

**SOFTWARE TUNNELS THROUGH THE RAGS
'N REFUSE: OBJECT ORIENTED SOFTWARE
STUDIES AND PLATFORM POLITICS**

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It took New York police officer William Barker two hours to find Homer Collyer dead in his apartment in March 1947. Barker had to crawl through a window into a second-storey bedroom, burrow his way through newspaper bundles, empty cardboard boxes lashed together with rope, the frame of a baby carriage, a rake, old umbrellas tied together, folding beds and chairs, half a sewing machine, boxes and parts of a wine press. For the next two days police continued to search the house, literally finding ways through 25,000 books, a horse's jawbone, a Steinway piano, an early X-ray machine, baby carriages, a doll carriage, rusted bicycles, old food, potato peelers, a collection of guns, glass chandeliers, bowling balls, camera equipment, the folding top of a horse-drawn carriage, a sawhorse, three dressmaking dummies, painted portraits, human organs pickled in jars, the chassis of a Model T Ford, tapestries, hundreds of yards of unused silks and fabric, clocks, fourteen pianos (both grand and upright), a clavichord, two organs, banjos, violins, bugles, accordions, a gramophone and records, countless bundles of newspapers and magazines and 130 tons of garbage. A further sixteen days later, police found the body of Homer's brother Langley, just ten feet away from where his brother Barker had been. Langley had been crawling through their newspaper tunnel to bring food to his paralyzed brother when one of the booby traps the brothers had constructed from their possessions fell down and crushed him. After the bodies were found, the police and the media began piecing together the story of the hoarders' lives from the material clues. Gradually a picture of two 'reclusives' emerged (Frost & Steketee, 2011).

Rodinsky's room was also piled high with material. While it was not as overwhelming as the Collyers', when the door to 19 Princelet Street in London was opened again in 1980 after over eleven years,

the renovators of the newly trendy Spitalfields property were met with material stuff: newspapers, books and papers, gramophone records, clothes and an A-Z marked with obscure journeys into the London suburbs, scraps of paper and sweet wrappers, all covered with indecipherable scribbles in many languages as well as a half-finished cup of tea and a pot of porridge still on the stove. What followed was another detective story, as artist Rachel Lichtenstein pieced together the life and disappearance of David Rodinsky (Lichtenstein, 1999) and writer Iain Sinclair traced his wanderings across London from the material objects he left behind (Sinclair, 1999; Lichtenstein and Sinclair, 2000).

What unites these two stories is the way in which the Collyer brothers and David Rodinsky were positioned or even recreated as governmental subjects through their material objects, the rags 'n refuse they collected, hoarded or archived. They became targets of police reports, medical and mental health professionals as well as journalists, artists and writers who read their lives from their stuff. The literal rags 'n refuse, like the metaphorical ones Walter Benjamin uses to tell history in new dialectical ways in *The Arcades Project* (2002) and *One-Way Street* (1997) are fragments. Of course each signifies more than that -- the collection and arrangement of those fragments has its own power.

In this paper I look to approach the governmental work of the software agents that burrow through the digital detritus we leave scattered across social media. These agents locate us as subjects and enable or perhaps demand the curation of our 'selves' and the management of what Foucault calls our 'conduct of conduct'. Rather than address this work at the scale of the assemblage and network, I look to the object-oriented philosophy of Graham Harman and the work of Jane Bennett to explore algorithms as powerful 'objects' -- real but weirdly withdrawn and vibrant yet open to political struggle through what Alexander Galloway and Eugene Thacker (2007) have called the 'exploit' (see below).

Every twenty minutes Facebook adds more 'stuff' to its collection:

- 1 million links
- 1.4 million event invites
- 1.9 million friends requests accepted
- 2.7 million photos, 1.3 million of which are tagged
- 2.7 million messages sent

- 1.89 million status updates
- 1.6 million wall posts
- 10.2 million comments¹

This digital ‘stuff’ is housed in at least 9 leased data centres or server farms, each around 35,000 square feet and consuming between 2.25 and 6 megawatts of power. Facebook is currently building its own 307,000 square feet centre with 60,000 servers and operating costs in the order of \$50m a year.²

Google is notoriously secretive about its hoard of data. What we do know is that it spent \$757 million on its seven data centres in the third quarter of 2010 and that those centres process twenty petabytes of data a day.³ Google’s data hoard, like Facebook’s includes our digital detritus - our email messages, our YouTube videos, our Picasa pictures and Blogger postings as well as 1 trillion cached webpages. Those farms also house the digital footprints we leave as we use Google’s services - our logins, IP addresses, search terms and histories, maybe our credit card details in Google checkout and records of the ads we clicked, the times and journeys we made. Google of course claims to ‘forget’ data after between 9-18 months and even denies it does data-mining.⁴ One could list other digital hoarders: Apple and its iPhone logs, Amazon and its traces of collaborative filtering choices, Sony and its misplaced Playstation 3 stuff.

Like the Collyers and Rodinsky, Facebook and Google hoard digital objects but unlike those real-world hoarders, the digital recluses also generate new data, new digital objects as they work. Their algorithms burrow through that data like a police patrolman or a researcher, tracing clues, forming connections, building pictures and creating new data objects - connections between data objects, between friends, searches and adverts, between activities and objects.

Facebook talks of the ‘Open Graph’ – its particular take on the ‘Social Graph’ a term from graph theory used to explore relationships and connections between people – or in Facebook’s case between people, their data, their ‘profiles’, ‘Timelines’ and ‘Likes’. This ‘Graph’, the raw material for Facebook’s ad targeting business, is more than an archive, even an infinite archive. It is a machine – with a nod in the direction of Charles Babbage, a ‘relationship engine’ that generates new data objects as objects connect. Every time I ‘Like’ something or an algorithm recommends

something or someone on my page, a new connection, a new data point or object is established. If I Like or connect it is one object. If I do not it is another. Those new objects are fed back into the engine and generate new data trails: User-object Paul Caplan Likes X but does not Like Y.

Those new data-objects are fed back into the archive, ready to be searched, found and connected again. This human and ‘unhuman’ burrowing, interpreting and organising is deeply political.⁵ In Foucault’s terms, it is ‘governmental’.

In a series of lectures in 1978 and 1979, Foucault addressed power as a matter of how government works as an activity or practice (2008; 2009).⁶ While he was concerned with the forms of rationality and regimes of truth/power that offer answers to questions such as ‘who can govern’, ‘what governing is’, ‘what or who is governed’ (Gordon, 1991: 3), it would be a mistake to read ‘governmentality’ as a move away from his conception of biopower as a modulation of power different to that of discipline, one more focused on ‘care of self’. In a lecture in 1982 Foucault says:

[I]f we take the question of power, of political power, situating it in the more general question of governmentality understood as a strategic field of power relations in the broadest and not merely political sense of the term, if we understand by governmentality a strategic field of power relations in their mobility, transformability, and reversibility, then I do not think that reflection on this notion of governmentality can avoid passing through, theoretically and practically, the element of a subject defined by the relationship of self to self. (2005: 252)

A study of governmental rationality is not simply an attempt to understand how government is organised, how the state or Facebook governs or exercises power over us, but how that rationality, that focus on the ‘conduct of conduct’ becomes part of our understanding of the state and Facebook but also ourselves – the relationship of self to self. It is here where the more interesting questions about software and data objects arise.

Just as the Collyers’ and Rodinsky’s rags ‘n refuse became pieces in constructing their subjectivity for media, law and social service

systems, so the digital detritus we leave for Facebook and Google, and that they in turn generate from that rags 'n refuse, constructs us as data-objects and targets, 'friends' or demographics, healthcare risks or subversives. This goes beyond the issue of the privacy of individual data-objects to a wider field of governmentality through data trails and software-generated connections and subject positions. Even if our personal data is never released, even if we remain 'anonymous', the unhuman software patrolmen that burrow through the digital archives create a picture of us as part of a social graph or an aggregated search community. Whether these data subject positions are ever sold on to advertisers or insurance companies or subpoenaed by the state, they remain part of our social CV, our digital subjectivity. Whether those objects and traces are ever seen by human eyes is irrelevant, they remain data connections and data-objects.

These governmental trails, connections, Likes and relationships that Facebook's 'relationship engine' generates from the digital hoard can be viewed as objects. But they are not 'virtual' or immaterial. They are as real and material as the Collyers' newspapers and Rodinsky's A-Z. From the digital rubbish that Jennifer Gabrys (2011) and Ned Rossiter (2009; 2011) discuss, to the carbon footprint of cloud computing (Cubitt, Hassan & Volkmer, 2011) and the wires, machines and 'tubes' of the Internet (Blum, 2012), there is nothing immaterial about the digital mesh. It is not just built-in obsolescence hardware that is material. The data itself, from its existence as electrical charge through its storage and shipping to its location as commodity bought sold and sued over, data-objects have the sort of materiality that Jane Bennett addresses as 'vibrant matter': 'quasi agents or forces with trajectories, propensities, or tendencies of their own' (Bennett, 2010: viii).

Bennett identifies an agentic capacity in material objects. When she starts from 'one large men's black plastic work glove; one dense mat of oak pollen; one unblemished dead rat; one white plastic bottle cap; one smooth stick of wood' in a gutter (Bennett, 2010: 4) and moves on to the 'quirky electron flow and a spontaneous fire to members of Congress who have a neoliberal faith in market self-regulation' at play in an electricity blackout (Bennett, 2010: 28), her Latourian litany points to an object-orientation that encompasses the concrete, the natural, the unhuman, the physical and the abstract. It is this sort of 'democracy of objects', to borrow Levi Bryant's term (2011), that allows us to trace and explore digital and software objects and assemblages or what Timothy Morton calls

‘meshes’, the strange, often insubstantial but actually present network that ‘isn’t bigger than the sum of its parts’ (2010: 35) but is rather no more nor no less than the sum of its objects.

Bennett rejects the idea of objects as signs and demands an account of objects as more than the human-object correlation. Bennett echoes Daniel Miller’s argument that semiotics can be ‘as much a limitation as an asset’ (Miller, 2010: 12) when looking at ‘the minutiae of the intimate’ (2010: 41), the ‘stuff’ or things people have, use and (in object-oriented terms) connect with (Miller, 2008). The objects in her gutter are not some instantiation of an industrial process or structure. Of course the glove she saw was made in a particular social and economic system under particular modes of production, its story can be read as one of globalisation and capitalism. It can be read as the trace or representation of those historical processes. But Bennett argues that the discourse of representation, of tracing the power and meaning of things as signs, falls short of what is needed. She says:

I caught a glimpse of an energetic vitality inside each of these things, things that I generally conceived as inert. In this mesh, *objects* appeared as *things*, that is as vivid entities not entirely reducible to the context in which (human) subjects set them, never entirely exhausted by their semiotics. (2010: 5 emphasis in original)

Digital objects can also be read as language, as many in Software Studies from Lev Manovich onwards have argued.⁷ The Wall posting, Like or the Social Graph relationship that connects them can be drawn in relational terms as traces of a techno-capitalist system or computational culture. But for Bennett, and I will argue Graham Harman, they are first and foremost objects – actual, real, present on servers and in browser caches, enfolded in databases and other software. They are more than their relations to systems of meaning or signs of something outside themselves. Objects are material. But that materiality is lively and active. Bennett’s objects are real and located. They are presences in the world but they ‘call to us’ and have a form of agency, ‘agentic capacity’, a ‘thing-power’ that animates the seemingly inert. But this sense of digital objects can be extended beyond data or even the data points in an Open Graph to the software that burrows, mines, classifies and clarifies. The algorithms too are objects. They are too are material.

As an example, the software that enables and organises the 65 billion images circulating and connecting within Facebook (Beaver *et al.*, 2010: 1) is an object, or perhaps more correctly a series of nested objects. It exists. It is real. It has a presence beyond its workings and its relations. Doug Beaver and his engineering colleagues at Facebook, when designing the new Haystack system that can cope with those rags 'n refuse and enable the sort of governmental burrowing, sorting and connecting that powers the Open Graph, refer to the components of the software system as objects. It is not just the servers, caches and CDNs (content delivery networks or external servers) that have a reality and presence in the system, the upload software, the search algorithms and the compression standards are similarly real, vibrant and agentic – they are 'doing things' as actants in the mesh. The engineers write:

If the CDN cannot locate the photo then it strips the CDN address from the URL and contacts the Cache. The Cache does a similar lookup to find the photo and, on a miss, strips the Cache address from the URL and requests the photo from the specified Store machine'. (Beaver *et al.*, 2010: 4)

This is not anthropomorphism or metaphor. The locating, stripping, requesting are done by software. This governmental work is a matter of software, algorithm and protocol objects doing something, connecting with data-objects, creating URL objects enabling search results objects, building Timeline objects.

The patents Facebook owns provide similar evidence of the reality and material location of software objects. The company's IP lawyers, like its engineers think in terms of objects. In the patent establishing Facebook's 'ownership' of the 'Timeline', the lawyers set out what the engineers are building and they are laying claim to:

A system, method, and computer program for generating a social timeline is provided. A plurality of data items associated with at least one relationship between users associated with a social network is received, each data item having an associated time. The data items are ordered according to the at least one relationship. A social timeline is generated according to the ordered data items. (Sittig & Zuckerberg, 2010: col. 1 lines 42-48)

Here 'data items' and 'relationships are the building blocks, the objects that create and are created by the Timeline.

Any type of data can be utilized to generate the social timeline and to be displayed via the social timeline page. [...] The photos may be selected automatically, based on profiles associated with the users or any other data. The photos may be automatically updated when a user uploads or otherwise provides updated photos that the social network engine determines to be relevant to the social timeline. (Sittig & Zuckerberg, 2010: col. 8 lines 21-30)

Again, to say 'the social network engine determines' is not to use loose or metaphorical language - hardly the province of lawyers. Rather it is to draw attention to the presence, reality (and thus potential ownership) of software objects, actants: active, agentic, vibrant. The software that burrows and connects, every bit as much as the photo rags 'n refuse it manages, is an object worthy of addressing and is open to political praxis. Before I discuss the political implications and opportunities of thinking with and through objects, I need a framework for understanding them.

Harman's object-oriented philosophy maps any object, whether human or unhuman, natural or human-made, material or immaterial, real or imaginary as having two dimensions - sensual and real.⁸ This framework offers a powerful way of understanding objects in the world like the cats, trees and hammers that Harman suggests as examples, but also the sort of 'weird' software objects Jussi Parikka discusses (2011) that we see at play in the rags 'n refuse of the digital archive.

For Harman, following Husserl, the panoply of objects in play, such as my mobile phone, its CCD camera sensor, the Facebook server, the photo data objects, the software 'inside', exist as sensual objects within my consciousness.⁹ When I or my technology sleep or fail to pay attention to them, in some sense they cease to exist. In Harman's reading of the philosopher, for Husserl:

We never see all faces of the hammer at once, but always see it from a certain angle and distance, in a certain colour and intensity of light, and always in

a specific mood. In this sense the hammer only appears in the form of specific profiles or adumbrations ... Nothing is 'hidden' behind the adumbrations for Husserl; the hammer itself lies within each adumbration, as an eidōs encrusted with accidents. (Harman, 2009: 180)

For Husserl, the object present to us is always particular. It cannot be separated from its adumbrations; its existence is tied to those specific profiles as we (or, for Harman, any other object) encounter them. This is as true of software objects as it is of hardware ones. We encounter or engage with particular instantiations of data-objects and algorithms: a particular decoding of compressed data in a particular browser on a particular screen in a particular time and space; a particular search or algorithmic Friend or Like recommendation on a particular device again in a specific, actual time and space. We never encounter the full Open Graph or Like economy (Gerlitz & Helmond, 2013) or even the full dimensions of the compression codec or tagging algorithm.

Harman's sensual objects exist only for another object that encounters them (2011a: 48). But there is a second dimension, what Harman calls real objects (RO).¹⁰ These differ from sensual objects in that they are autonomous from any object that encounters them and they withdraw from all access, all relations and each other. Here Harman turns to Heidegger's tool analysis (Harman, 2002). Heidegger argues that the spectacles I use to look at the Timeline page on my iPad, my heart beating, the iOS operating system and protocols are 'ready-to-hand' but are not present to me unless they break, stop working or fail. Objects disappear in favour of some purpose they serve... at least until they crash. These objects are real. They have an existence beyond the phenomenal realm.

There is a real iPad but also a real JPEG-encoded data file, materially present on a Facebook server. There is also a real upload algorithm that Beaver and his colleagues created and loaded onto a server. These objects exist in the world but we cannot access them, only their sensual instantiations. There is always more. Their reality, nature, even existence is withdrawn. We encounter its sensual dimension but unless the iPad crashes, the picture doesn't load or the upload fails, they remain out of reach. Harman talks of cats:

The real cats continue to do their work even as I sleep. These cats are not equivalent to my

conception of them, and not even equivalent to their own self-conceptions; nor are they exhausted by their various modifications and perturbations of the objects they handle or damage during the night. The cats themselves exist at a level deeper than their effects on anything. Real objects are non-relational. (2009: 194-5)

As with cats, so too with software. The upload algorithm exists when I sleep or when I am networking in the pub. It exists beyond its sensual presence for me or the Timeline software or beyond the relations and connections within which it works. 'Real objects exist "whether we like it or not"' (Harman, 2009: 195). The machinic algorithm objects that optically recognise text on Evernote servers, images on Google Goggles' or faces on Facebook's 'in the background' are real and present 'whether we like it or not'.

The 'real object' (RO) is 'autonomous from whatever encounters it' (Harman, 2011a: 48). There is a software 'engine' without me, my iPad or my browser (which can only encounter or touch the sensual JPEG). When I leave my iPad at home and meet real friends in the pub, the sensual data-objects and algorithms that tunnel, connect and construct me and them vaporise but the real ones do not. They still exist and so have an object status. This willingness to see anything at play in the mesh as an object - software, hardware, data object, algorithm, allows a powerful account of how they connect and so can be reconnected, a form of platform politics.

Harman moves on from Bruno Latour, who along with Alfred North Whitehead, he fetes as 'philosophers of concrete, individual entities' (Harman 2011b: 291) in the way he draws the relations between objects. In Harman's reading, for Latour, objects derive their power and presence from their relations or alliances. For Whitehead they are moments of becoming. For Harman any move away from a strict actualist focus on the object to either advocating a second realm of objects (the 'eternal objects' of Whitehead (1978, p. 61)) or a realm of potentiality beneath objects (the 'plasma' of Latour (2005: 50)) is a mistake. For Harman there are only 'objects'. That is all there is. Relations, the actant networks Latour maps, can be drawn in terms of objects connecting *within* objects. There is no need in this framework for the object to perish or for the relations to be pushed to an outside context or structure. Rather the flux or mesh of objects

(the assemblages, media ecologies, networks or whatever other term we use) can be addressed as a matter of the objects themselves.

To bring this back to data-objects (the photos or credit card details), data-mined objects (the Friends connection or click-through trail) and the data-mining objects (the algorithms burrowing through and creating new data), circulating in and through Facebook and Google's archive-hoards, Latour, Whitehead and Harman would perhaps see those files, database entries and software agents as objects, entities in the world. Latour might see them as constituted by their relations with other actants in the network: hardware servers, other software, engineers and lawyers, company business plans and competition legislation. Whitehead might see them as a series of occasions, discrete instants of becoming and perishing, as occasions of data connection. Harman however would see them as objects that are not 'exhausted by their relations to other objects' (Harman 2010: 164), that withdraw from view and have an existence outside of their connections with other actants. Where Latour puts the emphasis on the network (relations) as what gives the Facebook wall photo or an algorithm its presence and its power and Whitehead would stress the transience of the Google image search, Harman would put the emphasis on these objects, as more than their relations, contexts and becomings.

Real objects withdraw and so cannot 'touch'. 'Their reality consists solely in their being what they are, not in some sort of impact on other things' (Harman, 2011a: 73). The iPad, image file, database entry, algorithm or social network business are deeper and more mysterious than the 'user', CDN, search algorithm or any other object can access. But objects do connect. We do access and Like, the Open Graph does data-mine. The question for Harman becomes that of how do those objects connect. Following the quadruple structure, real objects cannot connect. They are always withdrawn and can only connect through a mediating sensual object. Similarly, sensual objects cannot touch each other except through a mediating real object. This can be seen in terms of human actant/objects.

The real human object (I as social networker) encounters the real iPad object only through the mediating sensual object of the accessible iOS operating system and interface. For object-oriented philosophy, pipelines or processes can be objects. They have a unity and do things in the world. They have withdrawn dimensions and dimensions present to experience. For Harman this encounter,

connection or relation does not happen in a field of becoming, plasma or potentiality, but within another object. Why does this matter? Because it means it can be critically explored – as I shall show shortly. Similarly the spatial location of my data profile (the SO) can encounter the particular temporal running of ‘my’ Timeline (its instantiation as accessible SO) only through a real object, the withdrawn, inaccessible real human object.

This mediation, however, extends beyond just the position of the human observer. Real unhuman objects act as mediators. The data-mining algorithm on a Facebook server that reads the metadata, or even the faces in a JPEG-encoded image file, has a sensual dimension. It is a SO insofar as it is present to human or unhuman consciousness or access. Similarly that data file has a sensual dimension that can be read. The two connect. We know they do because we see the ads served on our page or the Friends suggested. That connection happens within a RO, an object that has hidden dimensions, a deeper totality that is not available to full access. The Open Graph is more than a Facebook marketing term or even ideology. It is an object with a real dimension. Its reality as governmental actant is deeper and more inaccessible than those dimensions present to my or any other object’s consciousness. It is this RO within which the algorithm (SO) and the image data (SO) connect.

In one sense this is a form of nested objects but it is important to emphasise that these are not nested in any hierarchical let alone value-laden sense. There is no sense in which objects connecting with other objects should be seen as leading to a foundational macro or micro object (what Harman calls overmining and undermining). This model not only refuses to leave the object but also refuses to find the single object. There is no Facebook-object or Surveillance-object or Capitalism-object that acts like a ‘context’ or a ‘relation’ as the foundation for all connections. Nor is there some machine code-object or electrical charge-object that can stand in for a founding object or fundamental particle. The connection is within objects not in some wider field; some psychological, semiotic or capitalist plasma, field of potential or relations. This asymmetrical account of objects connecting within objects not only keeps the focus on objects and allows the actant-network to be mapped in its specificity and presence, but also opens up a space for object-oriented praxis.

The advantage of this approach is threefold: it provides a way of neutralising the problem of the Subject; it allows us to rethink the

concept of essence and technological determinism without recourse to undermining or overmining reductionism. Finally, it enables us to open up what Jodi Dean has referred to as ‘communicative capitalism’ (2009) to a form of struggle that Galloway and Thacker call the ‘exploit’ – an asymmetrical ‘topology of resistance’ ‘exploiting power differentials already existing in the system... [by] discovering holes in existent technologies and projecting potential change through those holes’ (Galloway & Thacker, 2007: 81).

Firstly this perspective escapes correlationism, Quentin Meillassoux’s term for the tendency to focus on the subject-object relation, to see everything in terms of the human-world connection (2009). From this perspective there is no world without the human nor human without the world. It is this separation (yet partnering) of subject and object that drags us away from focusing on objects, their connections and their working. In terms of data-objects, correlationism demands we address images, algorithms and the Facebook database in terms of the humans using or at least thinking about them. At the very least this means it becomes difficult to explore machine vision systems such as face-recognition where computers ‘see’, ‘file’ and ‘analyse’ with no human intervention, a situation an object-oriented approach could happily conceptualise in terms of a photo-object connecting with a face-recognition-algorithm object within a surveillance-image-evidence object. In an increasingly algorithmic world of unhuman stock exchanges (Berry, 2011; Steiner 2012), computerized urbanism (Graham, 2011) and sousveillance (Bakir, 2010) and social media subjectivities, we need to be able to theorise unhuman objects in their essential specificity that is not dependent on its field of relations – the context in which an algorithm or protocol works. To be able to understand or critically and politically engage with a software algorithm or standard demands approaching the object in its specificity, its essential (real) characteristics as well as its present (sensual) instantiations. If its specific work and power is not to be collapsed into a plasma of computation we need an account of essence and technological determinism outside relationality.

For Harman: ‘[t]o defend essence... is nothing more than to insist that objects are not exhausted by the relations to other objects’ (2010: 164). What we experience as essence is the outcome (or emanation as Harman calls it) of the tension between the object and its qualities. There are things about a table, a photograph or even an algorithm that are ‘necessary’ for it to be that table, photo or software that works. But these qualities are not identical with the

object. They do not exhaust it. This is significant because it means we can talk of seemingly insubstantial data-objects such as searches or click-throughs as things. We can say: 'yes there is a data-mined object' and then trace its connections within objects. We can use that essence as a space for exploit. An object-oriented essence is a starting point not an end.

Even more controversially perhaps, this rescuing of essence allows a similar embracing of 'technological determinism'. As Geoffrey Winthrop-Young puts it: '[t]o label someone a technodeterminist is a bit like saying that he enjoys strangling cute puppies' (2010: 121). A non-reductionist, object-oriented reading of essence however allows us to say: 'yes technology determines'. The issue becomes how that determination is drawn. Again an object-centred approach can explore determinations as connections within objects rather than as reflections of something more basic, foundational or powerful. It allows us to say that the connection between an image-file-object and the Facebook algorithm (within the Facebook image-object) does things.

Software and critical code studies has a proud history of criticality: mapping and reconfiguring computational cultures through an account of software in relations. Galloway's protocol as diagram of a control society (2004); David Berry's 'computational society' (2011) and Matthew Fuller's 'media ecologies' (2007) together with ideas of 'transcoding' (Manovich, 2001) and 'transduction' (Mackenzie, 2002) have all addressed our coded conjuncture as an assemblage of relations. Why therefore is a non-relational, object-oriented account of software actants appropriate to an account of the infinite archive within communicative capitalism? In Benjamin's terms it offers a new way of writing that history. In Galloway and Thacker's terms it enables a form of counter-protocological struggle: the exploit.

Bennett sees hoarders and curators as having a particular sensibility towards vital matter-objects (2013). Benjamin too drew attention to the collector and adapted their method when he sought to create 'dialectical images'. Mapping the infinite archive as multi-dimensional objects connecting and reconnecting within objects rather than within a wider field of relations allows a focus on the object's specificity and connections and also reconfigures our sensibility – demanding that we address the particularities of digital and software objects rather than undermining or overmining them. A JPEG standard connecting imag(in)ings and the Open Graph, an

advertising algorithm connecting human user and unhuman 'user' all retain their vibrant power, specificity and vulnerability to struggle. Here Facebook is not an assemblage or relational field of software, ideologies and business practices exploiting a mass of digital detritus, a network of relations demanding macro-resistance, but rather a mesh of objects within the Archive and setting that Archive in motion, open to reconfiguration.

An approach to the computational/governmental space based on objects not networks or relations, changes the focus of struggle and change. For Galloway and Thacker, counter-protocological struggle operates at the level of objects - in their case protocol. Struggle 'must not be anthropomorphic (the gesture, the strike); it must be unhuman (the swarm, the flood)' (Galloway & Thacker, 2007: 98). A virus does not fight a system, it overwhelms it. That struggle must be seen not as resistance but as 'hypertrophy'. Viruses or distributed denial of service (DDOS) attacks do not resist software they push it until it breaks. They clog up the server with too many requests, overloads, spam. But a DDOS attack can be seen as working not by simply overwhelming a network but by reconnecting objects (the https protocol, server requests, customers details, etc.) within the target object - in the case of recent Anonymous action, objects such as the PayPal or Amazon S3 object. Here an object-oriented approach of seeing and working with objects connecting within objects, rather than a field of relations, open up political potential. Benjamin Grosser's Facebook Demetricator¹¹ intervenes at the scale of objects. By connecting Javascript and Facebook data-objects within the browser object and removing the number of 'Friends', 'Likes' etc, the Demetricator reconfigures the experience of the Infinite Archive and its reworking of 'friendship', content and narrative (Fuller, 2012).

A focus on the code object not the whole Internet allowed developers to connect objects to create the Apache server (object). This software object can be seen, and used as a model, as a reconfiguration of objects whereby new possibilities for server-client relations were released. The hackers who brought objects together as they created the (open source) code for the Apache server were working with and through objects in the creation of a new object. A further example can be seen in the work of Dimitri Kleiner, whose Thimbl platform¹² offers more than an 'alternative' to Twitter. It connects protocol and software objects in new configurations to create a 'platform object', itself a space for new object connections.

An object-oriented approach allows one to see all the objects in play at the same scale in the computational/governmental mesh. Here the photos I upload, the protocols that encode them, the data trails I leave, the proprietary iPad I create them on, as well as the algorithms that position them and me - the whole governmental mix, are objects connecting within objects. The aim is not to trace relations external to those objects but connections within them. To move from understanding objects in terms of their relations is not to deny connections. Rather it is to place those connections - those governmental tunnels through the rags 'n refuse - front and centre, because they are issues of objects not issues of plasma or potential.

Object-oriented approaches to the governmental mesh of the data hoard allow us to deal with the unhuman objects of media and to address the connections that are made and can be made. To return finally to the Facebook and Google hoard-archives and the unhuman patrolmen who burrow through our rags 'n refuse, generating governmental positions as they go, an object-oriented approach to the Exploit offers new hope. Remaining true to a focus on objects and a flat ontology, rejecting relations as necessary to objects, it becomes possible to see how the data objects we willingly or unwillingly assign to Web 2.0 hoards are connected within those archives with others within governmental objects - the search-record object, the surveillance-object, the friend-object. These can be the target of exploit. These are what can be reconfigured or realigned through new connections developed by new algorithms or software objects. The hoards may not be ours, the patrolmen burrowing through them may not be us, but that doesn't mean we can't find new ways through the rubbish.

Notes

¹ <http://www.onlineschools.org/blog/facebook-obsession/>
accessed 14.04.11

² <http://www.datacenterknowledge.com/the-facebook-data-center-faq/> accessed 14.04.11

³ <http://www.niallkennedy.com/blog/2008/01/google-mapreduce-stats.html> accessed 14.04.11

⁴ http://www.theregister.co.uk/2010/09/23/schmidt_on_colbert/
accessed 14.04.11

⁵ I use the term ‘unhuman’ to draw attention to the problematic position of the objects I discuss. To use the term ‘nonhuman’ or ‘inhuman’ would be to position these objects in relation to a privileged category of human objects – a correlationist move locating the world of objects in relation to the human Subject.

⁶ See also Keenan (1982); Burchell, Gordon & Miller (1991); Barry, Osborne & Rose (1996); Rose (1999); Lemke (2001; 2011); Bratich, Packer & McCarthy (2003); Jessop (2006); Gane (2008) and Dean (2009).

⁷ Manovich’s *The Language of New Media* (2001) is often credited with founding ‘software studies’ as a discipline with its demand that what was then called ‘new media’ processes and products be approached as a language with their own logic and structure. This theme has been taken up by Galloway with his argument that ‘[p]rotocol is a language that regulates flow, directs net-space, codes relationships, and connects life-forms’ (2004: 74). See also Matthew Fuller and Andrew Goffey’s discussion of the ‘logic of programmed hardware and software... as something that more closely approximates the order of language’ (2009: 142); Adrian Mackenzie’s insistence that ‘[o]ne way to resist an abstracting turn away from software is to attend to its code-like structure’ (2006: 3); Michael Mateas’ discussion of ‘weird languages’ (2006: 274); and Nick Montfort’s discussion of programming languages (2006).

⁸ Harman expands this Real/Sensual split to include Real and Sensual Qualities (RQ and SQ) in a fourfold structure (2011a). Here both the Real withdrawn object or dimension and the Sensual Object we access are in a relation with SQs or particular profiles as well as essential RQ that distinguish objects from each other.

⁹ The reference to ‘consciousness’ is in part a legacy of Harman’s debt to phenomenology but it is also an important issue to bring into a study of unhuman objects that are present to other objects (an image file ‘present’ to OCR software for instance) but are still real even when they are not being used. As Bennett says: ‘We need to cultivate a bit of anthropomorphism - the idea that human agency has some echoes in nonhuman nature - to counter the narcissism of humans in charge of the world’. (2010: xvi)

¹⁰ It is important to note that for Harman Real and Sensual objects are dimensions of a unified object. Any object exists as a real, withdrawn reality and also as a sensual presence for other objects.

¹¹ <http://bengrosser.com/projects/facebook-demetricator>

¹² <http://www.thimbl.net>

References

Bakir, V. (2010) *Sousveillance, Media and Strategic Political Communication: Iraq, USA, UK*. New York: Continuum.

Barry, A., Osborne, T. & Rose, N. S. (1996) *Foucault and Political Reason: Liberalism, Neo-Liberalism and Rationalities of Government*. London: UCL Press.

Beaver, D., Kumar, S., Li, H. C., Sobel, J., & Vajgel, P. (2010) Finding a Needle in Haystack: Facebook's Photo Storage. *Proceedings of the 9th USENIX conference on operating systems design and implementation*.

Benjamin, W. (1997) *One-Way Street and Other Writings*. Trans. E. Jephcott & K. Shorter. London and New York: Verso.

Benjamin, W. (2002) *The Arcades Project*. Trans. H. Eiland & K. McLaughlin. Cambridge, MA; London: Harvard University Press.

Bennett, J. (2010) *Vibrant Matter: A Political Ecology of Things*. Durham, NC: Duke University Press.

Bennett, J. (2013) 'Powers of the Hoard: Artistry and Agency in a World of Vibrant Matter', in J Sutela (ed.), *ADD Metaphysics*. Aalto, Finland: Aalto University Digital Design Laboratory.

Berry, D.M. (2011) *The Philosophy Of Software: Code And Mediation in the Digital Age*. Basingstoke, Hampshire and New York: Palgrave Macmillan.

Blum, A. (2012) *Tubes: Behind the Scenes at the Internet*. Harmondsworth: Viking.

Bratich, J. Z., Packer, J. & McCarthy, C. (2003) *Foucault, Cultural Studies, and Governmentality*. New York: State University of New York Press.

Burchell, G., Gordon, C. & Miller, P. (1991) 'Governmental Rationality: An introduction', in G. Burchell, C. Gordon & P. Miller (eds), *The Foucault Effect: Studies in Governmentality*. London; Toronto; Sydney; Tokyo; Singapore: Harvester Wheatsheaf.

Bryant, L. (2011) *The Democracy of Objects*. Open Humanities Press.

Cubitt, S., Hassan, R., & Volkmer, I. (2011). 'Does cloud computing have a silver lining?' *Media, Culture & Society* 33(1): 149-158.

Dean, J. (2009) *Democracy and Other Neoliberal Fantasies: Communicative Capitalism and Left Politics*. Durham: Duke University Press.

Dean, M. (2009) *Governmentality: Power and Rule in Modern Society*. London and Thousand Oaks: SAGE Publications.

Foucault, M. (2005) *The Hermeneutics of the Subject: Lectures at the Collège de France 1981-1982*. Trans. A. I. Davidson. New York: Picador.

Foucault, M. (2008) *The Birth of Biopolitics: Lectures at the Collège de France 1978-1979*. Trans. G. Burchell. Basingstoke: Palgrave Macmillan.

Foucault, M. (2009) *Security, Territory, Population: Lectures at the Collège de France 1977-1978*. Trans. G. Burchell. Basingstoke: Palgrave Macmillan.

Frost, R. O. & Steketee, G. (2011) *Stuff: Compulsive Hoarding and the Meaning of Things*. Boston, MA.: Mariner Books.

Fuller, M. (2007) *Media Ecologies: Materialist Energies in Art And Technoculture*. Cambridge, Mass. and London: MIT Press.

Fuller, M. (2012) 'Don't Give Me the Numbers – an interview with Ben Grosser about Facebook Demetricator', <http://www.spc.org/fuller/interviews/don%e2%80%99t-give-me-the-numbers-%e2%80%93-an-interview-with-ben-grosser-about-facebook-demetricator>, accessed 15.04.13.

Fuller, M. & Goffey, A. (2009) 'Towards an Evil Media Studies' in J. Parikka & T. D. Sampson (eds), *The Spam Book: On Viruses, Porn,*

And Other Anomalies From The Dark Side Of Digital Culture. Cresskill, N.J.: Hampton Press.

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

Galloway, A. R. (2004) *Protocol: How Control Exists after Decentralization*. Cambridge, Mass and London: MIT Press.

Galloway, A. R. & Thacker, E. (2007) *The Exploit: A Theory of Networks*. Minneapolis, MN: Univ Of Minnesota Press.

Gane, M. (2008) 'Foucault on Governmentality and Liberalism', *Theory, Culture & Society* 25(7-8): 353-363.

Gerlitz, C. & Helmond, A. (2013) 'The Like economy: Social buttons and the data-intensive Web', *New Media & Society Online First*.

<http://nms.sagepub.com/content/early/2013/02/03/1461444812472322>, accessed 15.04.13.

Gordon, C. (1991) 'Governmental Rationality: An Introduction' in G. Burchell, C. Gordon & P Miller (eds), *The Foucault Effect: Studies in Governmentality*. London; Toronto; Sydney; Tokyo and Singapore: Harvester Wheatsheaf.

Graham, S. (2011) *Cities under Siege: The New Military Urbanism*. London and New York: Verso.

Harman, G. (2002) *Tool-Being: Heidegger and the Metaphysics of Objects*. Chicago: Open Court.

Harman, G. (2009) *Prince of Networks: Bruno Latour and Metaphysics*. Melbourne: Anamnesis.

Harman, G. (2010) 'Space, Time, and Essence: An object-oriented approach (2008)', in G. Harman (ed.), *Towards Speculative Realism: Essays and Lectures*. Winchester and Washington: Zero Books.

Harman, G. (2011a) *The Quadruple Object*. Winchester and Washington: Zero Books.

Harman, G. (2011b) 'Response to Shaviro', in L. Bryant, N. Srnicek, & G. Harman (eds), *The Speculative Turn: Continental Materialism and Realism*. Melbourne: re.press.

Jessop, B. (2006) 'From Micro-powers to Governmentality: Foucault's Work on Statehood, State Formation, Statecraft and State Power', *Political Geography* 26(1): 34-40.

Keenan, T. (1982) 'Foucault on Government', *Philosophy and Social Criticism* 1: 35-40.

Latour, B. (2005) *Reassembling the Social: An Introduction to Actor-Network Theory*. Oxford and New York: Oxford University Press.

Lemke, T. (2001) 'The Birth of Bio-politics: Michel Foucault's Lecture at the Collège de France on Neo-Liberal Governmentality', *Economy and Society* 30(2): 190-207.

Lemke, T. (2011) *Foucault, Governmentality, and Critique*. Boulder, Colo.: Paradigm Publishers.

Lichtenstein, R. (1999) *Rodinsky's Whitechapel*. London: Artangel.
Lichtenstein, R. & Sinclair, I. (2000) *Rodinsky's Room*. London: Granta.

Mackenzie, A. (2002) *Transductions: Bodies and Machines At Speed*. London and New York: Continuum.

Mackenzie, A. (2006) *Cutting Code: Software and Sociality*. New York: Peter Lang.

Manovich, L. (2001) *The Language Of New Media*. Cambridge, Mass. and London: MIT Press.

Mateas, M. (2006) 'Weird Languages', in M. Fuller (ed.), *Software Studies: A Lexicon*. Cambridge, Mass. and London. MIT Press.

Meillassoux, Q. (2009) *After Finitude: An Essay on the Necessity of Contingency*. Trans. R. Brassier. London: Continuum.

Miller, D. (2008) *The Comfort of Things*. Cambridge and Malden, MA: Polity.

Miller, D. (2010) *Stuff*. Cambridge and Malden, MA: Polity.

Montfort, N. (2006) 'Obfuscated Code', in M. Fuller (ed.), *Software Studies: A Lexicon*. Cambridge, Mass. and London. MIT Press.

Morton, T. (2010) *The Ecological Thought*. Cambridge, MA and London: Harvard University Press.

Parikka, J. (2011) 'Mapping Noise: Techniques and Tactics of Irregularities, Interception, and Disturbance', in E. Huhtamo & J. Parikka (eds), *Media Archaeology: Approaches, applications, and implications*. Berkeley; Los Angeles, Calif.: University of California Press.

Rose, N. S. (1999) *Governing the Soul: The Shaping of the Private Self*. London and New York: Free Association Books.

Rossiter, N. (2009) 'Translating the Indifference of Communication: Electronic Waste, Migrant Labour and the Informational Sovereignty of Logistics in China', *Ethics of Waste in the Information Society* 11: 36-44.

Sinclair, I. (1999) *Dark Lanthorns*. Uppingham: Goldmark.

Sittig, A. & Zuckerberg, M. (2010) *Managing information about relationships in a social network via a social timeline*. U.S. Pat. 7,725,492.

Steiner, C. (2012) *Automate This: How Algorithms Came to Rule Our World*. New York: Penguin.

Whitehead, A. N. (1978) *Process and Reality: An Essay in Cosmology*. New York: Free Press.

Winthrop-Young, G. (2010) *Kittler and the Media*. Cambridge: Polity.