Theses on the Philosophy of History: The Work of Research in the Age of Digital Searchability and Distributability

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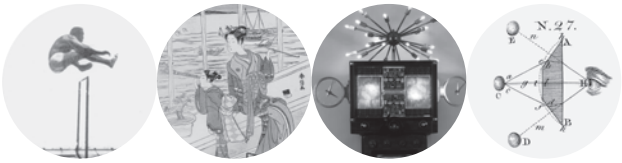

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Abstract

What is it to conduct research in the second decade of the 21st century? What is the nature (or what are the modalities) of the work that we as researchers do? What is research as a praxis? And how have recent shifts in paradigms of knowledge generation and distribution – especially around the archive and the Internet, and the Internet as archival – transformed profoundly what we as researchers do, how we do it, and in fact even our very capacity to do it?

In this article, I begin from the idea of research as a praxis, and from the figure of the researcher as a locus for the discovery of knowledges by way of acts of searching and gathering. In 15 theses I engage critically with challenges raised recently for the idea of 'history' as a form of knowledge by our own épistémè of re-search; one whose conditions and conditions of possibility are delineated by the emergence of our late capitalist global algorithmic knowledge economy, and the Internet with its distinct operations of searchability and distributability. Because this is our present moment's épistémè of re-search, I argue that our being in thrall of the archive has dangerous future consequences: in fact it is perilous for the very idea of the future itself as a category of historical time. Concerned by this situation and thus responding forcefully to it, in offering a few grains of dissent I will 'look with care' at how we might navigate our way fractiously and thus productively through such a predicament.

Keywords

the archival • the archive • curiosity • history • hope • the Internet • knowledge • metadata • research

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Kraftwerk, 'Computerwelt', 1981

I

> [I]t is the questions that we ask that produce … and not some body of materials which determines what questions need to be posed to it.[1]

What is it to conduct research in the second decade of the 21st century? What is the nature (or what are the modalities) of the work that we as researchers do? What is research as a praxis? And how have recent shifts in paradigms of knowledge generation and distribution – especially around the archive and the Internet, and the Internet as archival – transformed profoundly what we as researchers do, how we do it, and in fact even our very capacity to do it?[2]

II

> To research, which by definition is 'to look for with care', is an act of not only interpreting the world but changing it.

I engage with the pressing questions above by beginning from the etymology of the word 'research' that, from the Old French, *recercer*, in its verb form is both 'to search' and 'to search again'. It is thus bursting with all of the instigating and reiterating that this implies. As a verb, research is 'to roam while digging' and 'to look for with care'. Both are acts well worth keeping in mind, especially in the context of archives, the archive, and the archival, as well as cultural practices themselves, and methodology in Visual Culture Studies.[3] As a verb, then, what is stressed etymologically is the *act* of searching and researching.

Research is discovery, by way of a searching for knowledge and a gathering of data. It is as well an attending to the ever-changing acts or practices or protocols of such searching and gathering. There are four principal reasons for these activities. The first is to investigate, to experiment, and to test. This is the rhetoric of conjecture and speculation. The second is so that what is being searched for and gathered can be increased, used, and utilized, or better, exploited. This is the rhetoric of a different kind of speculation: that of economic accumulation, capitalization, and monetization. Third is the advancement of knowledge per se. This is the rhetoric of knowledge for knowledge's sake. Fourth, and ultimately, the purpose of research as a searching, a gathering, *and a distributing* by way of solving problems and raising new challenges is conducted in order, to re-purpose Karl Marx's 11th Thesis of his 'Theses on Feuerbach' (Marx,

1969[1845, 1888]), not only to interpret the world, in various ways, but to change it.

III

> The researcher's desire is what makes knowledge, and what makes it differently.

Raising the question of *why* such researching and gathering and distributing is carried out, why it is done, creates a need to profile the researcher. I foreground this figure because the researcher (whether scientist, academic, scholar, artist, curator, etc.) is an *ur*-form. The researcher is a 'type' (and there are many types of this type) whose desire drives the conditions, limitations, and possibilities of knowledge and thus epistemology. It is the multiplicity and dissimilarity of these desires that makes the patterning of theories of knowledge such a permanent revolution. This patterning and indeed re-patterning – moulded to such an extent by the intensity and eccentricity of the researcher and our research practices (our decision-making vis-a-vis what we're going to research, how we're going to research it, and to what end) – is what generates knowledge differently. As a locus for the discovery of knowledges through acts of searching and gathering, the researcher's *ways of doing* research – of for instance 'doing' history, of the practice of history as a form of knowledge, *why* and *how* the researcher 'roams while digging' and 'looks for with care' – is what *makes* knowledge, and what makes knowledge *differently*.[4] As a figure caught up in making knowledge differently, the researcher is of course a subject of and subject to such knowledge, as well as being constituted by the very drives and desires (including the bitter-sweet double binds of curiosity and hope) that compel us to search and re-search, and by the drives and desires that shape *those* drives and desires. At the end of this article I will return to these double binds.

IV

> Each historical moment has its own épistémè of re-search.[5]

The persistence of the figure of the researcher, albeit its necessarily variegated persistence, constitutes the history of humankind as an epistemology of re-search. That said, each historical moment has its own épistémè of re-search. This is determined by and determining of its scientific, technological, medical, legal and juridical, cultural, and aesthetic parameters; as it simultaneously integrates elements from previous paradigms and imagines the forms of a barely legible imminent future.

The post-Enlightenment period has produced an admixture of paradigm shifts in epistemology; and each épistémè of re-search makes its own idea of history. Each of these has its own rendering of the dynamics between the idea of the past, the present, and the future as categories of historical time,

as such dynamics are generated by and circulate through these knowledge systems. Such shifts are sanctioned by philosophical markers, historical convergences, and dates including (in roughly chronological order): Diderot's *Encyclopédie*; Samuel Johnson's *Dictionary*; Kant's universal history; 1789; Hegel's *reines Zusehen*; 1830; Marx's historical materialism; Alexandre Kojève and his legacies; Benjamin's principle of montage into history; 1945; 1968; Post-Historie; Situated Knowers; the Subaltern; Postmodernism's incredulity towards meta-narratives; New Historicism; 1989; the End of History and the Last Man; the events of September 11th 2001; the 'Arab Spring'. There are others.

Each of these events and historical processes as palimpsests, social hieroglyphs, as proxies even, is a challenge that, because of our own épistémè of re-search, makes us ask again in new ways: What is the practice of history as a form of knowledge (with its multiplicities of duration and time such as for instance its *longue durée* or its micro-temporalities), and where is it? What (because of these shifts) is the future of and for knowledge? What does the future hold for the generating and circulating of knowledge (given that knowledge is now expressly a capitalized and monetized commodity in our 'knowledge economy'), and what are the implications of this for the archive and the archival, not least because of the Internet (and the Internet as archival) with its distinct operations of searchability and distributability?[6] And finally, how might our praxis as researchers – our labour, our sensibilities, our choices and decisions, our curiosity, our hopes, our desires – be both challenged by these shifts and, despite this, also perhaps facilitate research's capacity for criticality?

V

> Who controls the past … controls the future: who controls the present controls the past.[7]

At the same time as Jean-François Lyotard was publishing *The Postmodern Condition*, his 'report on knowledge' (as the book is subtitled) in the post-Enlightenment period in which he identifies the contemporary's incredulity towards (the legitimacy of) its meta-narratives, in post-industrial society, certainly in the UK as the home of the industrial revolution, the idea of 'history' began to enter a new phase: that of heritage. In the UK, because of the consequences of a mix of Margaret Thatcher's devastation of 'unproductive' industries (the primary sector of the economy), the collapse of manufacturing (the secondary sector), the deregulation of financial markets, privatization, and the promotion of a political ideology of 'the past' as an ahistorical and bucolic idyll of benign Empire, all over the country changes ensued in its industrial landscape. Much as raw materials 'proved' themselves to be no longer economically viable, so History, which is to say (raw) material history, ground to a halt. Sites of former industrial production became sites for post-industrial reproduction for the dark tourism of the Heritage Industry. The precarity of everyday life gave way to the performance (by those in the

service industry or tertiary sector) of industrial production in the form of themed 'living museums'. Here, what is called 'living history' replaced what is presumably its opposite, 'dead history', or what we call history. History became heritage as its modes of production, labour practices, and the intrinsic value of fossil fuels or precious minerals and metals as materials and commodities were made over for the purposes of edu-tainment. (There are few things more dispiriting than speaking to a costumed actor role-playing a chipper miner in a former pit village turned living museum.) This is an industry that neither produces nor manufactures, and whose currency is alienated affective labour. This is true for its own precariat workers, and for us. As a response to and precipitate of de-industrialization, the Heritage Industry was surely a functioning of that discourse of the End of History and the victory of neo-liberal (democratic) capitalism.

Any present-day effort to engage with the question of history as a form of knowledge must do so, I think, through a critical alertness to the kind of model of history that the Heritage Industry operates: i.e. that épistémè of re-search in which the present invents (the idea of) 'the past' as a category of timeless historical time to populate that present in order to colonize or take possession of the future. (And the future is certainly a possession that can be taken, and taken from us, as I will go on to discuss.) To do otherwise is to replicate it; and thus to ourselves inhabit the eternally recurring plastinated ruins of a de-commissioned, post-industrial wasteland.[8]

Such an attentiveness to this model of history is often observed by epistemologists, historiographers, theorists, and not least practitioners utilizing archives or 'the archive'. In fact, our recent archive fever and our archival, an-archival, anomic, genealogical, and archaeological impulses – which as spatio-temporal processes figure the past as a site of radical potentialities – may well emerge directly out of (and as a critical response to) such a 'crisis of history'. They may well be a taking up of Fredric Jameson's 1981 instruction to 'always historicize' (1989[1981]: 9) At the same time, after Warburg, Benjamin, Richter, the Beckers, and Boltanski, and even more so after the end of the Cold War, and the European revolutions of 1989 and their legacies of independence, nation imagining, ethnic and sectarian violence, and remembering, employing archives and 'the archive' as repository, inventory, source and resource, and as places of authority and power, and to do so *as provocations* (as transformations, fictions, fabrications, re-enactments, and re-stagings) is a form of remobilizing enacted in order to produce (the question of) history differently. Such re-activating practices are 'institutive'.[9]

VI

In our late capitalist global algorithmic knowledge economy, knowledge has become confused with or misconstrued as data.

If the question of history as a form of knowledge in and after Postmodernity is articulated by way of both an incredulity towards meta-narratives and

a hollowing out of history into heritage, today history's predicament is knowledge's instrumentalization as 'mere' data. As that thoughtful critic of the university Thomas Docherty writes, 'the demand for … data to operate as a kind of substitute for knowledge … is part of a culture of "immediacy" [which is] anathema to knowledge, and to education, both of which require time, delay, and the mediations of thinking'.[10]

Yet in the age of Big Data no archive is too extensive, no archive project too grand or too foolhardy to be imagined. As I write, the Library of Congress is compiling Twitter's public tweet archive, with over 170 billion tweets, and which continues to grow with well over half a billion tweets each day. Unsurprisingly, this archive is still inaccessible, as the Library of Congress Information Bulletin states: 'It is clear that technology to allow for scholarship access to large data sets is not nearly as advanced as the technology for creating and distributing that data.'[11] And this is not a new phenomenon: since 2004, the British Library, responding as their website says to 'the challenge of a potential "digital black hole"', has been archiving (via what's called the UK Web Archive) all UK websites in order to 'preserve and give permanent access' for future generations.[12] Exemplary of this preservationist impulse is the Internet Archive, the digital library of Internet sites founded in 1996, which is likewise 'working to preserve a record [of the Internet] for generations to come'.[13] Its ambition is such that as it archives the extant world, it will culminate inevitably in a real-time Internet archive that will be coextensive with, and eventually, surpass it.

Many years ago, Jorge Luis Borges (1998[1946]: 325) in his one-paragraph short story 'On Exactitude in Science' warned us against such hubristic folly:

> … In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it. The following Generations, who were not so fond of the Study of Cartography as their Forebears had been, saw that that vast Map was Useless, and not without some Pitilessness was it, that they delivered it up to the Inclemencies of Sun and Winters. In the Deserts of the West, still today, there are Tattered Ruins of that Map, inhabited by Animals and Beggars; in all the Land there is no other Relic of the Disciplines of Geography.
>
> – Suarez Miranda, Viajes de varones prudentes,
> Libro IV, Cap. XLV, Lerida, 1658.

In the age of Big Data, and also the digitally cartographic with its geo-spatial technologies and applications – such as for instance Google Earth, Google Maps, and Google Street View with their use of satellite imagery, aerial photography, and image-stitching panoramas, and their navigation features such as zoom-ability and pan-ability – it is patent that Borges' warning has gone unheeded.[14]

VII

The revolution will not be televized, but it will be archived live.

Activists in the 1960s protest movements knew that the revolution would not be televized. It would take place live. You had to be there, on the ground, on site. As Gill Scott-Heron put it, discussing his track of 1970 'The Revolution Will Not Be Televised', the change in people's minds, that *coming into political consciousness*, couldn't come from television, and neither could it be captured on film and played back to them via television.[15] The revolution will be live. Its liveness was its very condition of possibility.

Scott-Heron did not foresee Web 2.0 Culture, that culture of social media through which individuals, protesters, citizen-journalists, citizens, the multitude with hand-held screenic devices instigate a vernacular documenting and recording of events as they unfold. He did not foresee the dissemination simultaneously of still and moving footage, the live-ness of live streaming, Facebook, Twitter, and YouTube into distributive platforms orchestrating a revolution. As one protester during the Arab insurrections put it: 'We use Facebook to schedule the protests, Twitter to coordinate, and YouTube to tell the world!'[16]

This is a glimpse into the fractious geo-politics of the Internet as a globalizing network of networks, where the digital public (albeit highly corporate) sphere marks a turn or a return to the civic. There is something wondrous about the immediacy (albeit the mediated and re-mediated immediacy) of the present as it is archived live. Although, we will do well to remember that while it might be wondrous *to be able* to see, *what* we see isn't always so wonderful. This is 21st century witnessing, with the self-archiving document as testimony. This is to live through the civil disobedience of the global village. Men and women make their own history. We make history under existing *and* self-selected circumstances, literally, as it takes place. On this, we might recall Derrida (1996: 13) writing almost 20 years ago in *Archive Fever* that 'archivization produces as much as it records the event.'

That said, most of us are of course *not* there, live, but we experience such acts *as* live, albeit always and already mediated by technology. So we watch on our screens – our tablet touchscreens, our iPhone screens, our computer screens, and yes, even our television screens – as Al Jazeera (and any and every other network) plays, re-plays, and plays out the revolutionary wave of demonstrations and protests in Tunisia, Egypt, and Syria; and more recently protests in Turkey and Brazil, and more recently still the military coup in Egypt and its ensuing massacres. And we see, framed by our screens, the live-streaming present archived as it takes place.

Despite its efficacy, there is an element of the spectacle in such access, produced and distributed as it is by the voyeuristic digital infrastructure of a mediated and thus distanciating surveillance culture. It's live, the network is live, but it's not a 'being there'.[17] Accordingly one has to wonder, following on from Derrida's observation above, what it means and what is the cost

for 'history' when live archiving itself creates the event; especially if, in a culture of immediacy, knowledge is being misconstrued as data.

To vanquish the spectre of the spectacle in general, my feeling is that this civic needs to be particularized. That there's an absolute specificity to these events that makes them significant and consequential in exceptional ways was brought home to me by a recent conversation with a mature student from Syria, exiled with his wife and children in London. He told me that every night he watches 30 minutes of footage streamed live via a surveillance camera trained on the front door of his parents' home in Damascus. He must watch, but every second is more than he can bear. Such compulsory torment is a true rendering of the 'intense proximity' of distance and 'the terrible nearness of distant places', phrases coined by curator Okwui Enwezor (2002, 2012) to characterize in an analogous context the mediated and remediated frontiers of our globalized communicational relations.[18] Getting a sense of the exceptionality of this gap, this remove, this *not being there* but it still being live, is where the researcher's efforts at empathy (without inanity or contrivance) becomes the spur for producing differently history as a form of knowledge.

VIII

> Data in the age of digital searchability and distributability is transforming, and being transformed by, archives, the archival, and the archive.

Ours is a late capitalist global algorithmic knowledge economy. In this economy, the question of history as a form of knowledge disappears, and is replaced with the processual operations of the searchable and the distributable. Here Big Data tools and processes facilitate the intelligence–industrial complex: a government, a company (Internet service provider, search engine, etc.), or the intelligence community's ability to establish, handle, and manipulate huge data sets, discerning patterns of activity (every act by phone, text, search, chat, or email, etc.) that enable them to improve their decision-making which in turn better envisages future activities. This is not unconnected to the 'vernacular datasets of the digital age', as media theorist Tara McPherson (2013: 7) has characterized social media 'archives' such as Facebook, YouTube, Tumblr, and Instagram which, as they accumulate and self-archive, are generative through the capitalization and monetization of their data. In all of this, value does not reside in searching, gathering, and distributing in order to, for instance, investigate, interpret, and change the world. Rather, it resides in search*ability* (the extent to which and the ease with which a thing is 'susceptibl[e] to being found', as art historian David Joselit has put it recently) and distribut*ability* (its susceptibility to being dispersed, given out, or delivered, we might say). Searchability and distributability become the two most critically significant terms in our épistémè of re-search.[19]

This economy raises three pressing challenges. The first is to the *politics of knowledge*, which is also the politics of knowledge in the future, and of future knowledges: what are and what will be the conditions for knowledge's production, dissemination, and utilization (not least in a climate of analyst interceptors, military redactors, and publisher expungers), and what does it mean for us to contribute to, and be complicit with, the activities of this épistémè of re-search? The second challenge is to the *politics of ownership*: who owns and thus controls data? Asking this question raises a whole series of further reservations about governance, the disparity between privacy and security (that in our permanent state of exception we are monitored to protect us), intellectual property, and chronic breaches of data protection law (since the act of giving away is in no way identical to it being taken or captured) as vital legal safeguards, oversight, and accountability limp far behind.[20] The third challenge is to the *politics of the human*: it is our labour as activities that are producing the data (handed over by us willingly) and metadata. It is our data and metadata that are monitor-able, search-able, analyse-able, exploit-able. Our rights that are being revoked gradually. Our privacy that is being violated. Our identities that are being compromised or perhaps constituted even, as I later contend, through searchability and distributability as operations of this global algorithmic knowledge economy.

This is today where the future of the archival is being fought out, and how our current épistémè of re-search is transforming, as well as being transformed by, archives, the archival, and the archive. I raise this because of concern for the extent to which the contemporary continues to be in the thrall of the archival, and its impulses, as a particular version of history as a form of knowledge, and indeed of knowledge as a particular kind of form. Undoubtedly these re-configurings of knowledge, ownership, and the human will have damaging consequences – partly because such re-arrangements are proceeding largely unacknowledged in debates on archives and the archive, history, historiography, and epistemology[21] – for the future of research in the arts, humanities, and social sciences, as well as for visual cultural practices, and more profoundly I venture for the very idea of the future itself as a category of historical time.

IX

> The Internet is a living archive governed by (and governing) the operations of the searchable and the distributable.[22]

There are archives on the Internet. There are archives of archives on the Internet. There are archives of the Internet. And then there is the Internet itself as an archive and as archival. The Internet as an archive and as archival is figured as a network, a network of networks, an organizing principle of global dimensions whose arrangement (whilst incredibly uneven) is worldwide and planetary. Much like the archive, with its etymological roots in the Greek *arkheion* (the dwelling of the *archon* under whose authority

archival documents were filed and interpreted), the Internet is a repository, an inventory, a source, and a resource, a home of storage, generation, transmission, and distribution. As such, it raises questions for the archive, the archival, and storage and retrieval systems; all the more so because its modularity threatens an almost limitless re-arrange-ability of things ad infinitum.[23] It is significant *that* these networks connect and inter-connect with one another, like a pulsating, self-perpetuating and self-preserving, non-organic sentient celestial being. But what is more critical is *how* they do so by way of the dynamic operations of the searchable and the distributable that govern actively, and that are in turn governed actively by, gathering, accumulating, storing, aggregating, arranging and managing, mediating and remediating, retrieving and presenting, disseminating and transmitting information and knowledge of the historical and the geographical.

X

As a living archive, the Internet mutates the stuff of memory.

History and memory, and history *as* memory, previously inscribed in the physical space of the archive as a place of storage, organization, and access have been transformed by computing-based storage and retrieval systems or apparatuses such as the personal computer, the iPhone, the portable memory stick, and that meteorological digital media *Gesamtkunstwerk*, The Cloud.[24] Such mobile and cloud storage is an outsourcing. Whether as open, closed, or semi-closed systems, by way of these apparatuses, memory as transitional is an externalization, as well as an extension. It is a mnemonic device. Artificial memory machines as repositories of knowledge are nothing new. Think alphabets, writing systems, movable-type printing, and the phonograph and the cinematograph as storage systems with their capacity to 'record and reproduce the temporal flow of acoustic and optical data', and thus to 'store time', as Friedrich Kittler (1997[1986]: 34) put it so well. What is new is the unprecedented speed at which and the extent to which the stuff of memory – this information, data, and knowledge as a source and a resource – is searchable, retrievable, and infinitely reproducible and thus distributable by such calculating and processual systems.[25]

If this is new, what is profound is that in this ecology such systems, or mnemotechnologies as Bernard Stiegler (nd) calls them, become both 'the object of a control of knowledge' and actually constitute the basis of control societies as such, as defined by Deleuze in his late writings. This is disturbing because of how cultural memory is now articulated through, as media archaeologist Jussi Parikka (in Ernst, 2013: 9) writes, 'the calculation- and number logic-based ontology of technical (and especially computational) media'. In such an all-encompassing programming ontology of software-based cultural memory, the stuff of memory is changed irreparably as it comes to be characterized by processes, *as* process: storing content or time or content as time for instance gives way to the distributive dynamics of the

processual per se. Search technology figuring personal history, for example, as no more or less than search history, the data patterns of traces of activity that we leave in our wake, along with the concomitant capitalization of memory, are testament to this. Indeed Internet archives, and I would add the Internet as archival is, as another media archaeologist Wolfgang Ernst (2009: 84) proposes, 'a function of their software and transmission protocols rather than content'. If then the Internet mutates the stuff of memory to the extent that searchability and distributability as operations are in no way *about* memory *as* content (and the same must thus be said for data, information, and knowledge itself), what motivates their functioning?

XI

The Internet as a living archive is self-generating.

The content of archives, in fact *all* content, has become largely irrelevant. What matters is not *what* is gathered, arranged, and transmitted, but *how* such gathering, arranging, and transmitting works.[26] 'What' is supplanted by 'how'. This 'how' is tied to the specifics of web-born and web-based searchability and distributability; both those digital tools that, in navigating actively map the web itself, and the data that flows in a motivated way through it, likewise carving out its topographic contours. Rather than the content, then, it is these dynamics, along with the processes, the processuality, and the operationality of the system and its protocols (such as archiving software) that make the Internet a living archive. In fact as an autopoietic machine – an integrated and self-governing system that produces, maintains, and recreates itself – it is these protocols, and such programming and operations that make the Internet not just a living archive, but also a self-generating one.

Getting to grips with this has a bearing for two reasons. First, it is pressing because our ongoing obsession with archives, the archival, and the archive almost entirely has content at the centre of its attention. To continue to focus on content – the ambition to archive Twitter, but also to transform and animate anew 'history' as a form of knowledge by way of archives – is to miss the present location, nature, and terms of the dispute.[27] Second, it confirms that archives continue to be infused with authority and power but that, rather than being embodied as Derrida tells us in the figure and form of the *archon*, today it is embedded in 'architectures of software' (Parikka, 2012: 115).[28] Such authority and power are exercised by way of a 'mathematics of software' (Chun, 2004; Parikka, 2012) (calculability, programmability, coding, cryptanalysis computation, protocols, executable algorithms, bits, pixels, the quantifiable, etc.) where processuality, operationality, and functionality shape and facilitate data's searchability and distributability. Getting this is crucial because we need to begin to grasp, even just conceptually, what it means in a post-content condition for IP addresses and web browsers to be communicating with other computers and with one another, and for these

semi-autonomous 'intelligent agents' – operating on our behalf but without our knowledge or consent – to be engaging in 'incessant and non-volitional dialog', as Wendy Hui Kyong Chun (2011b) has put it so well.[29]

XII

> The Web 2.0 culture of 'user generated content' has given way to the Web 3.0 culture of the 'content generated user': Medata Я Us[30]

The collaborative peer-to-peer sociality and conviviality of the Internet as a participatory platform (by way of social media such as Facebook, Twitter, Flickr, Instagram, etc.) was only ever a distractive Trojan Horse. That is to say, Web 2.0 culture, as a collective fantasy of democratic participation, was only ever a coercive apparatus (*dispositif*) whose function is to smuggle Web 3.0 culture into our very marrow. For as we archive ourselves, so it archives us. It was only ever a prelude to the great data harvest. Indeed Web 2.0 culture distracts us from a most serious concern in our contemporary environment; one that is largely invisible and thus all the more in need of careful attention: metadata.

Metadata as data about data, information about information, is figured as an archiving protocol that facilitates the retrieval, structuring, use, and mis-use of data, information, and knowledge. It is at the heart of our age: it underpins, drives, and shapes information economies, societal networks, search engines, communication technologies, websites, online images, maps, catalogues indexes, and stock markets. It is the structure, the organizing principle, the ecology that governs us.

It governs us and constitutes us. For in all this *we* are metadata. More obviously, by way of metadata the 'content generated user' is a marker of the human as product. That is to say, we are enmeshed in a culture of life-tracking. Metadata trawls through our searches, monitors our buying habits, its GPS systems tracking us, its cookies shadowing us, tagging us, remembering us, accumulating data and information along the way, for its own sake, for purposes ominous or as yet undetermined or unanticipated. As it collects, stores, mines, and analyses, it earns capital by, as cultural and media theorist Gary Hall (2010: 16) writes, 'extract[ing] economic value' from our labour as we produce free data via Amazon, Facebook, and so on which is then monetized by these private companies for demographically targeted advertising, sold on to further companies, or given to government.[31] All the while it accumulates, number-crunches, and processes, identifying the discernible patterns of our activities as individual profiles that are then offered back to us as desire.[32] But this is more than life-tracking, it is life-*constituting*. More insidiously then, metadata doesn't just offer our desire back to us: mobilized as a predictor envisaging future activities and thus the future as such, by way of, for instance, the NSA conducting so-called 'pattern of life' analyses, it constitutes the latest iteration of the human's subjectivation. Comprehended in this way, it shapes experience, our sense of privacy, identity, security, civic-ness, labour, sharing,

peer to peer-ness, being together, and life itself. In shaping what we are as a cognitive and psycho-social system, it changes the human condition itself. If the Internet as a living and self-generating archive is autopoietic, metadata as an archiving protocol is perhaps an allopoietic machine that produces things other than itself.

Perhaps it was always thus. We were always already calculating (and calculable) machines: the human as (and productive of) data resource: genetic, cellular, molecular, bio-informational, encoded, archival. The 19th century for instance gave us Adolphe Quetelet's codification of statistics, and later Frederick Winslow Taylor's scientific management, and the data gathering and archival practices of biometrics, psychometrics, inheritance, and proto-eugenics as enacted by the likes of Alphonse Bertillion and Francis Galton – the first to individuate, the second to visualize – as part of a wider efficiency drive to manage the human as a productive and re-productive citizen of mechanized industrial capitalism.[33] The fin-de-millennium gave us a draft of the fully sequenced human genome, the 'book of life' as archival, stored in databases and accessible on the Internet, whose generative capacity seems inexhaustible; with patentable entities (including biological products, genetically modified organisms, and genetic material), and anticipated developments in medicine, biotechnology, and treatment and disease management that will keep Big Pharma busy for years to come. Today the human is recoded as forever-productive bio-computational searchable data storing, data generating, data distributing machinery. Now we will be always already metadata.

A recent example will suffice: with regards to the revelations about the US National Security Agency's Internet monitoring program and the UK Government Communications Headquarters' Mastering of the Internet and Global Telecoms Exploitation programs, what should send tremors through the collective bio-techno-archivo-body politic is not per se this violating of privacy, the revoking of rights, the compromizing of identities via the detailing of intimacy, and ultimately the mastery of the individual *by* surveillance. It may well be the 'largest programme of suspicionless surveillance in human history', as Edward Snowden has put it, but this point is banal. More challengingly, this episode exposes and confirms the extent to which the latest iteration of the human, constituted (as an advanced information management system) by these power–knowledge regimes of data and metadata, is functioning within (and as part of) the post-content condition. As the NSA and the White House keep telling us, they are 'not looking at content'. We (as human, all too human) do not believe them, but we should because this is the point: what we *say* doesn't actually matter; it's only what we (as calculable bio-informational data patterns) *do* that does. Any phone call makes this clear: de-territorialized yet all the more tethered because of it, by way of geo-location (network-based or device-based) finding and tracking aids, we are indexed dynamically in time (the 'when'), durationally (the 'how long'), locationally (the 'where'), and relationally (the 'from where to where', and the 'from whom to whom').[34] It is this 'doing'

which marks our archivable selves as tag-able, locate-able, map-able, track-able, search-able, reach-able, recover-able, rank-able, transaction-able, and distribute-able.[35] With always more metadata to come, as software-generated programmable and calculable media objects vulnerable to the whiles of the algorithm, the human is simply a constellation of almost infinitely ever-changing coordinates.

That the human comes into being as a subject of data and metadata, and is subject to it, has consequences for the figure of the researcher whose very cognitive, psycho-social, and affective desires to search, to research, to roam while digging and look for with care, to be curious, to doubt, to interpret, to act, and perhaps even to change the world are thus themselves being constituted through searchability and distributability as the critically significant operations of our épistémè of re-search. These operations are composing our desire to know and to be curious: in fact our very *capacity* to desire-to-know and to be curious. This is an ultimate victory of late capitalism's global algorithmic knowledge economy.

XIII

We do not know what the future wants from us.

If this all sounds a little dystopian, that's because it is meant to. This is the case because it is not just the past but also the future that is at stake here. Our late capitalist global algorithmic knowledge economy utilizes archives, the archival, and the archive to overwhelm the (idea of the) future. This then becomes a danger of the Internet and the archive, and the Internet as archival. In such instances we are future-proofing the future. And we are future-proofing the future to the detriment of the future.

The Internet and the archive, and the Internet as archival, are saturating and thereby overwhelming the future as a category of historical time. This is due to our economy's intensified convergence of the calculable, the quantitative, and the predictive whereby the future is discovered (pre-emptively) as a time and place ripe for exploitation (research as speculation) that, by filling it with the interests of 'the now' masquerading as sharing-for-tomorrow, brings it both closer to us and strips it of its potentialities. From the ground up, every minute 72 hours of video is uploaded onto YouTube's servers. From the top down, in the context of the NSA and GCHQ's Internet monitoring programs whose ambition is to scoop up online and telephone traffic by tapping into, storing, and analysing huge volumes of data drawn from fibre-optic cables, the *Guardian* newspaper reported on June 2013 that '[e]ach of the cables carries data at a rate of 10 gigabits per second, so the tapped cables had the capacity, in theory, to deliver more than 21 petabytes a day – equivalent to sending all the information in all the books in the British Library 192 times every 24 hours'.[36]

Do the maths, and imagine the sheer volume and velocity of data and metadata engulfing and devastating the future's topographies.

The predictive in the age of digital searchability and distributability is at the heart of the struggle over the politics of knowledge, ownership, and the human. Computers trawling huge data sets (as the raw material of knowledge) search for patterns in these troves of data in order to monitor and measure and manage (and profit from) that data, information, and knowledge in what has become a post-nation state monopoly of privately regulated governance in our late capitalist global algorithmic knowledge economy.[37] Such predictors, statistical modelling, and data analysis as search technologies in discerning patterns envisage future activities that envisage the future itself. Economically, this includes financial trading models, and speculating on debt's (including default's) future earning capacity (government debt, a bankrupt city's 'legacy' costs on previous debts, student loans, mortgage owners' negative equity, consumer debt in general) and managing indebtedness. Environmentally, this includes climate change models forecasting global warming, and rampant resource depletion, as well as process optimizing weather, space, geophysical, and Pharma data. In terms of the pharmaceutical, genomics, and bio-informatics industries, this includes personal genome sequencing which in revealing pre-disposition precipitates preparedness, discrimination (by health insurers), and the development of specific treatments; which is not unconnected to the Pharma industry's opposition (as they patent and market drugs) to the full disclosure of clinical trials data. As regards security, defence science and technology labs promote 'integrated futures thinking' through 'horizon scanning capability' in order to produce new protection systems and battle-winning technology, and predictive policing is upon us; *Minority Report* was a documentary.[38] Vis-a-vis retail, it includes the decades-old practice of market research, especially when in league with neurology and psychology, of targeting customers by not just guessing at but also provoking behaviours; Google Now is already predicting (by way of search habits and location) what you want to know before you ask. Such envisaging future activities that in doing so envisage the future itself includes all estimating and managing risk. It includes all forecasting, whether statistical, visionary, futurological, utopian, apocalyptic, or necromantic. It even includes archival projects committed to the past's radical potentialities that inadvertently litter the future with the debris of the past; where the future becomes the dumping ground for the past. In all cases, the predictive is anticipatory. In this it is though absolutely unlike Orwell's *1984* in which Winston Smith works as a clerk in the Records Department of the Ministry of Truth re-writing historical documents in order to change the past for the future. For us, the predictive as anticipatory populates the future in order, almost like a prediction *from* the future, a regressive *nachträglichkeit*, for searchability and distributability as operations to dictate its terms and conditions. In all this, the danger ultimately here is in the fact that, much like the illusion of storage's limitless capacity, so too the future is not inexhaustible.

Against this, we need to attend to both the future as a category of historical time, and to what was for VI Lenin the burning futural question of his moment; and to ask it again (albeit to different ends): what is to be done?[39] Doing so orients us more towards the future's radical potentialities. For even if the future is no longer contingency par excellence, such orientation makes it possible to revisit the challenge of how we relate to and conceptualize the future; our openness or our opening ourselves to it; how it functions as a most productive 'space' for projection, imagination, and fantasy; how we can harness our capacity to desire to speculate on the not-yet and the yet-to-come; and ultimately to celebrate un-knowability itself. In this, much as it is for Benjamin's notion of the charged energies of the outmoded that short-circuit the present with the anachronistic and enchanted splinters of the past's potentialities, so it is for the future whose 'fragments of utopian potential' (Leslie, nd) as a source of revolutionary energy vibrates, interrupting the present, but doing so only to demand that we concede it is unknown to us.

If the future is a category of historical time, much like the archive and the Internet as a home or dwelling, like them it is also one of geographical space and place; albeit a 'no place' or 'not a place' of utopia. As always and already spatio-temporal, the future's utopian impulse – both in its utopian form and its utopian wish – comprises a sense of a place, a negation of bounded topographies, and as its own condition of possibility the future's radical potentialities. The future is, as Russian futurist Velimir Khlebnikov wrote, 'creation's homeland'. The future-oriented, governed by this utopian impulse thus looks to create 'outlines of a better world', as Ernst Bloch put it in *The Principle of Hope*. Which is why I need to return urgently to the figure of the researcher, for surely the absolute specificity yet planetarity of our acts of 'roaming while digging' and our 'look[ing] for with care', our searching and re-searching as praxis, the eccentricity of our desirous *ways of doing* research, necessitate and provoke motivating driving forces that render possible worlds imaginable and, in so doing, can bring about meaningful change? There is much to do. I propose three institutive driving forces: cutting, curiosity, and hope.

XIV

Knowledge is not made for understanding; it is made for cutting.

I find the possible means to craft productive (which is to say hopefully fractious) counter-dynamics through the flows of our épistémè of re-search's late capitalist global algorithmic knowledge economy with its distinct operations of searchability and distributability by turning to the genealogical thinking of Foucault's Nietzsche.

Foucault's genealogical thinking (Foucault, 1977) rages against the 'dialectic of memory'. For Foucault, genealogy's 'duty' is not to demonstrate that the past actively exists in the present, [and] that it continues secretly to

animate the present' (p. 146). For him, 'knowledge, even under the banner of history, does not depend on "rediscovery"' (pp. 153–154). In saying this, Foucault means to oppose 'history as reminiscence or recognition', history 'as continuity', and history 'as knowledge' (p. 160). This implies instead, as he goes on, 'a use of history that severs its connection to memory' (p. 160).

The historical consciousness of what Foucault calls such an 'effective' history enacts such severing by way of the 'instinct for knowledge' which is itself 'malicious' because it destroys (pp. 162–163): it destroys the pursuit of origins, it destroys that which was already there, the search for total knowledge, faith in universals, confidence in the unity of the knowing subject, and so on. Thus it is also against the demand that we must return to the past, that we are answerable to what has come before, and, accordingly, against the logic that because of this our futures, the future itself, the yet-to-come, is both pre-determined and over-determined by it. For Foucault, this is all so because ultimately, as he makes clear (pp. 153–154), 'knowledge is not made for understanding; it is made for cutting'. It is by way of history severing its connection to memory that it is possible for it to 'encourage … the dangers of research and [why it] delights in disturbing discoveries' (pp. 162–163). This is how for him the formation of counter-memories take shape, which in their very forming transform history into a 'totally different form of time' (p. 160).

As a way 'to *make* difference', as Foucault puts it in his discussion of genealogical thinking, such counter-memory, such a severing of history from memory and by extension the future from its own predictive inevitability, becomes a driving force for *making knowledges differently*. This is the means by which to do some of the work of research in the age of digital searchability and distributability. For it does still matter *that* we search and search again, and *how* we do it. It is these *acts* of doing research – and there are a hundred and one ways to 'roam while digging' and to 'look for with care' – that hold the promise for making knowledges differently. And this is despite, or perhaps even because we are researchers labouring in (and thus subjects of and subject to) the conditions of our own épistémè of re-search.

There is all the more reason then to ask what is to be done, and to question in ways that just might change the world, even a little. Questioning, whether inquisitive, interrogative, impassioned, bellicose, or simply born of perplexity or unreasonableness, is itself always a driving force of dissent. Acts of questioning confront and arrest arrangements, putting pressure on them in ways that compel them to reveal their own inadequacies. Such questioning might take a number of forms – some older, some newer – by which to enact a dissensus: a very particular kind of act of political disagreement, a difference of opinion, a dissenting opinion in which the very possibility of the political subject to demonstrate, as Jacques Rancière has it (2004: 304), that they are 'deprived of the rights that they ha[ve]' as well as the rights that they did not have, demonstrates, through their action that 'they ha[ve] the rights that the constitution denied to them', and in so doing they enact these very rights.

Foucault for his own part proposes jolts, surprises, the debris of disparity, error, accidents, ruptures, discontinuities, short-circuits, and recursions. Such propositions are today still workable. We could add: the outmoded, redundancy, anomalies, contingency, disorganization, interference, undoing, failure, and there are others. With further attention to the specifics of the operations of searchability and distributability in our late capitalist global algorithmic knowledge economy, we might also put forward:

- Interrogating critically and to disruptive ends the means by which (and why) data is gathered, accumulated, aggregated, and distributed.
- Utilising archives as sources and resources, and the archival as a tactic to locate and challenge the logic, the structure, and the nature/status of data, information, and knowledge in ways that might undermine from within the ambitions and operations of such systems.
- Picking away at data and metadata – interrupting their logic, their rhythm, their ubiquity – as they create, shape, and pervade the informational, the communicable, the environmental, the bio-cultural, the historical, the archival, the knowable, the searchable, and the distributable.
- Imagining how the structure and properties of datasets, as well as their content (such as climate data, space data, energy data and pharma data) can be pressured, troubled, and interrupted.
- Admitting that quantitative data visualization in and of itself is absolutely not interesting. It's nothing more than the proof of the victory of data over knowledge in the post-content condition.
- Employing the material operations of editing, montage, and assemblage.
- Grasping how datasets might function beyond their original location and purpose, and how their transformation by the utilization of languages visually and poetically might articulate an aesthetics of system-ness as criticality.
- Conducting research that is made up entirely of the Internet as a living archive – of blog fragments, GPS locations, online photosharing communities, and so on – to render differently the creation, organization, and presentation of data and metadata.
- Pointing out that the map *is not* the territory, much like the human genome is not the human.
- Hacking
- Whistleblowing
- Glitches
- Going for a walk.
- Going for a walkie-talkie with Zello.
- Joining The Free University 'movement' as an alternative knowledge economy 'free' of the market.
- Reading Aaron Swart's 'Guerilla Open Access Manifesto'.
- Instituting '"counter-institutional" platforms, tools, databases and other media experiments', as Hall (2010: 18) has proposed, that are 'capable of maintaining a much needed level of opacity, noise, error, feedback, delay, antagonism and dissensus within the system'.

- Re-engineering the Internet.
- Grasping that we do not know what the future wants from us.
- Keeping in mind that searchability is something's *susceptibility* to being found, and distributability is something's *susceptibility* to being dispersed or delivered, and thus that the condition of susceptibility (which is a pre-condition) is itself a *vulnerability*.

XV

Curiosity and hope are bittersweet double binds, but they're all we have.

Such questioning acts are driven by curiosity and by hope, and the desires that drive such desires. Both curiosity and hope find their earliest discursive protocols in Book 18 of Homer's *Illiad* (700 BCE) in the figure of Haphaestus. The much-derided 'crippled' son of Zeus and Hera, Haphaestus is the smithing god; the god of blacksmiths, craftsmen, artisans, sculptors, metals, and metallurgy. He is the mechanical alchemist responsible for crafting Hermes' winged helmet and sandals, Aphrodite's girdle, Achilles' armour, and Eros' bow and arrows. He also crafts from water and earth Pandora, the first woman, endowed with the gifts of the gods. It is Pandora's curiosity that leads her to release from her jar all humankind's evils, retaining for them hope. While apparently affirmative, even hope proves itself, as Nietzsche (1994[1878]: # 71) was to write in *Human, All Too Human*, 'the most evil of evils because it prolongs man's torment'. Such is the nature of both curiosity and hope as bittersweet double binds.

Nonetheless, perhaps because of this, we must harness curiosity and hope not just because they are all we have, which is true, but also because they are the fuel that drives our desires to research, to make knowledge and to make knowledge differently, that drives our searching and searching again, our 'roaming while digging', and our 'look[ing] for with care'. Curiosity is such a practice, a will, a desire. It is at the root of inquiry, the desire to learn and to know. It is the quality of being eager to learn and know. It is the state of being curious itself. Curiosity is also a thing of interest, a curiosity, and thus reinforces both the nature of our interest in such things, and the things themselves as such: these documents, images, and objects, as well as the environments, situations, and relations by which encounters ensue between persons and things. Curiosity is a modality of encounter driven by a will-to-learning and a will-to-knowing which also indicates the reasoning behind our very desire to be curious, linked as it is to a sense of wonder, the excitement of discovery and the pleasures and dangers therein. Such coming-to-know becomes an invitation to further curiosity, wonder, thinking, and change. This is why curiosity, as Foucault (1996[1980]: 305) writes, 'evokes "concern" … the care one takes for what exists and could exist'.

As hopeful as I am about curiosity's promise though, I have to wonder if this sensibility that drives learning and coming to know, inquisitiveness itself, as a form of knowledge production, of making knowledge differently, has in

its very fibre been damaged irreparably. My disquiet articulated throughout this article is a concern then also for curiosity, and for its future: what are the consequences for curiosity of our épistémè of re-search composed through our late capitalist global algorithmic knowledge economy's operations of digital searchability and distributability? What are the effects on curiosity if, as I have claimed, history is a 'living museum'? When knowledge is wholly capitalized? When the politics of knowledge, ownership, and the human are re-configured by the predictive envisioning of how their futures will unfold? When content has become protocol, 'what' has become 'how'? When we are in a post-content condition? When we are metadata, constituted as a constellation of coordinates, and machines indulge in chatter that is anything but idle? When the future as a category of historical time is overwhelmed by predictive analytics (and even by institutive archival projects re-activating the past's radical potentialities)? What, I also have to wonder, does it mean for curiosity and what it has the capacity to do when the lexicon of processes like 'data mining' – a semi-autonomous computational process which discerns in large data sets patterns of activity and extracts that information which is then put to further use predicting the future – is itself designated by way of the vocabulary of epistemology, archaeology, geology, and industrial production? And what about our supposedly sacred acts or activities or behaviours or protocols (even) of research, of research as a praxis, of a researcher's desire for searching, gathering, investigating, speculating, conjecturing, detecting, doubting, questioning obsessively and compulsively? What furthermore about flitting, serendipity, hunches, browsing, and cruising, those ways of doing research in which you're never sure what you're looking for, or if or where you might find it; that potential to come across something you didn't know you wanted or even knew existed? What about the unexpected, the unknown, the unknowable? What about those 'unproductive' practices of procrastinating, floundering, and incompletion, are these too now all subjects of and subject to (the operations of) searchability and distributability? When our very capacity to desire-to-know is susceptible to, now even composed, infused with, replaced by the operations of data analysis, statistical modelling, and predictors, what ultimately are the effects of all this on curiosity's capacity for criticality?

Which is why we have to have hope.[40] We are in the grip of hope despite ourselves; even and especially in the face of despair, doubt, uncertainty, hopelessness. We have to be. For if curiosity is the desire, hope (in its resolutely atheistic, non-theological, non-messianic form) is the drive that fuels searching and searching again, roaming while digging in a hundred and one different ways, looking for with care, and questioning in ways that in fact might just change the world, even a little. '[I]t is the questions that we ask', stresses cultural critic Gayatri Chakravorty Spivak, 'that produce … and not some body of materials which determines what questions need to be posed to it'. In this spirit it is time to turn away from a question left over (although very much still with us) from a more Enlightenment-couched épistémè of re-search: 'What can I know?' Today we must turn to one of a more communitarian utopianism: What may we hope?[41]

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Notes

1. Gayatri Chakravorty Spivak, comment at a lecture at Harvard University's Center for Literary and Cultural Studies, 1987, paraphrased in Irit Rogoff (2000: fn 39).
2. If in this article I am recognising The Research Turn, it is not unconnected to ongoing discussions of other recent turns – the educational turn, the pedagogical turn, the historiographic turn, the archaeological turn etc. – and of 'turning' itself in the discourse of art, art criticism, and curating. See for instance Holert (2009), O'Neil and Wilson (2010), Rogoff (2008), and Slager (2012). It is tied intimately to debates over the last two decades on practice-led research and artistic research. On this, see also the activities of EARN (European Art Research Network: http://www.artresearch.eu/).
3. For the purposes of this article, at this point I define simply archives, the archival, and 'the archive'. In its noun form, an archive is the physical environment/repository/storage area housing documents, records, etc., and refers also to an archive itself. In its adjectival form, 'archival' is of or relating to the archive. The term 'the archive' characterizes the way in which historical knowledges (and the conditions of knowledge) embedded in and embodied

by archives and the archival have come to be re-mobilized to political and aesthetic ends.

4. I take the phrase 'practice of history as a form of knowledge' from Green and Seddon (2000).
5. My use of the phrase 'épistémè of re-search' is taken, in modified form, from David Joselit's (2013: 58) use of the phrase 'epistemology of search'. Thanks to David for exchanges on this, the first of which took place I remember fondly a few years ago in a restaurant somewhere on the outskirts of Seoul.
6. I put the phrase 'knowledge economy' in scare quotes because for me it is so insidious. Certainly within the university 'sector', knowledge (its production as research, its distribution via print and electronic media, and its availability and accessibility, or otherwise) is rarely figured in terms other than those of economy: that knowledge as raw material is shaped by the hard work of the researcher whose cultural capital legitimates its value, and thus its cost and price. Knowledge as capital is then 'transferred' or 'exchanged' in order to maximize its economic and societal 'impact'. It is no surprise to find that this idea originates in the 'scientific management' of Frederick Winslow Taylor.
7. George Orwell, *1984* (http://archaeology.about.com/gi/o.htm?zi=1/XJ&zTi=1&sdn=archaeology&cdn=education&tm=28&f=10&su=p284.13.342.ip_&tt=13&bt=1&bts=20&zu=http%3A//www.george-orwell.org/1984/index.html, n.p.).
8. If the Heritage Industry gave way to the Memory or Memorialisation Industry, this is today giving way to the Forgetting Industry. Two examples will suffice: on the legislative side is the European Commission's proposal to create a new privacy right (really a consumer data protection plan): the 'right to be forgotten' (http://ec.europa.eu/justice/data-protection/document/review2012/com_2012_11_en.pdf, accessed 5 June 2013); on the more obviously commercial side is the burgeoning industry of online reputation management: http://www.guardian.co.uk/technology/2013/may/24/search-me-online-reputation-management (accessed 5 June 2013)
9. See Jacques Derrida, *Archive Fever* (1996: 7) where he writes about archives as 'institutive' and 'conservative'.
10. Thomas Docherty, 4 April 2013, quoted in *Times Higher Education* (http://www.timeshighereducation.co.uk/features/are-universities-as-open-as-they-should-be/2002888.article).
11. http://blogs.loc.gov/loc/2013/01/update-on-the-twitter-archive-at-the-library-of-congress/ (accessed 5 April 2013).
12. http://www.webarchive.org.uk/ukwa/ (accessed 5 April 2013).
13. To be kinder to such archiving projects, one does need to distinguish their ambitions for preservation from, say, Google's archiving activities which are driven by ownership (control) of and utilization (monetization) from data and metadata; although I'd still contend that both types of archiving – the preservationist and the predictive – do impinge adversely on the idea of the future as a category of historical time.
14. No mention of Google Street View would be complete without noting that for years Street View cars have illegally been collecting/pulling out and storing data (including personal emails and financial details) from unsecured public Wi-Fi networks. At the time of writing (August 2013) Google is being threatened with criminal proceedings if they fail to delete this data.
15. http://www.youtube.com/watch?feature=fvwp&NR=1&v=kZvWt29OG0s (accessed 5 June 2013) The last verse of 'The Revolution Will Not Be Televised' reads: 'The revolution will not be televised, will not be televised /

Will not be televised, will not be televised / The revolution will be no re-run brothers / The revolution will be live.'

16. See Kris Sangani, 'Arab Spring – Revolution 2.0', *E & T Magazine* 6(7), 11 July 2011 (http://eandt.theiet.org/magazine/2011/07/revolution-2-0.cfm, accessed 1 May 2013). I would want to make a strong claim for a distinction between this specific use of social media in the context of protest, and social media in general as a form of 'digital narcissism'.
17. See Nicholas Mirzoeff (2011). Mirzoeff uses the phrase 'the network is live'. See also Anna Everett (2002).
18. See the writings and curatorial projects of Okwui Enwezor, from for instance *Documenta 11* (2002) to *La Triennale* in Paris (2012).
19. In *After Art* (2013: 58), Joselit wrote that Google's success at the Epistemology of Search is because 'in informational economies of over-production, value is derived not merely from the intrinsic qualities of a commodity (or other object), but from its searchability – its susceptibility to being found, or recognized (or profiled).'
20. The final draft of this article was being written as the Prism scandal was in full swing. The US National Security Agency (NSA) Internet communication monitoring bulk capture and collection program, known as Prism, has been busy eavesdropping on Americans' phone records and Internet connections. This 'Internet intelligence system' has been giving the US government access to Google, Apple, Facebook, YouTube, Skype, Yahoo, and Microsoft's customers' data, having secured these private/commercial Internet companies' co-operation. If Prism collects data, it is Boundless Informant, the NSA's internal analytics tool that organizes and indexes metadata which is stored for up to a year in a repository codenamed Marina.
    As with Google Street View noted previously, likewise for the NSA and GCHQ breaches, what seems to be at issue with their Internet monitoring programs is not whether the organizations per se but rather the programs themselves knew they were capturing, collecting, and storing data illegally. The use of adverbs in phrases such as 'did not wittingly collect data', 'inadvertently collecting data', and 'indiscriminately vacuuming up data' bears this out.
    As an aside, on the perceived sheer scale and complexity of the Internet, and the Internet as an archive, it is well worth noting the following: given the ongoing urgency of heated debates around privacy, surveillance, transparency, availability, access (granting or restricting it), and the politics and ethics of ownership and control, it is significant that much less than 5 per cent of the Internet is searchable by commercial search engines. The rest, known as the darkweb or the deep web, which comprises anything from troves of consumer data to illegal marketplaces such as the drugstore Silk Road (now shut down) and child pornography, is largely non-searchable (see http://www.guardian.co.uk/technology/2009/nov/26/dark-side-internet-freenet). It is the actual scale and complexity of the darkweb that should both put the urgency of current debates into perspective and emphasize how inadequate they are. It is almost impossible to imagine the spatio-temporal dimensions of the darkweb; and this is in part interesting, I think, because it is largely not susceptible to (or refuses) searchability, retrievability, and distributability.
21. For sure this is truer in Art History, art criticism, curating, and visual arts practice, as well as in History, Cultural Studies, and Film and Media Studies than it is in Media Archaeology and Software Studies.
    Such an unwillingness to acknowledge this is in part because of the reactionary obsession with archives harboured by arts and humanities research

councils internationally, integral to a broader commitment to heritage and preservation, which in turn has a profound effect on what universities are capable of imagining themselves doing. In the UK this is tied to the bullying of the arts and especially humanities by the Higher Education Funding Council for England via its Research Excellence Framework's instrumentalization in our knowledge economy of research's production of knowledge as 'useful' in particular kinds of ways, and its dissemination as 'impactful'.

22. The idea of the Internet as a living archive is not a million miles from Eivind Røssaak's (2010: 12) consideration of 'archives in motion', an idea central, as Parikka has put it, to our 'new archival situation' and our 'new forms of archives in technical media culture' in which archives 'themselves are dynamic, changing forms' (p. 120).
23. This still important (although by now perhaps overly familiar) point is made also by Parikka (2012: 134.) This point needs to be supplemented by the fact that the Internet is of course nowhere near as open, limitless, and re-arrange-able as we often suppose. As Gary Hall has pointed out (in conversation) this is the case even more so today (and tomorrow) as more people access the Internet with tethered mobile devices – phones and tablets – which are controlled either by their manufacturers, who provide their operating systems, or the telecommunications companies that operate the mobile networks.
    I am all too aware of the dangers of making an analogy between the Internet and the archive, of the Internet as archive and as archival, and that the Internet can more straightforwardly be likened to a database, a collection, or an assembly. See, for instance, Ernst (2013: 84–86, 129, 138–139).
24. I found Coley and Lockwood's *Cloud Time* (2012) after this article's completion. In the book they utilize a number of the same ideas, terms, and tropes as I do in this article, which is nice.
25. Note, in all this it is not possible to say that digital memory storage is the equivalent of (or can be conflated with) human memory, nor incidentally that such memory's preservation is permanent; one should not forget that digital memory has its own versions of material deterioration. See Chun (2008, 2011a) and Parikka (2012: 119).
    Velocity and scale aside, such memory machines remind us of what we have known formerly: that organic or species-memory was always assembled, infused with, and orchestrated by the (*techné* of the) artificial.
26. For an interesting recent event on this topic see 'Critical Ways of Seeing: Visualising Knowledge in a Digital Age', held at Goldsmiths, University of London, 21–22 March 2013 (http://www.gold.ac.uk/calendar/?id=6243, accessed 12 May 2013).
27. There are exceptions here, of course, of artists interested in engaging critically with the structure, infrastructure, mechanisms, and the operationality, processuality, and functionality of archives. Sometimes this is done by way of the Internet – see for instance the work of Tom Corby, Martin John Callanan, and Thomson and Craighead – and sometimes by other means – see, for instance, contributors to this issue: Basel Abbas and Ruanne Abou-Rahme, Shezad Dawood, susan pui san lok, and Uriel Orlow.
28. It is not by accident that Google algorithms favour established and authoritative sites.
29. On packet sniffers, software packages that monitor/analyse local-area network traffic, and much else besides see Chun (2005, 2011b).

30. Media theorist Chris Horrocks must take credit for introducing me in 2010 to the phrase 'content generated user' during a Whitechapel Salon at which he spoke.
31. We might want to recall, as Derrida (1996) writes, that the archive was always originally evidence of transaction; albeit not necessarily a monetized one.
32. Amazon's 'Customers Who Bought This Item Also Bought …' aggregating recommendation system/predictor feature is a stunning because so simple instance of this. This is the virtuous circle of metadata's efficiency: search results are improved by adding metadata; intelligent search algorithms (Ernst, 2013: 86) update to make calculability more effective; our daily searches modify these algorithms; search results are improved by adding metadata. Ad infinitum.
    Will we ever read the Terms and Conditions before clicking the 'I Agree' button, even after the disclosure of the NSA and GCHQ security surveillance programs?
33. See for instance Sekula (1986).
34. This is why GCHQ has said it wants to be able to 'exploit any phone, anywhere, any time'. See http://www.theguardian.com/uk-news/2013/aug/01/nsa-paid-gchq-spying-edward-snowden (accessed 1 August 2013).
35. This marks a shift from a constitutional right to know to a purely pragmatic predictive ability to know; a know-ability. This is a point made also by Battelle (2006:193).
36. http://www.guardian.co.uk/uk/2013/jun/21/gchq-cables-secret-world-communications-nsa (accessed 24 June 2013)
37. This must be set against, it has to be said, the importance of energy (gas, water, etc.) and its infrastructures as key sites for geo-politics, trade, and the post-nation privatization of state-owned organizations.
38. See, for instance, https://www.dstl.gov.uk/
39. Thanks to David Cunningham for knowing everything about the future as a category of historical time, and letting me pinch it. See Cunningham (2003, and Cunningham and Smith, in preparation).
    Archives and the archival have driven the production of a number of significant projects that look at and to the future's radical potentialities. Notable examples include the work of the Otolith Group, Afrofuturism, Utopia Station (curated by Molly Nesbit, Hans Ulrich Obrist, and Rikrit Tiravanija, ongoing), and Obrist's 'The Future will be …' (http://umagmag.com/2012/12/the-future-will-be-by-hans-ulrich-obrist/).
    There is a sense, within some discussions of modernism, that the idea of the future is somehow intrinsically proto-fascistic. We can blame this on the Italian Futurists. Yet the idea of a 'progressive future' drives the avant-garde commitment to the future of both the Italian and the Russian Futurists. It is, then, not the idea of the future per se that's the problem so much as narratives of 'progress' as future-oriented. More often than not Benjamin's 'angel of history' from Thesis IX of his 'Theses on the Philosophy of History' (1968) is called upon to make this or a similar point. For sure his angel of history (although for me not Paul Klee's 'Angelus Novus' which prompts it) is a compelling image, with its face turned towards the past, where it sees a catastrophe (History), but who, with its back to the future, is propelled irresistibly by a storm (Progress) into it. For two recent invocations of Benjamin's 'angel', see The International Necronautical Society, 'Declaration on the Notion of "The Future"', November/December, 2010 (http://www.believermag.com/issues/201011/?read=article_necronautical), and curator

Nicolas Bourriaud's 'The Angel of History' (2013) at the exhibition galleries of the Beaux-Arts de Paris (ENSBA). That said, having recourse to Benjamin's 'angel of history' in the second decade of the 21st century is, I think, banal, but worse, it is out of kilter with how to make sense of the question of History (and the past, the future, and the contemporary) in our own épistémè of re-search. Benjamin's 'angel of history' is unsuitable for this task.

40. In 2009, Gayatri Spivak, Richard Sennett, Chantal Mouffe, and Peter Osborne led a quartet of exhilarating conversations on the subject of hope, organized at Whitechapel Gallery in London by my colleague David Cunningham and myself. These conversations are available as podcasts at: http://culturemachinepodcasts.podbean.com/ Also in 2009, David and I programmed a series of roundtables at the David Roberts Art Foundation on the topic of the future, and I thank the numerous contributors for their insights.
41. Kant's *Critique of Reason* asks three questions: What can I know? What should I do? What may I hope? During his Whitechapel Salon, Peter Osborne modified the third of these questions, and here I follow his lead.
In ending my article thus, I note with unease Franco 'Bifo' Berardi's (2011: 26) point that '[t]he communitarian utopia gave birth to the reality of nationalism and fascism.'

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