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**Breaking Open the Black Boxes: media archaeology,
anarchaeology and media materiality**

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Opening up the Black Boxes:

Media Archaeology, 'Anarchaeology' and Media Materiality

Abstract

This article examines the emergent field of media archaeology as offering a materialist approach to new media and specifically the Internet, constituting a ‘travelling discipline’ or ‘indiscipline’ rather than a new disciplinary paradigm. Following the lead of Siegfried Zielinski (2006) it provides less an archaeology than an ‘anararchaeology’ of media archaeology, understanding this term in political as well as methodological terms. To do so it charts a trajectory through some of the sources of media archaeology, and its key theoretical articulations in the work of Zielinski and Friedrich Kittler up to its more recent articulations in the work of Jussi Parikka and Wolfgang Ernst. It uses this theoretical trajectory to illuminate some of the key problematics of media archaeology, in terms of both its practical application as a form of ‘theoretical circuit breaking’ (Hertz and Parikka 2010), and its most imaginative speculations as not only a material but even a geological approach to media as evident in Parikka’s most recent work, by way of such phenomena as the ‘vernacular Web’ (Lialina, 2005) and the problematics of e-waste. Throughout it pays close attention to the value of media archaeology as a set of methods for new media research in relation to more established methodologies in media studies ranging from medium histories to cultural studies. In particular, it argues for articulating media archaeological approaches with media ecological ones, in order to bring out more clearly both the political stakes of the field and its potential contribution to studies of digital media

Keywords

Media archaeology, anarchaeology, media ecology, e-waste, vernacular Web, Friedrich Kittler, Jussi Parikka, Siegfried Zielinski, Wolfgang Ernst, zombie media.

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Opening up the Black Boxes:

Media Archaeology, Anarchaeology and Material Media

‘Media cross one another in time which is no longer history’ (Kittler 1999: 115).

Introduction: Situating Media Archaeology

This article aims to survey the emergent field and sets of methods of media archaeology with at least two key hypotheses. The first is that media archaeology can be better thought of, following Zielinski, in terms of ‘anarchaeology’, a rupture within contemporary media theories and histories, rather than a new discipline. Secondly that one of the key values of media archaeology is its insistence on the materiality, and material ecologies of media objects, systems and processes, contrary to the still lingering tendency to view informational technologies and processes in disembodied and immaterial terms. This is distinct from phenomenological approaches centred on an assumed human body and sensorium (see Hansen, 2006). Instead it consists of an attention to the material ecologies of human, non-human and machinic entities, the inorganic, organic and, as we shall see, geological strata that underlie technical media systems and networks, but which are frequently ignored in conventional media studies. Media archaeology is also distinct from Anglo-American approaches to digital media that tend to be empirical, social scientific epistemologies based on qualitative and quantitative research in which data sets are analysed as traces of user practices such as linking or tagging, for example, or form the basis for digital mapping techniques such as social network analysis (SNA). While empiricism shares with media archaeology, and media materialism more generally, an interest in media objects, it constructs these objects epistemologically in terms of data and information, software and platforms, or in other words as objects of knowledge, bracketing off any non-informational aspects of their physicality. From a media archaeological perspective then, social scientific empiricism is not empirical enough, and needs to get closer to the materiality of objects such as chips, circuit boards and fiber optic cables,

in the field of their material relations, rather than abstracting them as objects of knowledge about a human, non-machinic and insufficiently material digital society (see Parikka 2012a, 84-88). In this sense, the stakes of introducing a media archaeological approach to studies of new media are very high, in that its radical materialism at the very least problematizes dominant social scientific approaches to new media, while at the same time resonating with some research in the field.¹ Nevertheless, this article will argue that this is provided that this will nevertheless require a modification of some media archaeological approaches as they were initially proposed.

While, in theory, it would seem to have become easier to answer the question of what media archaeology is, given the recent appearance in English and other languages of many key media archaeological texts by authors such as Kittler and Zielinski, several edited collections and Parikka's recent volume simply entitled *What is Media Archaeology* (2012a), in reality each addition to this archive in many ways only increases its complexity. Parikka, for example identifies four key themes and contexts flowing into media archaeology comprising of modernity, cinema (especially but not only new film histories), Foucauldian 'histories of the present', and alternative or even alternate histories, but also says of this already complex situation that these themes 'are not exhaustive in any way, and the amount of work that is in spirit, even if not always explicitly in name, media-archaeological is vast' (Parikka 2012a: 14). If media archaeology is as Parikka and Huhtamo propose elsewhere a 'travelling discipline' (Parikka and Huhtamo 2011: 3), or even indiscipline, then it can perhaps better be seen as a set of loosely related methods and principles, without any one single or stable essence; given the major differences between key theorists and practitioners of media archaeology, not to mention the divergences from and even rejection of the use of the term itself by some of its key theorists, media archaeology is clearly a problematic, and problematizing field, but herein lies its most important contributions to the field of media research.

The appearance of Huhtamo and Parikka's edited collection on media archaeology (2011) forcefully introduced this field of contemporary media research to a new Anglo-American

¹ See especially the Wendy Chun and Thomas Keenan edited collection, *New Media, Old Media* (2006), which not only takes up the media archaeology challenge to new media teleologies but also includes chapters from some of its key theorists like Kittler and Ernst.

readership. Part of this hidden nature is due to linguistic reasons, especially that many of the key thinkers in media archaeology were working in European, mainly German contexts, and even today not all of their key works are readily available in English. However translation issues go well beyond the linguistic, since media archaeology is necessarily mobile rather than fixed, a reading of both contemporary media and media history against the grain, with multiple sources and diverse methods that nevertheless share a common rejection of dominant teleological accounts of media and technological history.

The valuable introduction to Huhtamo and Parikka's volume charts an 'archaeology of media archaeology' (Huhtamo and Parikka 2011: 1-21), which in true media archaeological spirit means addressing work in multiple disciplines, eras and locations. Media archaeology is by no means limited to those works that explicitly invoke its name and many of its precursors such as the work of Walter Benjamin and Michel Foucault, Aby Warburg and Erwin Panofsky, Ernst Curtius and Marshall McLuhan have more usually been inscribed in a range of other disciplinary and trans-disciplinary formations. Even many of the key theorists of media archaeology, did not use the term to label their theoretical enterprise even, as it turns out, its two most prominent figures, Friedrich Kittler and Siegfried Zielinski. While the editors do an admirable job of tracing out the various historical conjunctions of the terms 'media' and 'archaeology', the real origins of the field come from thinkers outside of media research, especially Walter Benjamin and Michel Foucault, as re-read by media archaeologists who critically deploy their methods (this is in addition to the influence of media theorist Marshall McLuhan whose seminal analyses of both the 'Gutenberg Galaxy' and electronic media have clear media archaeological implications).² In the case of Benjamin, it is especially his unfinished *Arcades Project* (2002) that provides an inspiration for media archaeology in its non-linear engagement with the 'outmoded' phantasmagoria of the 19th Century, although several of his key critical essays are also amenable to a media archaeological reading. However, it is Foucault who provides something like a method for media archaeological research, even if his

2 Arguably many of these ideas derive from Harold Innis who, in works like *The Bias of Communication* (2008), developed the conceptual framework of technological determinism that McLuhan would later popularize.

project for the archaeology of knowledge is taken up in varying and not uncritical ways by media archaeologists from Kittler and Zielinski onwards. It is also important to note that these engagements with Foucault diverge considerably from his take-up in Anglo-American contexts as the theorist of modern discursive regimes of power. Nevertheless such distinctions are difficult to maintain, since some branches of what the editors include as media archaeology draw not on German media theories but the new historicism into which Foucault's work was often assimilated in the English language context. This raises a key problem for the definition of media archaeology as a field: what is it that differentiates it from new historicism, the cultural history of technology, or science and technology studies (STS) approaches? This will underlie the following account of the the Internet as a material technology but provisionally it can be admitted that this distinction is far from clear in every project termed media archaeological.

According to Ernst, another key media archaeologist whose work is only just beginning to appear in an international context, 'Media archaeology adds to the study of culture in an apparently paradoxical way by directing attention (perception, analysis) to noncultural elements of the technological regime' (Ernst in Huhtamo and Parikka 2011: 244). The methodical attention given to forms of non-human machinic inscription are, for Ernst, crucial to the media archaeological project following the maxim that 'the media-archaeological gaze ... is immanent to the machine' (2011: 251). Ernst refers in his chapter to a range of largely sonic examples in which different sound recording technologies, such as phonographic recording onto aluminum discs and an electromagnetic wire recorder, were used for ethno-musicological purposes, to record Serbian epic songs as a present day analog of the Homeric epic. The point Ernst is making via these and other examples is that what the machines inscribe is less the songs than the materiality of the voice, now reconfigured as an 'electromagnetic flux of electrons—which opened a different regime of signals operating as a substratum of cultural semiotics' (2011: 44-45). In fact he suggests that the technological machine in fact listens much better than we do and 'is the better media archaeologist of culture, better than any human' (2011: 145) since it directly registers in electro-physical matter

the material modulations of not only the voice but all the present sonic signals without distinguishing between the important and the insignificant, meaning and noise, in line with human habits of filtering according to 'cognitive, cultural knowledge' (2011: 244).

What might it mean to bring such a media archaeological gaze, or more specifically this listening to the non-cultural, non-narrative and the machinic, into the realm of new media and its theorization? In the case of the Internet, this gaze would entail paying attention not only to the material substratum beneath or behind Internet 'content' such as its technological components (chips, modems, circuit boards, casings, wireless networks etc), but also the technical, economic, social and environmental relations that both sustain the Internet and are generated by it. This might seem a leap from Ernst's formulations which are vehemently against any resort to narrative, history, text or meaning, even as articulated within media archaeology itself, although paradoxically presented by Ernst himself in the form of a number of technological fables. Nevertheless the technological events that Ernst presents can only take place in the context of relations and economies, such as between the advent of new sound recording technologies and the developments of academic disciplines like ethnomusicology, not to mention a near obsession with the Greek origins of Western culture and media, as much apparent in media archaeology, as in the ethnomusicologists Ernst describes.

The question of the relations surrounding any technical system is the point at which media archaeological concerns touch upon ecological ones, as in the thorny issues surrounding e-waste that media archaeologists like Parikka have drawn attention to. For media archaeologists, the unevenly distributed phenomena of e-waste are not just a moral or environmental issue, but also are exactly the sort of site, as the rubbish dump of supposedly obsolescent 'dead media', where media archaeology can be most fruitfully conducted (see Hertz and Parikka 2010/2012). Not only does e-waste draw our attention to the toxic excesses of the teleological drive towards ever newer technologies, but also the ways in which media components go well beyond cleanly designed functional elements, to all sorts of non-biodegradable plastics, toxic chemicals and other substances,

whose durations are as deserving of media archaeological attention as any more culturally defined Internet phenomena. Finally for media archaeologists, obsolescent e-waste far from being dead media is more a case of the living dead or *Zombie Media*, as Hertz and Parikka have proposed in their project for circuit bending discarded electronic toys from the 1980s into mutant musical instruments (Hertz and Parikka, 2010/2012).

Having situated media archaeology in relation to contemporary media research, this article will now plunge more directly into the field and examine some of its key theoretical currents, before returning to the question of its potential impact on studies of new media in general, and the Internet in particular.

An (An)archaeology of Media Archaeology

As with many earlier theoretical paradigms such as postmodernism or structuralism, media archaeology is traversed by debates, contestations and evasions, rendering any stable delimitation of the field at the very least difficult. Some of the key theorists held responsible for the media archaeology paradigm have either never or at least only in limited instances considered their work to be media archaeology, and both Friedrich Kittler and Siegfried Zielinski have gone as far as to question the usefulness of even the word media in their later work, the latter preferring the term ‘Variantology’ to describe his current research into ‘techniques of hearing and seeing.’³ As for Kittler, his interests turned largely to cultural techniques in the classical world, for example, through conducting experiments to prove that Odysseus was lying, when he claimed to have heard the Siren’s song despite not coming ashore, as recounted in Homer’s *Odyssey*.⁴ Despite these instabilities, this section will attempt to draw out some of the key concerns and insights of the field.

From a perspective of media development, both media archaeology and ecology have their roots in the advent of new media, beginning with video and culminating in the current digital

3 Zielinski introduces the term Variantology in the introduction to *Deep Time of the Media* (Zielinski 2006: 7) still in relation to media and media archaeology. His development of Variantology through a series of events and publications of the same name has, however, seen media being progressively dropped as a referent.

4 For a discussion of this fascinating experiment see Winthrop-Young, (2011: 82-87).

regime we now inhabit; Among the many effects of the appearance of successive new media technologies from the 1970s onward was a significant challenge to the ways in which media had been conceptualized just at the very moment when critical film and media studies were becoming recognized as legitimate fields of academic research. While the histories of media research are varied and also took different forms according to both what media were being studied and in what context, a general tendency was to study media separately, that is to have departments and courses focused on film or cinema studies, television studies and less frequently radio and this was reflected in publishing, which was medium specific and carved up the field in question in terms of concepts imported from literary studies or the social sciences into such fields as genre, authorship, industry, political economy, national cinema and media and of course medium histories (see Elsaesser 2006: 13-15). While some contestation of this discipline formation of the field of media research was enacted by the trans-disciplinary methodologies of cultural studies, this too tended to be confined to specific media forms (TV news, popular music) and not to call narrative histories and medium definitions into question.

The figure most frequently evoked in the shift from medium history to media archaeology, is of course Michel Foucault, whose project of the 'archaeology of knowledge' (Foucault, 1989) is the primary inspiration for using this term in relation to media. However, the use of Foucauldian archaeology in media archaeology is by no means a homogeneous or uncritical one, and most media archaeologists insist on the need for the term to be reinvented or at least extended beyond the written archive that forms the basis for Foucault's studies of disciplinary societies. While this might seem to resonate with Baudrillard's argument in *Forget Foucault* that Foucault's diagnoses of power appeared at just the moment when the forms of power they discerned were disappearing (Baudrillard, 1988), the media archaeological critique of Foucault is considerably more precise. The key limitation to Foucault's analyses, according to Friedrich Kittler, is that while based entirely on the written archive stored in libraries and other repositories, they do not acknowledge that writing is just one technical medium amongst others and one that had already lost many of its privileges at the

time of Foucault's writing: 'even writing itself, before it ends up in libraries, is a communication medium, the technology of which the archaeologist simply forgot. It is for this reason that all his analyses end immediately before that point in time at which other media penetrated the library's stacks. Discourse analysis cannot be applied to sound archives or towers of film rolls' (Kittler 1999: 5).

Nevertheless, however scathing this criticism may seem, in many ways it is a dual call to open up questions of technicity to encompass writing, while at the same time opening up questions of the archive beyond written texts to encompass other forms of storage, transmission and retrieval. In this Kittler updates the dual innovations of McLuhan's studies of the 'Gutenberg Galaxy' (McLuhan 1962) and the latest forms of media communication, with the more rigorous insights of the Derridean deconstruction of the technicity of writing. Nevertheless, Foucauldian archaeology still remains an essential inspiration for any media archaeology since, despite these limitations, it provides a range of key principles for a non-linear account of diverse media, their various crossings and contingent assemblages. As Elsaesser puts it, what is most useful in Foucault's project is what he calls an 'archaeological agenda' (Elsaesser 2006: 17) encompassing an abandonment of the search for origins; a questioning of the already stated; and the description of discourses as practices; all of which can be found elucidated in Foucault's meta-archaeological text, *The Archaeology of Knowledge*.

A media archaeological perspective then is necessarily a non-linear one and one that disputes the already stated distribution of winners and losers in teleological medium narratives whether this be an inventor, a technical invention or a whole media *dispositif* or assemblage. This tendency can be seen clearly in both Zielinski's archaeology of cinema and television as contingent assemblages of seeing and hearing in his book *Audiovisions* (1999), as well as in Kittler's *Gramophone, Film, Typewriter* (1999). In these studies, the contingency of media assemblages are emphasized as are their crossings, not only with each other but also other modern technical phenomena like warfare and psychology to name only two. While the shift to a media archaeological perspective often de-

emphasizes content in line with the famous McLuhan formula of the medium being the message, this is not necessarily a shift to a hard technological determinism. Certainly it can seem to take this form in Kittler's work, after all the very first line of the preface to his key media archaeological text famously reads 'media determine our situation which—despite or because of it—deserves a description' (1999: xxxix). Nevertheless this hard statement of media determinism while not merely rhetorical proves to be less severe in Kittler's actual analyses of media, in which creators and experimenters certainly play a key role, and media assemblages are repeatedly shown not to be implemented when this would have been first technically possible but only when the right socio-technical assemblage is able to make use of them.

Media Archaeology Versus Anarchaeology

In a less deterministic vein, Zielinski privileges the artist-inventors of the technologies of seeing and hearing that he investigates whether of the more conventional media such as cinema and television or the deeper historical studies he presents in *Deep Time of the Media* which extend media archaeology back to the Renaissance and even to the classical world, since techniques of seeing and hearing have a much longer history than that of contemporary mass entertainment media. This is yet another effect of an archaeological approach, to extend the temporal layers of media back beyond their usually circumscribed periodization as artifacts of recent modernity. Furthermore, Zielinski is as if not more interested in 'imaginary media' that never existed except as dreams, diagrams and imaginative schemes, as he is in actually realized and implemented media forms, showing the proximity between this style of media archaeology and the field of imaginary media (see Kluitenberg ed. 2006). While this article does not intend to follow Zielinski into these realms of pre 19th Century technical invention and imaginaries in such domains as alchemy and combinatorial systems, it does point to a key insight of media archaeology that necessarily extends the concept of media beyond narrow definitions of mass media. This applies as much to other modes of communication as it does to the 'deep time' that Zielinski is excavating.

Another key insight of Zielinski's, relating directly to the field of media archaeology, is that Foucault's archaeology of knowledge project would be better characterized as an 'anarchaeology.' This idea, that Zielinski adapts from the German Foucault scholar Rudi Visker, is that while archaeology in the conventional, disciplinary sense implies an ordering and governing of the ancient or original (*archaios* plus *logos*), Foucauldian archaeology evades any idea of a 'standardized object of an original experience' (Visker cited in Zielinski 2006: 27). What this means for a truly Foucauldian media archaeology is the idea of 'a history that entails envisioning, listening, and the art of combining using technical devices, which privileges a sense of their multifarious possibilities over their realities in the form of products' (Zielinski 2006: 27). Essentially what Zielinski takes from this idea of 'anarchaeology', (leaving aside the question of to what extent this is still Foucault's method in relation to the archive or his own), is a non-linear history, one that is as, if not more, interested in the 'losers', or inventors and inventions that remained potential and imaginary rather than actual and implemented, and that rejects any idea of either origin or teleology. For this reason, Zielinski is as interested in examples such as Athanasius Kircher's allegorical drawings and magic lanterns as he is in the latest examples of digital art, with considerably more focus on the former than the latter. While Zielinski's plea to 'keep the concept of media as wide open as possible' (2006: 33) is an important one, the direction in which he responds to this plea, namely via the investigation of a range of media archaeological 'curiosities' is not the only road that can be taken in the elaboration of a media archaeology. It is one thing to call linear temporalities into question, and quite another to abandon interest in temporal shifts altogether in a kind of 'deep time' that risks becoming only a series of eternal moments of invention which, as Zielinski himself puts it, blur together heterogeneous times and spaces:

I developed an awareness of different time periods that we often experience with regards to places: for example, to discover Kraków in Palermo, to come across Rome in New York ... Phases, moments, or periods that sported particular data as labels began to overlap in their meanings and valencies. Wasn't Petrograd's techno-scene in the 1910s and 1920s more

relevant and faster than that of London, Detroit or Cologne at the turn of the last Century?

(Zielinski 2006: 11).

Despite Zielinski's reference to his archaeological examples as 'dynamic moments in the media-archaeological record that .. enter into a relationship of tension with various present day moments' (2006: 11) or 'attractive foci where possible directions for development were tried out and paradigm shifts took place' (2006: 31), in practice they often seem plucked out of the economic, social and technological modes of development they were embedded in and given a semi-eternal status as the great inventions of great men with an undisguised uncritical act of constructing media archaeological heroes (2006: 34). But is a new canon of great media inventors and dreamers any better than a pantheon of great cinematic auteurs? It certainly does not seem very anarchic, but rather a strangely Leavisite reinvention of a great if relatively occult tradition that sacrifices at least one key aim of Foucauldian archaeology, namely a non-teleological way of accounting for historical change. While it may be accepted that Foucauldian (an)archaeology disrupts the linear order of historical causation and succession, this is not a relativist denial of relations between the present and the past but rather an insistence on their force and power. In particular, if Foucauldian archaeology insists upon heterogeneity, this is in order to get at real processes of change, or as Foucault puts it in *The Archaeology of Knowledge* 'to establish the system of transformations that constitutes change' (Foucault 1989: 173). This is what some commentators on Foucault have referred to as the 'history of the present' or the rules governing what it is possible to express in a given spatio-temporal *episteme* but more broadly than that it refers to something like the Deleuze and Guattarian concept of becomings, of real change that a given state of affairs certainly modulates and conditions but which, nevertheless, has the capacity and tendency to escape this given state (see Deleuze and Guattari 1980: 256-341). In this light, (an)archaeology, the history of the present, or becomings, are not outside of history, as great moments of invention but rather refer to the processual flux of real temporal change out of which historical narratives emerge in a process of capture, always in favor of particular ends and power

formations. Much as it is tempting to follow Zielinski in his media archaeological ‘deep time machine’, exploring the wonders that the conventional and non-conventional archive have to offer and their capacities to transport us from one spatio-temporal variant to another, it is also important to maintain the foothold in processes of real change, whose aesthetic and importantly political effects are felt all too keenly in the present.⁵ Strangely, Zielinski’s earlier work *Audiovisions*, in its explorations of the ‘materiality of the media within the triadic relationship of culture-subject-media’ seen as reciprocally defining terms (Zielinski 1999: 20), comes closer to giving a non-linear history of media invention, expanding closed accounts of the histories of both cinema and television into a broader field of material media practices and inventions. Nevertheless, despite these intentions, there is still an almost exclusive focus on technical inventions and inventors rather than the socio-technical assemblages into which these technologies have been implanted.

The insistence on the importance of engaging with real processes of change and providing a history of the present is at any rate the justification for the type of media archaeology that will be explored here. This raises another issue connected with ‘Germanic’ media archaeology namely its privileging of science and scientific invention over social and political processes. While this is often done out of a valuable rejection of humanist tendencies and over-emphases on such frozen social categories as ‘the audience’ or ‘media institutions’, the result is often the jettisoning of the socio-political altogether, or at least its relegation to an epiphenomenon. More than this, the narrow equation of invention with science and technology, even if this is moderated by an interest in other actors including in Kittler’s case not only film directors but quite surprisingly also pop musicians like Pink Floyd or Jimi Hendrix, tends to exclude any consideration of how media function as vectors of political invention. It is as if any consideration of the explicitly or obviously political is too tarred with the brush of Cultural Studies populism and its ‘resistant audiences’ or ‘embodied spectators’ to warrant serious consideration, unless it is to echo Virilio’s conclusions about media as the ‘misuse of military equipment’ (see Virilio 1989) also a favored trope of Kittler (see Kittler

5 For the first of Zielinski’s Variantology series of events and publications see *Variantology 1: On Deep Time Relations of Arts, Sciences and Technologies* (2006).

1999: 110 ff).⁶ Of course the very focus on the materialities of media objects and systems, coupled with alternative genealogies or counter-histories of media is in itself at least micro-political in that it challenges dominant regimes of knowledge in a manner highly resonant with Foucault's later genealogical method that succeeded his archaeological one. In this regard, Parikka has noted the ways in which Kittler extends Foucauldian genealogies into media networks: 'Power is no longer circulated and reproduced solely through spatial places and institutions—such as the clinic or the prison as Foucault analysed—or practices of language, but takes place in the switches and relays, software and hardware, protocols and circuits of which our technical media systems are made' (Parikka 2012a: 70). In that media practices are always assemblages of expression with both human and technological elements, they are also always political but, from a media archaeological perspective, this is a politics that runs counter to both the usual refrains of both the political economy of the mass media and cultural studies investments in the audience. Instead, taking from media archaeology the interest in the 'invention of machines', but understanding these machines in political as well as technological terms, another mode of media archaeology becomes possible in which both human and machinic agencies are articulated in specific media assemblages.

In this respect, more recent articulations of media archaeology, especially those that have aligned themselves with archaeological tendencies in media art, may be more useful than Zielinski's approach. Erkki Huhtamo, for example points to the emergence of what he calls 'the *archaeological approach* in media art' (Huhtamo 1996: 234), citing the work of such artists as Paul DeMarinis and Lynn Hershman among others. These artists produce works that 'incorporate explicit references to machines from earlier phases in the development of technoculture' (1996: 234). By calling attention to these 'archaic' technologies in relation to the present, these art practices destabilise processes of technological progress, acceleration and obsolescence, by privileging machines that bear the traces of the recent but already obliterated past. According to Huhtamo, these artists are not just performing a luddite techno nostalgia for earlier epochs but are themselves acting as media

⁶ This is taken up both at the end of the 'Gramophone' chapter of *Gramophone, Film, Typewriter* and especially in the highly Virilio-influenced reading of the history of film as appropriated military technology from Marey's chronophotography to contemporary computer games (Kittler 1999: 122-133).

archaeologists, viewing forms of technology less in terms of ‘concrete artifacts’ than the ‘*discursive formations* enveloping them’ (Huhtamo 1996: 239 [emphasis in original]). Furthermore, these artists also often clearly articulate the political stakes surrounding successive forms of technoculture and draw attention not only to technological change but also shifts in the discursive socio-political orders that surround given technological assemblages. In Huhtamo’s words ‘their affection for the debris of the machine culture seems to be intertwined with anxiety and suspicion about the role that technology actually plays in contemporary society, pushing them to investigate the processes of its becoming’ (Huhtamo 1996: 258). A similar tendency can be seen in the interest in ‘Dead Media’, a term first popularized by the science fiction writer Bruce Sterling but taken up recently in a more complex way by the artist Garnet Hertz. The existence of ‘dead media’ that is discarded and outmoded forms of technology is not just an archaeological problem but an ecological one, first of all in the sense of the exponentially increasing stockpile of electronic waste whose toxic effects and relations to geographically unequal power relations has been stressed by several writers. But this is only the beginning of the ecologies of dead media which, as Hertz and Parikka have argued in a recent co-authored work, should really be thought of as ‘undead’ or ‘Zombie Media’ (Hertz and Parikka 2011) as they continue to exist and to haunt present technological configurations and not only because of the problems of their disposal. In a complementary way to Huhtamo, Hertz and Parikka suggest that ‘Zombie Media’ point to the ways in which media archaeology can become an art methodology in which the theoretical critique of rapid technological obsolescence is coupled with an active repurposing of discarded forms of technology through practices of circuit bending; for example a discarded electronic toy from the 1980s can become a mutant musical instrument. The value in this process is less in terms of the object produced which may, in fact, be more rather than less useless than it originally was, but in the process of undoing the ‘black box’ of a given technical assemblage, understanding on a practical level how it functions, and making it function otherwise. This is meant less as a serious proposal for dealing with the growing stockpile of electronic waste, so much as a pragmatic pedagogy that

reveals to what extent the technological formations that we are wired into, are prone to being repurposed and modified, thereby subverting their closed functioning as standardized objects or commodities. This resonates with contemporary practices of both software and hardware hacking but also many alternative media ecologies which, in different ways, also aim to critically repurpose existing socio-technical assemblages, or their own (un)dead media (see Parikka 2012a: 136-158).

Media (An)archaeology and Material Media

The material aspects of the media archaeological approach can be illustrated, by a pop cultural rather than underground example taken from the British TV show *The IT Crowd* (2006-2010). In a justly celebrated episode 'The Speech' (Series 3, 2008), Roy and Moss enact a classic revenge of the nerds by convincing their manager Jen, that a small black box with a flashing red light contains or in fact is 'the Internet'. She then proceeds to present this revelation in her speech to the company's shareholders. Rather than Jen coming across as an idiot, however, the assembled shareholders are completely convinced, and when 'the Internet' is inadvertently destroyed due to a different sub-plot, they erupt in a blind panic like the one anticipated around the 2000 Millennium bug. The joke, of course, being that, as the nerds know and everyone else should know, the Internet is an immaterial, distributed, network and it is absurd to locate it within any black box; Jen and the shareholders are just demonstrating their own ignorance when they do so. Nevertheless, media archaeologists would not necessarily see it in this way and might rather be with Jen, in their interests in any number of black boxes making up the material strata or substrata of the Internet, rather than seeing it as an immaterial and virtually disembodied phenomenon.

A media archaeological perspective, therefore, would want to literally get inside the black box, to break it open and examine its physical workings, in a perspective more informed by physics and engineering than cultural hermeneutics or semantics. At the limit this would mean the exclusion of any interest not only in Internet content or user practices (considered as so much ephemeral eyewash) but even in software itself that Kittler famously declared not to exist, at least when one

drills down to its engineering basis:

Not only no program, but no underlying microprocessor system could ever start without the rather incredible autobooting faculty of some elementary functions that, for safety's sake, are burned into silicon and thus form part of the hardware ... All code operations, despite their metaphoric faculties such as 'call' or 'return', come down to absolutely local string manipulations and that is, I am afraid, to signifiers of voltage differences. (Kittler, 1995: n.p.)

Winthrop-Young has shown how this approach connects up with the politics of open source movements, in its rejection of the delusions generated by the user friendly interfaces of proprietary software systems that in reality are less transparent windows than 'one way mirrors' (Winthrop-Young 2011: 76), screening out the real operations of machines from any human gaze. Winthrop-Young has analyzed Kittler's insistence on programming, preferably using basic programming and operating languages, as an uncharacteristically Enlightenment, even activist moment in his work, the demand to at least 'rise above our software supported immaturity and interact eye to eye (or signal to signal) with all that is on the verge of leaving us behind' (2011: 77). In this optic then, media archaeological approaches to the Internet would be limited to hardware studies of the matter, materials, physical infrastructures and operating systems that subtend digital networks, and indeed some media archaeologists have followed this route in recent work. However in that the levels of software, programs and protocols are materially anchored to hardware materials via operating systems, they are in a sense equally material and certainly just as real, hence the proximity between media archaeological approaches and approaches like software studies as Parikka and others have indicated (2012a: 86-88). Therefore media materialist theoretical projects ranging from that of Galloway on *Protocols* (2006) to that of Fuller on *Media Ecologies* (2007), and especially his more recent work in software studies can be seen as bringing a media archaeological approach to bear on the level of software as well as hardware, while still maintaining a focus on material processes, rather than on interpretations of media content.

While not specifically named as media archaeology, similar approaches have also proven highly fertile for thinking the Internet in a non-linear temporal perspective, rather than as an eternal and teleological perpetually renewed present. Exemplary in this respect are projects like Olia Lialina's research of what she calls the 'Vernacular Web' of the 1990s. According to Lialina, this vernacular web 'was bright, rich, personal, slow and under construction. It was a web of sudden connections and personal links. Pages were built on the edge of tomorrow, full of hope for a faster connection and a more powerful computer. One could say it was the web of the indigenous ... or the barbarians' (Lialina 2005). Whether looking at such things as the design and profusion of 1990s Geocities sites or the fateful decline of urban Internet cafes in Rotterdam, Lialina's perspective is one that while not explicitly presented as media archaeology, follows highly media archaeological principles; focusing on material practices within a non-linear sense of history that as with revisionist film history refuses to consign the recent past to the dustbin of history as a primitive phenomenon only of curiosity value. Instead Lialina's project indicates the ongoing 'retromanic' nature of Internet development that constitutes a highly media archaeological perspective:

Just as clothing styles come back into fashion so do web designs. On a visual level things reappear. Last year I noticed that progressive web designers returned to an eclectic style reincorporating wallpapers and 3D lettering in their work. In the near future frames and construction signs will show up as retro and the beautiful old elements will be stripped of their meaning and contexts. (Lialina 2005)

Such an approach to the vernacular Web also suggests a tendency of media archaeology picked up on in Vivian Sobchak's somewhat oblique account of the field as, following Hayden White, a form of meta-history. More specifically, Sobchak claims that the media archaeological project should be seen as meta-history in a decidedly romantic mode, owing to its almost fetishistic interest in the 'presence' (in Huhtamo and Parrika 2011: 328) of otherwise neglected objects,

machines and technological processes, and insistence on an approach to the things themselves rather than their cultural mediations, representations and interpretations: ‘media archaeology—ideologically, and in terms of its liberal alliances and differences from the disciplined disciplines of history, film and media studies, and cultural studies—retains its anarchic status as undisciplined [and] poses a major challenge to these disciplines’ epistemic norms and established values’ (2011: 330). While such a characterisation in terms of romanticism would perhaps be justified in relation to some aspects of Zielinski’s project, with its unabashed desire to celebrate great inventions and inventors unjustly neglected in teleological media history ‘in a spirit of praise and commendation, not of critique’ (Zielinski, 2006: 34), the more materialist orientations such as those of Ernst, Kittler and more recently Parikka, escape this romantic orientation via the insistence on a rigorous attention to matter and machines, one that in its most recent articulations takes on distinctly ecological characteristics, beyond the human/machine interface.

A New Chemical, Geological Turn in Media Archaeology?

Rather than point to more examples of Internet focused media archaeological projects, I would like to point to some speculations of media archaeologist Jussi Parikka on the future of media theory as ‘bin theory’ (2012). These comments are interesting as a contrast to a recent text by Geert Lovink, ‘Media Studies: Diagnostics of a Failed Merger’ (Lovink, 2012: 76-94), which suggests that the very paradigm and discipline of media studies ought to be abandoned as a ‘failed merger’ in favour of a separation into different spheres, so that studies of networked digital media would have nothing to do with the discipline of media studies out of which it emerged and in which it is often but not always located in a disciplinary sense:

Media Studies is presently an abandoned construction site, crumbling under its own neglect.

Do we wilfully continue a failed project? Or should we acknowledge its growing cracks and celebrate its successes as we raze it to the ground and start anew. (Lovink 2012: 77).

Such a *tabula rasa* approach both underestimates the potential contributions of a media archaeological approach and itself subscribes to the logic of inbuilt obsolescence that structures the development of new technological commodities, that media archaeology in all its variations consistently rejects.

Parikka's 'bin theory' would approach this situation rather differently, not interesting itself so much in these turf wars but the turf itself and what lies below it:

We can use theory as a pathway itself to open up and question lists of things, as well as old habits, and include a range of new things for our conceptualisations. There is a practice of theory as well. ... [T]hings ecological, even under another theoretical theme of past years, media ecology, are mapped as part of the very concrete material contexts in which media takes place and displaces. Rubbish, electronic waste, and the concretely ecological contexts of media are what constitute another way of seeing where things come from and end up. (Parikka, 2012b: n.p.).

In a more recent text, Parikka has taken these insights further in a stratigraphic direction, emphasizing the cycle of chemicals and geological materials essential to Internet and computer technologies in their passage from underground mining to post-industrial waste. Arguing for an alternative, and literal, deep time of the media, Parikka departs from the romantic traces of the media archaeological project that Sobchak identified, in favour of a rigorous engagement with the non-human ecologies that are intimately bound up with media technologies and their archaeology:

[A] more geologically tuned deep time – deep in various senses, down to mineral excavation, and picking up some themes of a media ecological sort. ... A media excavation into the mineral and raw material basis of technological development, through which to present some media historical arguments as to how one might adopt a material perspective in terms of ecological temporality. (Parikka 2012c).

Such a perspective may seem quite far from the usual concerns of media research, whether of a relatively theoretical or empirical persuasion, and even from the description of the field of media archaeology given earlier in this article. Nevertheless it is in the radical openness of media archaeological approaches and methods to the material constitution of media and their associated technologies that media archaeology has the most to offer contemporary media research, at the very point that its cartographic excavations touch on questions of a media ecological nature, beyond merely human durations.

These media ecological inflections of media archaeology need not only go in the non-human geological/chemical direction sketched out by Parikka, but can also extend studies of media systems into other ecological contexts, such as their deployment in urban environments, their potentials for technological misuse, bricolage and noise, and lastly their collective deployment as political socio-technical assemblages as I have previously discussed in relation to Italian and contemporary pirate radio (Goddard, 2011). Such approaches if they are to remain media archaeological will need to pay strict attention to the material elements and relations of any media system, but do not necessarily need to exclude the political effects of such material systems on the social contexts in which they are embedded; however they point to re-articulations of new media with the social that cannot rely on ossified terminologies of producers, audiences, users, technologies, meanings and representations but rather non-representational archaeological and ecological terms that will fully articulate their dynamic and material relations and processes.

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