with life in the stuffy manor. One day a Handsome Stranger called Archaeology arrived in the neighbourhood. He had potential and was unattached; and since it is a truth universally acknowledged that a young discipline in possession of cultural capital must be in want of interdisciplinary collaboration, he set the sisters' hearts aflutter. One after the other, they proceeded to seduce him. The first tryst involved Spinsterish Daughter a.k.a. Philosophy, but it was such a blink-of-the-eye affair that hardly anybody witnessed it. The second affair united Handsome Stranger with Erratic Stepdaughter, whom we know as Psychoanalysis. It lasted a bit longer, and though it was for the most part restricted to the exchange of delicate metaphors, nearby villagers fondly remember it to this day. By contrast, the third affair, with Liberated Daughter (a.k.a. Cultural Studies), was a no-holds-barred, on-again-off-again romance that hit every hayloft in the surrounding. Indeed, it went on for so long that it bracketed famous affair #4 with Francophone Cerebral Daughter (History of Ideas), a liaison which many say affected Handsome Stranger more deeply than any other. And then there was—or rather: is, since we've arrived in the present—the ongoing dalliance with Scrappy Stepdaughter, whom we know as Media Studies.*

If this were no more than a steamy chronicle of interdisciplinary elopements, things would be easy. But in ways that anticipate the snippets to follow, matters become complex and threaten to defy conventional plotlines. The affairs have been going on

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for two centuries, so it is doubtful whether Handsome Stranger was always one and the same Handsome Stranger—maybe earlier trysts were carried out with his father or grandfather? There are hints of incest, for it appears that Handsome Stranger and Scrappy Stepdaughter are very closely related. To make matters worse, evidence is mounting that Scrappy Stepdaughter is in fact the result of a hushed-up encounter between Dotty Grandmother and a farmhand and therefore maybe the rightful owner of the mansion. Anyway, in the end—well, we haven't reached the end yet.

Knut Ebeling's 767-page study *Wilde Archäologien* (2012) offers a slightly more extensive and judicious account of these topsy-turvy affairs. Each sister receives her own chapter and appropriate genitive designation: Kant and the archaeology of metaphysics; Freud and the archaeology of the soul; Benjamin and the archaeology—he preferred *Urgeschichte*—of modernity; Foucault and the archaeology of knowledge; Kittler and the archaeology of media. If we superimpose Ebeling's diachronic analysis on recent synchronic studies, such as Jussi Parikka's *What is Media Archaeology?* (2012), the result is a crosshairs enabling us to target an important affect that ties together these compound archaeologies. It is already present in Kant, the Spinsterish Daughter (and equally spinsterish philosopher). In trying to give an account of the unfolding of Western metaphysics, Kant resorted to archaeology to make the case that there cannot be a *history* of metaphysics, since you cannot give an empirical account of the transcendental. History narrates, archaeology describes; history elaborates sequence, archaeology traces structures; history revolves around the relationship between events and interpretations, archaeology centres on the relationship between conditions and unfoldings. Wild archaeologies, then, are as much appropriations of archaeology as they are rejections of historiography. It is the daughters' rebellion against Pompous Father's stuffy regime. We are dealing with an affect against *hemerochronia* (from Greek *hémeros* for tame or cultivated); that is, against the ongoing attempt to tame time and have it jump through the hoops of established historiographical narratives.

No wild archaeology manifests this tendency more clearly and vociferously than media archaeology. Scrappy Stepdaughter, especially when she puts on a German accent, is Pompous Father's most rebellious offspring. The effect appears in the three different ways in which media archaeology is currently inflected. There are no clear boundaries between them; consider the following three inflections areas of increased density in a broad conceptual spectrum.

First, media archaeology is the excavation, resuscitation, and maybe even redemption of media dead, lost, poor, unwashed, forgotten, discarded, silenced, repressed, or simply too inconspicuous to have been noticed before. We have plural narratives, emphatically de-capitalized media histories from the bottom up and inside out, alternative micro-archaeologies, technological counter-histories, media uchronias—all taking aim at the established capital-H Media Histories emanating from classrooms and cable TV. But as rebellious as they may be, from a narratological point of view they are still pretty conventional. The winners and losers change, the emplotments do not. Scrappy Stepdaughter is redesigning her rooms, she has not yet deserted or levelled the mansion.

The radical implications of this media-archaeological inflection emerge in Parikka's most recent work, which may be described as a descent into *dust and debris*. Dust, that

amorphous substance of uncertain parentage accumulating in the corners and recesses where nature and culture intersect, is a splendid signifer to highlight what happens when media archaeology, going beyond the excavation of all the overlooked media, extends into media *geology*. The line between the two disappears in its crossing: gray ecologies of documents and artefacts merge with green ecologies of soil and stone. Yet these are no longer only ecologies of mutually beneficial interactions, but also of mutually harmful entanglements. As Parikka emphasizes, our growing, multi-layered media structures are discarding so much debris that it requires an archaeological approach. Media become troublesome matter that needs to be dug through – much like the landfills targeted in William Rathje's garbology. There appears to be an intriguing chiasm at the heart of the relationship between archaeology and media archaeology: while archaeologists are increasingly treating their matter as media, media theorists are increasingly treating their media as archaeological matter.

Media archaeology's second inflection is the technological update of Foucault's archaeology of knowledge. Scrappy Stepdaughter and Handsome Stranger are replaying the affair the latter had with Cerebral Daughter. Or, to provide the proper names, Kittler is extending and—in every conceivable sense of the word—grounding Foucault. As is well known, the key concept is the (in Foucault's own assessment) "rather barbarous" *historical a priori*, which Kittler and others updated into a *technological a priori*, but which is in any case an *archival a priori.* As is equally well known, the term "archive" not only signifies a depository but also successive sets of ruling conditions that are both *within* history in as far as they each on their own determine a finite regime of time, and *without* in as far as they (1) defy attempts to weave together successive regimes into a continuous narrative, and (2) raise the epistemological quandary of how one is to reflect on the conditions that determine such reflection in the first place. Foucault—this is a key attraction of his darkly glamorous prose—is a great deal more eloquent when explaining what things are *not* than what they are. Hence it is at times difficult to navigate his meandering negations; but the key dynamic here is the distinction between the ongoing discontinuity associated with archaeology and the changing continuity associated with history.

To be sure, Foucault's wild archaeology does not simply turn time into space. It does "not set out to treat as simultaneous what is given as successive. […] What it suspends is the theme that succession is an absolute" (1972, 169). Very well. But it is at times difficult to avoid the suspicion that these sophisticated elaborations, especially in the hands of those pillaging Foucault's toolbox, are haunted by temptations of immediacy. Could it be that the appeal to archaeology is also driven by the—somewhat naive—perception that monuments and ruins are immediate irruptions of the past into the present? That archaeology therefore promises an absence of mediation, a liberating escape from the domestications of historiography?[1] Freud's fetish of the shovel (which is not a phallus but, really, is

1. Of course the opposite is just as true. The presence of the past in a decayed shape which the past did not have in mind—call it the Ozymandias effect —allows for an equally decisive rupture (cf. Rieger 2014, 137). In this case, the termination of mediation is linked to the power of the present over the past. Think, here, of power as described by Elias Canetti in *Crowds and Power as Survival*. To paraphrase: excavations are battles in and across time; and the supreme moment of power is at the end of the battle: all the others are dead, I am alive.

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a shovel) is well known and encapsulated in his metaphoric praise of non-metaphorical archaeological matter: *Saxa loquuntur!* (The stones speak!) The unconscious with its scars from decades past is not subject to time: it *is* (and emanates) here and now. At the risk of drawing the ire of past academic decades, I would argue that in this respect media archaeology resembles the great trauma fetish of the 1990s (as well as the concurrent body fetish). Trauma, for all its pain, still indicated some kind of direct contact, a time-defying short-circuit that cuts through all mediation. Archaeology—at least a somewhat amateurish conceptualization of archaeology—appears to promise something similar. It is as if we never quite left the 1:1 universe of Heinrich Schliemann. He was, after all, an accountant and businessman, for whom numbers translated as directly into money and goods as Homer's words into historical reality. Some layers of media archaeology—Kittler's "cleartext" obsession is the most flagrant example—are still losing the battle against the closely related temptations of immediacy and literalness. But this ahistorical construction deprives archaeology of its own history. The archaeology Kant had in mind differed from that which obsessed the hobby archaeologist Freud; and it had changed fundamentally by the time Foucault appeared. Handsome Stranger wasn't always that handsome; and he wasn't always a stranger.

The third, most radical instantiation, for which the work of Wolfgang Ernst may serve as an example, consists of a further radicalization of the anti-hemerochronic impulse (see especially Ernst 2012, 347–453; further see Winthrop-Young 2015). It effectively installs media as their own archaeologists and thereby removes the human subject. Analogue and digital media do not only allow for the time-axis manipulation of stored data; the enacting performance—in bad Heideggerian English: the presentizing *Vollzug*— of past media effectively undercuts the hemerochronic channelling of time that separates past and present. The archaeology of media insists that the time of media is no longer history.

At this point (if not earlier), historians will interject that this view of their trade is no less egregious a simplification than the corresponding romanticization of archaeology. Media archaeologists seem to be behaving like rebellious teenagers who need their parents to be boorish tyrants. Pompous Father, however, was never that pompous. Clearly, historians have been willing to engage in alternate chronicities. Think of Fernand Braudel's tripartite division of time into the environmental *histoire immobile* at the bottom of history, the sluggish cycles of material culture in the middle, and frothy human events at the top, or of Braudel's non-linear update by Manuel DeLanda (1997). (And meanwhile Dotty Grandmother in her basement is clamouring that all this, somehow, is already at play in Thomas Aquinas with his temporal layers made up of God's eternity, the *aevum* of saints and angels, and the temporal existence of mere mortals.) But this media archaeology goes further. What we are dealing with is the perspective that time may dissolve into a flash of strings and bursts in ways that recall the dissolution of space and matter on the smallest subatomic scale. Time becomes a strange amorphous beast: folded, intersected, and recursively processed; and the media archaeologist emerges as a time whisperer in synch with the alien or untamed—the xeno- or agriochronic—noise of time.

"At its best," Parikka writes, media archaeology establishes "a problematization and a rethinking of such fundamental questions as what even counts as media" (Parikka 2012, 79). Exactly. And more: it raises the question of what counts as time, and to what

extent time—literally and metaphorically—counts. Scrappy Stepdaughter leaves the mansion to take a walk on the wild side of time.

Bibliography

DeLanda, M. 1997. *A Thousand Years of Nonlinear History.* New York: Zone Books.

Ebeling, K. 2012. *Wilde Archäologien 1: Theorien der materiellen Kultur von Kant bis Kittler.* Berlin: Kadmos.

Ernst, W. 2012. *Gleichursprünglichkeit. Zeitwesen und Zeitgegenbeiten technischer Medien.* Berlin: Kadmos.

Foucault, M. 1972. *The Archaeology of Knowledge.* Translated by A. M. Sheridan-Smith. New York: Pantheon.

Parikka, J. 2012. *What is Media Archaeology?* Cambridge: Polity.

Rieger, S. 2014. "Medienarchäologie." In *Handbuch Medienwissenschaft,* edited by J. Schröter, 137–144. Stuttgart, Germany: Metzler.

Winthrop-Young, G. 2015. "Siren Recursions." In *Kittler Now: Current Perspectives in Kittler Studies*, edited by S. Sale and L. Salisbury, 71–94. Cambridge: Polity.

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