

INTRODUCTION: POLITICS, POWER AND 'PLATFORMATIVITY'¹

Joss Hands

The Internet is vanishing: as its ubiquity increases, it has also become less and less visible in the production and experiences of network culture. Indeed, many of the operations that used to typify the Internet are now funnelled through so-called 'platforms'. We do not have a single Internet anymore, but rather a multiplicity of distinct platforms, which in this issue are broadly defined as online 'cloud'-based software modules that act as portals to diverse kinds of information, with nested applications that aggregate content, often generated by 'users' themselves. These are characteristics often associated with 'Web 2.0' in marketing and popular discourses; discourses that are wholly inadequate for a serious critical engagement with the politics of platforms. 'Platform' is a useful term because it is a broad enough category to capture a number of distinct phenomena, such as social networking, the shift from desktop to tablet computing, smart phone and 'app'-based interfaces as well as the increasing dominance of centralised cloud-based computing. The term is also specific enough to indicate the capturing of digital life in an enclosed, commercialized and managed realm. As Eugenia Siapera points out in her article included in this issue, the roots of 'platform studies' in gaming and operating systems need to be extended to include digital platforms of all kinds. Therefore, while the presence of the Internet must not be forgotten, theories of network culture need to be supplemented with new frameworks and paradigms.

The challenge can be seen most clearly in the contradictions of platform politics. The desire expressed by Mark Zuckerberg in the early days of Facebook 'to make Facebook into something of an operating system' has become a widespread stimulus to platform development. The motivation is obvious: 'creating a platform that enables a software company to become the nexus of an ecosystem of partners that are dependent on its product' (Kirkpatrick, 2010: 218)

will generate huge revenues and profits for that company. Yet, at the same time, the immense power of the 'social graph', which has expanded hugely as a result of the ease of use of many platforms, has provoked widespread speculation as to the role of, for example, social media in recent waves of protest and revolution. As a result, the potential for harnessing platforms against constituted power in all its forms has become one of the most pressing political questions of the early 21st century. All of these topics, and many more, are touched upon in the articles in this issue of *Culture Machine*. We hope the issue will be a valuable contribution to the growing body of critical work on 'platformativity'.

The issue opens with the contribution from Greg Elmer and Ganaele Langlois, who argue that the 'digital object' is the constitutive element of platforms. In considering platforms as objects they recognise an inherent autonomy of relations and affects. The characteristics of digital objects contribute to a specific kind of platform politics that reflects their increasingly discrete and hidden workings, yet at the same time shows how their external tentacles reach throughout the Internet. The point here is that platform 'objects' operate in a digital ecosystem ever more vast and hidden, and increasingly operating beyond human control or understanding. It is the hidden character of the source code, the algorithms that sift the vast amounts of data they process, and their autonomously generated relationships, that presents a great difficulty in both marshalling platforms for resistant uses and in researching them. The 'objectness' of platforms is what Elmer and Langlois identify as the chief barrier to their research and understanding. They discuss attempts to access these platforms through alternative assemblages of data, rendering them visible in new ways, for example via their APIs (Application Programming Interfaces). While such alternatives assemblages present one possibility, this possibility is always already truncated by the fact that, in most cases, the access to the full spectrum of data is limited to the owners of the 'objects' themselves.

Neal Thomas also employs the concept of the 'object' in his contribution; building on this notion via Bernard Stiegler's understanding of memory as having 'material origins in *technicity*'. In that sense the digital objects of memory are grammatised as informational objects and understood as the originating elements of the subject, which are formed through the experience of time in the retention and protention of memory. Doubly important, therefore, is what Thomas calls 'industrial social computing', otherwise known as 'cloud computing'. As the latter is becoming a 'general substrate',

it organises what any platform can do, working at such speed so as to effectively become the exteriorised object of memory. The implications of this state of events are profound and reflected in the tendency towards a mass truncated 'affective participation', in which human subjects drift around helplessly on the surface of affective experience.

Paul Caplan dedicates his contribution to a full examination of the digital platform as just such an object, and does so through the lens of object oriented computing. Unlike the other uses of the term, which employ the idea as part of a constellation of materialist, or perhaps even 'new materialist', understandings, Caplan draws fully on the framework of Graham Harman's object oriented ontology. Caplan speaks of 'meshes' of objects, wherein all manner of digital phenomena, including social media 'likes' and 'friendships', as well as the algorithms that drive them, are described as objects. Through this, their objectness gains a life, a 'thing-power' that encourages us to think beyond the standard categories of being on-line and suggests a more positive reading of the digital object. The advantage of such a view is that it gives a reality to somewhat illusive digital phenomena - perhaps another dimension of the 'grey' and 'evil' processes that are discussed by Jussi Parikka later in the issue - but Caplan frames these as positive objects 'within' objects. The machinic quality of the digital object then becomes the real agent of platform politics, and thus a political object to be brought into the open and worked with. While the notion of an object has the advantage of throwing a border around the platform - of seeing it as being 'discretely connected' - other articles in this issue foreground the economic and technical context of the platform, its process and place at the centre of the flows of the global noosphere and as a neo-liberal force of machinic enclosure and subjectification.

We can certainly see this pattern developing in the advances of Facebook as it tries to absorb many of the functions of the Internet, including the Web, but also IRC, email, video communication and VOIP (Voice Over Internet Protocol), newspaper distribution, blogging and recently search. What Manuel Castells has referred to as 'switching power' (2009) becomes more and more focussed on a handful of platforms that colonise or enclose the Internet into a source of value creation, accumulating economic and consequently political power - which is captured in the dynamics of 'communication power'. While Castells foregrounds more traditional notions of a logocentric network, driven by the capacities of individuals and hubs, the approaches characterised in this issue

are sceptical of this notion of power. Instead, they find power embedded in matter itself; in the notion of the digital object as a distributed set of micro-relations characteristic of the 'digital objects' already mentioned, but also – to take a position outside of object oriented ontology – in relations viewed as antagonisms structured into protocological systems as a whole. On this basis, it is suggested, we can start to think about the dialectical relations that can be grasped as the driving power of a whole panoply of multifarious actants and networking logics.

Harry Halpin, for example, looks at the underlying institutional power of the Internet and its materialisation of control in the management of the Internet by ICANN and various other bodies. He points out that even where the Internet has managed to cling on to its 'neutrality', the ever growing power of Google and Facebook make this supposed neutrality less and less materially significant, as those corporations absorb its diversity and its affordances for the realisation of a counter-power in instantiated technological collective intelligence. Halpin refers to the rise of the platform as a matter of life itself, given its all-encompassing nature and its moves to capture value from free labour. Eugenia Siapera, also following a Marxian interpretation of online news and the ambiguities of the existing institutional power to influence online life looks at the subsumption of journalistic labour into the logic of the platform. In examining the increasing centrality of distribution for understanding the place of journalism in the political economy of news, Siapera insists this is necessary for rebalancing our understanding away from the traditional site of news 'production' to the 'whole' picture. She finds that an emptying out of meaning occurs with the circulation of fragments and 'liked' articles – an argument that resonates with Jodi Dean's (2012) notion of communicative capitalism. Siapera suggests that the platform politics of journalism is one that demands an account of consumption as increasingly inseparable from production and circulation, in ever more immediate and profound ways.

The question of possibility and hope beyond the increasingly control-oriented and value-capturing aspects of platformification lies in the capacity of platforms to provide affordances for radical political configurations. Such a facility, for example, to open up prospects for events that rupture the smooth surface of capitalist flows, and for fidelity to events as such, is explored by Joss Hands, who touches on the themes of subjectivation and becoming common in his evaluation of the chances for a non-capitalist

platform politics, or 'platform communism', being realised. Engaging with a range of recent thinking regarding a revived and rethought communism, Hands claims that platform communism's most feasible realisation is in the combination of expanded antagonisms alongside the construction of common spaces to accommodate an exodus that can challenge the dominance of the digital control society. While Hands focuses primarily on the prospects of platforms for ruptures and revolutionary breaks in the transition from capitalism, Nick Dyer-Witheford offers a more fully historical conception of the relation between communism, cybernetics and planning through the lens of Francis Spufford's 'Red Plenty', which retells the story of Soviet computing and its dreams of a cybernetically-enhanced communism. Dyer-Witheford explores the potential of a planned complex communism that could end scarcity and be finally realised thanks to the application of modern advanced computing power. The ability to develop platforms that could organise and plan a complex economy, according the capabilities and needs of all, is taken seriously and the notion of a K-communism mooted. In that regard Dyer-Witheford imagines what platforms, as spaces on the other side of the kinds of exodus discussed by Hands, could actually look like and how they could contribute to full computationally enhanced communism. Tim Jordan offers an alternative take on radical platform politics and the digital, diverging from some of the assumptions of the previous articles. Setting aside a prefigured Marxist or otherwise presumptive approach, he asks about the politics of information itself, exploring the question of whether we need to think of information and platform culture as a starting point that deserves its own specific politics. Taking as his point of departure an analysis of Jodi Dean's (2012) elucidation of communicative capitalism, Jordan makes a case for a 'multiple view of political antagonisms', or what might be described as a non-Marxist dialectic of antagonism, and the place of platforms as the latest instantiations of such informational politics.

While the articles discussed so far touch on a number of broad issues, the realities of a more concrete and immediate platform politics are picked up in the final two articles. Tero Karppi goes one step further even than Halpin by claiming that Internet life itself is the target of control, by exploring Facebook's valorisation of death. In examining Facebook memorialisation sites Karppi undertakes a subtle exploration of the platform politics of death and the bereaved. He shows how Facebook manages to translate the digital afterlife into a machine for extracting value from those left behind and in some prolonging life after death, but a rather peculiar form of digital

undead. Finally Parikka looks at the art practice of Weisse 7 in order to examine new forms of public that are produced by the kinds of 'evil' media described in Fuller and Goffey's (2012) book of the same name. Parikka understands the platform in the mode of 'wirelessness', taking the concept beyond the standard definition towards a more 'grey' configuration. In a way Parikka offers us a glimpse of the next step forward, thinking the platform beyond platform, towards the general subsumption of space and time.

The issue is completed by two video interviews carried out by Cornelia Sollfrank, with Dmytri Kleiner and Sean Dockray. These interviews are part of a broader project, 'Giving What You Don't Have',² that Sollfrank describes in the following terms:

Artists and creative producers play a central role in the discourse around copyright and intellectual property; at the same time, artists' voices are rarely heard. Normally, it is representatives of collecting societies or media corporations and other legal experts who claim the authority to speak on behalf of them – in order to argue for stricter copyright laws.

GWYDH aims at balancing this misrepresentation of contemporary artistic and cultural production. Using the interview format, the project collects and presents statements of artists whose practice reflects complex copyright-critical attitudes. However, the artists present in the project no longer work on the assumption of artists' privileged status, but rather consider themselves as part of the social movements for open access and free culture. Unlike appropriation artists, for example, who have claimed, and still do, to be 'super-users' who should be granted special rights and copyright exceptions for their appropriative practice, the artistic practices introduced in GWYDH produce real openings. They promote the free circulation of images, texts and other cultural products and intervene in broader cultural processes, related to the current overall 'post-medial' situation. This involves the development of forms of authorship and work conceptions that are able to elude the dictatorship of private property in the realm of culture and clear the space between life and art to

become a habitat for all. 'Artists' in the context of GWYDH are cultural producers of various backgrounds who work both inside and outside art institutions to realise their projects.

The goal of GWYDH is not to formulate one political position, but rather to give an insight into a variety of informed copyright-critical practices, which shall serve as a basis for further interdisciplinary research.

Dmytri Kleiner and Sean Dockray are the two figures whose projects are particularly valuable to this special issue, given that they both take platform politics beyond the academy and into the realm of praxis. Kleiner is a founder and key member of the Telekommunist collective and Dockray is the founder of AAAAARG.org, and instigator of 'The Public School'. Both of these enterprises are examples of platforms in the broad sense of the term: Telekommunisten is an organisation that operates as a platform for a range of what might be called network art projects, , such as Thimbl, R15N and DeadSwap, which work with existing technologies to re-imagine and reengineer network culture – as well as serving as the seedbed for Kleiner's 'Telekommunist Manifesto'. All of these projects are run under the 'Telekommunist' banner using its web portal as a nexus. In his interview Kleiner explains the logic behind these artworks, and the importance of copyright as the machinery of commodification in contemporary capitalism, as well as his concerns about the 'creative commons' as an alternative regime. In his interview Sean Dockray describes the beginning of AAAAARG.org as a simple platform for the exchange of reading material and, more importantly, for the building of communities of readers; never considering sharing as an issue of copyright, but rather as a space of secondary circulation, closer to a library than a pirate operation. Yet, as it has grown, AAAAARG.org has become about the latter 'retroactively', so to speak. Both Telekommunisten and AAAAARG.org are attempts to activate a commons, in the sense of the commons as a mutually constituted process of the 'becoming common of those who are involved', but also in the sense of building actual spaces that constitute the commons for the sharing or, as Sollfrank puts it, 'giving (of) what you don't have'. This phrase implies not the 'theft' of proprietorial goods, in the mode of piracy, but the eschewing of 'having' altogether, which perhaps evokes the logic of Erich Fromm's entreaty to 'be' rather than to 'have'. In that sense to be is precisely to share freely one's time with the expectation that this will not then be exploited for financial gain. But

often - as Kleiner argues and Dockray is also very aware of - such forms of giving quickly become commodified as 'department one' commodities, that is commodities that are used in the production of more commodities. As such, free access to department one commodities is actually helpful to capital, and therein exists yet another route for capital to valorise platforms. Nevertheless, both of these projects work to find ways to escape this logic. Kleiner does this by creating artworks and developing practices that are, to a significant degree, useless (or, better, non-exchangeable or valueless), and Dockray by creating commons in which already commodified objects and practices can be reproduced and reframed as public goods. Such uselessness and repurposing is in many respects a version of disappearance or 'exodus' from capital that is discussed by Hands and that is part of the opportunity that Dyer-Witheford considers K-ommunism to represent.

The hope of the editors of this issue is therefore that a specific politics of platforms can begin to be understood and theorised, not primarily in the electoral or formal sense of the term, or even in the way of movement building, but rather as the context for and frame of current and future politics as a whole. The question as to whether this becomes increasingly contested, and/or subject to the iron rhythms of the 24/7 cycle of digital capitalism (2013), as Jonathan Crary puts it, will likely be one of the most important questions of the coming decade.

Notes

¹ The project originated in the conference 'Platform Politics', which took place at Anglia Ruskin University, Cambridge, on the 12-13 May 2011, and was organized by Joss Hands and Jussi Parikka as part of an AHRC funded network 'Exploring New Configurations of Network Politics'. See www.networkpolitics.org for more details.

² The project was commissioned by the Post-Media Lab, Leuphana University, Lüneburg, Germany. Other interviews in the series include: Kenneth Goldsmith (ubu.com), Marcell Mars, The Piracy Project; still others are being planned.

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THE RESEARCH POLITICS OF SOCIAL MEDIA PLATFORMS

Ganaele Langlois and Greg Elmer

‘This is the first time the world has seen this scale and quality of data about human communication’, Marlow says with a characteristically serious gaze before breaking into a smile at the thought of what he can do with the data. For one thing, Marlow is confident that exploring this resource will revolutionize the scientific understanding of why people behave as they do. His team can also help Facebook influence our social behaviour for its own benefit and that of its advertisers. This work may even help Facebook invent entirely new ways to make money.

‘What Facebook Knows’

<http://www.technologyreview.com/featuredstory/428150/what-facebook-knows/>

In June 2012, the *MIT Technology Review* published ‘What Facebook Knows’ – a story about Facebook’s Data Science Team headed by Cameron Marlow (see citation above). An interdisciplinary group of mathematicians, programmers and social scientists, the Data Science Team is in charge of understanding the massive amount of user information that Facebook collects. The team, of course, does not follow purely scientific goals; their purpose is to develop new markets based on the new knowledge derived from collecting, storing and analyzing the massive amount of human data that corporate social media has made reachable. While such ambitions obviously raise serious questions about the privacy of Facebook users, in this article we focus on how the Data Science Team’s agenda also raises substantial critical questions for media scholars.

Corporate social media platforms may seem to be like an open book: on their ever changing interfaces we see the unfolding of an amazing array of communication acts, from mundane gestures to revolutionary ones, from intimate exchange to the rise of new global public spheres. Yet such transparency is only superficial: it presents but one aspect of corporate social media platforms. From a critical perspective, it is necessary to enter the belly of the beast, so to speak

– that is, to examine how so many acts of communication are technologically enabled or encoded within media objects for their ‘platforming,’ i.e., for their circulation and promotion across social media platforms. The first challenge is ontological, in that it requires that we switch our attention away, for a minute, from *what* is being said (posted, commented, and so forth), to *how* it is being processed and rendered. In so doing, we must expand from the study of communication as signs or discourse to include the study of communication as data collection, storage and processing. The second challenge is consequently methodological, given the proprietorial enframing – or some might say enclosure – of the communicative act on social media. To address such concerns we interpret social media’s *digital object* (one that is constituted by links, videos, posts, images, ‘like’ buttons, etc.) as the operative site of the commercialized, communicative act – an instance of what we term *thick* data (as opposed to big data). We argue that the *digital object*’s thick layers of data allow us to trace the articulations of technical, corporate and media logics, and thus to identify some of the new forms of power yielded by corporate social media platforms.

Enframing Communication

Corporate social media have redefined communication – and not just in terms of offering users some flexible tools of self-expression. This is why it is a mistake to see social media as mere tools through which participatory communication (Jenkins, 2009) can take place. While it is true that social media platforms such as Facebook and Twitter have simplified the communication process and expanded potential communicative opportunities, they have also harnessed communications in an effort to monetize it. Thus, while social media, like any other media form, serve to enhance and to a degree promote communication, they are not simply semantic platforms. Rather, social media platforms can be said to promote the patterning of communication through media objects, which involves recording not only what is being said but, more broadly, the act of communication itself. From a corporate social media logic, content (understood as meaning) is only the tip of the iceberg. Social media record in increasingly layered detail the different aspects of a communicative act: that is, not only what is said, but also specific information about the profile of the user sending out a message, the users receiving that message, about how users interact with a message by reading or not reading it, ‘liking’ it, sharing it, etc. As such, the recording processes at stake with corporate social media

include a minutiae of details that would be difficult to gain through human observation only: corporate social media platforms notice time lapses, time spent on a page or scrolling, pauses in the communication process, silences that might seem non-communicational but that still yield information as to what a user is reading or deciding not to react to, as well as previous communication acts that give a specific communication act a discursive and social context. Finally, the combination of long-existing tracking devices, such as cookies, and newer ones, such as the Facebook 'like' button that is now commonly embedded on many webpages, allows for the collection of diverse contextual clues: not just of the kind of content users access and interact with at different times of the day and night and in different social settings (at work, home, or with friends), but also of how users themselves act on different platforms and how they share content across a multitude of platforms.

The corporate social media platforms that organize most of what we currently experience as participatory culture do more than just allow users to publish and communicate with one another: they also seek to enhance, format, encode and diagnose communication. This enhancement of acts of communication can take different forms, from the creation of tools that facilitate user communication to the development of targeted advertising and the personalized ranking of information according to specific logics. For instance, Facebook gives two choices for ranking stories on a user's newsfeed. The first default ranking logic is called 'most popular', which means stories which are 'liked' or commented on more than others, or that are produced by very active Facebook users. The second ranking option is filtered by newest stories first – a more traditional ranking commonly found in blogs in particular. In trying to define a specific ranking logic that involves some kind of contextual understanding of user activity and user's centrality within a network of connection, Facebook does not simply transmit content: it filters it and claims to augment it, to make it more relevant and meaningful to its supposed addressees. The challenge is that such logics of sorting through large amounts of information are not open to public scrutiny: just as the Google algorithm is a proprietary format, so too is Facebook's EdgeRank algorithm which identifies most popular stories. While it is possible to understand in general terms how both ranking algorithms work – for Google, through in-links and geographic location, and for EdgeRank, through closeness among specific users, number of existing interactions with a story and time elapsed since the story was first published – the actual weight of each

of the elements that compose the algorithm is kept secret (Bucher, 2012). In all, corporate social media platforms have accelerated the melding of communication acts with special interest logics. They do not merely interject for-profit messages, such as advertising, into acts of communication. More importantly, they also encode and fold acts of communication into techno-corporate kernels, or objects. In other words, they do not simply use communication as a springboard to promote special interests – they use communication to tap into everyday life in order to try and refashion it from the inside.

The consequences of this new articulation of media, life and economics have been the focus of much attention in the past few years. Overall, we can distinguish three different yet intertwined approaches to corporate social media. The first approach, often dubbed ‘critical political economy,’ examines how the new business models developed by corporate social media redefine power relations. For instance, scholarship on immaterial labour, semiotic capitalism and cognitive capitalism has shown that corporate social media platforms do much more than just sell users’ attention to advertisers: they actually help identify the very strategies through which attention can be fully harnessed. The general understanding that has emerged from the critical political economy approach is that corporate social media seek to mine life itself – where life is understood not in strictly biopolitical terms, but rather as intellectual, emotional, affective, cognitive and social life, from attention (Terranova, 2012) to noo-power (Gehl, 2013) and being together (Stiegler, 2012).

The second axis of reflection critically reflects on corporate social media through empirical engagement with social media platforms and networks. Software studies and other forms of software analysis examine the algorithmic logics of social media platforms in order to identify whose interests they serve. Research into ranking algorithms, for example (Bucher, 2012; Gillespie, 2012), highlights how the circulation of information is framed through cultural biases inscribed into algorithms. Elsewhere, so-called ‘natively’ digital methods (Rogers, 2009) trace the different networks of data produced by social media, from networks of friends to economic networks. Using this approach, Helmond and Gerlitz (2013) proceed by tracking the networks of data collection and marketing agents that are activated each time someone clicks on the ‘like’ button. These new maps of corporate social media activity reveal the

complex and multilayered communicative acts on social media as they link together disparate economic, cultural and social interests.

The third approach relating to our problematics of media objects is concerned with questions of software activism and software design, from the politics of the aesthetics of user-interface to the design of alternative social media that preserve privacy and build alternative spaces of online community, exchange and activism (Lovink and Rasch, 2013). This approach specifically interrogates how we can deconstruct and reconstruct the experience of using corporate social media platforms in the hope of developing new user agencies.

As with our own stated goal, these three strands of critical analysis of corporate social media highlight the search for technological articulations in and across so-called participatory communication – in the context of corporate social media's principle of information gathering, processing and circulation through networks of data analysis and marketing. This concept of articulation, as non-necessary, context-defined connection between diverse processes (Slack and Wise, 2004), is key here. Tracing the impact of such articulations in specific contexts and events could yield important insights into how to critique, reconstruct, and develop alternatives (both political ones and software ones) to the impact of corporate social media on all aspects of life – from the mundane to the exceptional, from the political to the everyday, from public life to private, intimate connections. The concept of double articulation (Langlois *et al.*, 2009) becomes a particularly useful device that can help us understand corporate social media. This concept suggests that communicative acts – particularly those occurring through digital objects – that take place at one level simultaneously create new articulations at another level. For instance, economic interests in gathering as much user data as possible are articulated with technical ones in the creation of new platforms. This, in turn, has an effect at the level of interface communication among users, in that such new knowledge about users will be used to create targeted interventions at the interface level, from advertising to the suggestion of stories to follow. As such, if as researchers we focus on the phenomenon of communication and take an act of communication as an object of study, we have to be aware that this object of study, which we call here a digital object, is not simply about human content and context: it encapsulates a series of double articulations where disparate economic, technological, cultural and social logics are shaped by each other, and therefore have to be studied in relation with each other. Corporate social media

platforms constantly enact these double articulations: while on the surface they seem to promote unfettered communication, they work in their back-end of data processing and analysis to transform and translate acts of communication into valuable data.

Critical Social Media Research?

We offer these initial thoughts on social media studies, as both an ontological and methodological challenge in light of what we view as an increasingly complacent, administrative approach to social media research. In other words, we see the current juncture in social media studies as echoing back to the divide in mass media research in the 1930s and '40s between administrative research and critical research. On the one hand, administrative communication research emerged as empirically-driven, favouring the use of quantitative methods and the parcelling out of acts of communication into recognizable objects: actor, content, audience, effects. Such research aimed to be descriptive and mostly emerged outside of academia: it was state- and commercially-driven, leading to studies about how people made voting decisions as well as which commercial products they favoured and why. On the other hand, critical research posited that culture could not be measured, favoured qualitative methods over quantitative ones, and aimed to identify systemic power inequalities as well as formulate alternatives (Adorno and Horkheimer, 2001). As such, it was radically opposed to the administrative agenda of rationalizing acts of communication. The two approaches attempted to connect with each other through the infamous radio project that saw the father of administrative research Paul Lazarsfeld attempt, and fail, to collaborate with Frankfurt School theorist Theodor Adorno. The split was more than just a failure of a collaborative research project. Indeed, this breakdown established two very distinct and separate paradigms for research: an administrative one that has often been criticized for unproblematically aligning itself with corporate and special interests, and a critical one that has either been focused on broad structural issues such as political economy ones, or on qualitative analysis of small samples.

Such divisions in the research framework have already appeared in the case of corporate social media research: to date, the conjunction of wanting to study social media with a push towards 'big data' has led to numerous content analyses of broad data samples, including those that seek to describe the general mood of the public (i.e.

sentiment analysis). An example of such approach is wefeelfine.org, which collects sentences containing 'I feel...' from different Web sources in order to provide a broad tapestry of feelings online. While such research projects demonstrate the magnitude of voices that are present online, they tend to decontextualize acts of communication, that is, to create artificial correlations and equations to produce artificial communities of feelings that erase the specific and unique context of a single utterance.

Too often, scholarly research on social media suffers from an unproblematized approach to social media data as supposedly a transparent representation of human behaviour, one that can be used to predict future behaviour. The assumption here is that social media data can be used to understand all potential users and non-users alike. The inherent problem in trying to simplify and decontextualize such things as emotions, feelings and sentiments tells us about the limits of some of the approaches that see social media as data repositories of transparent and simple communicative actions. That being said, we suggest that the critical approach of old needs to be revisited as both types of analysis – those of structural issues and those of small samples – are limited in the case of corporate social media platforms. In the case of smaller samples subject to qualitative analysis, the explosion of content in the participatory communication context suggests that research that was already time consuming now becomes almost impossible to carry out: while conducting a discourse analysis of a newspaper for a day could be feasible, doing a discourse analysis of a popular Facebook group even for once single day is almost impossible, unless one has access to a whole team of researchers. As such, critical research runs the risk of limiting itself either to broad structural claims while ignoring the actual articulations of corporate and participatory logics in specific contexts, or to very small claims because of its necessarily limited sample size. The question, then, is how to navigate all these contextual, theoretical and methodological challenges in order to shape a new critical framework for research into corporate social media.

Before delving further into the digital object as a methodological point of departure or better, critical *kernel*, it is useful to highlight how corporate social media have changed the epistemological and political context for doing critical research. Critical research broadly defined focuses on examining unequal relations of power and on formulating alternatives. With regards to communication technologies, critical research focuses on whose interests are being

served and whose interests are being denied or made invisible as technological systems evolve in economic, social and political contexts. With regards to corporate social media, as seen above, critical approaches have turned towards the question of individual and collective life, from perception to affects, from political agency to a sense of belonging to communities, as it is mediated and regulated by techno-corporate networks. This is why we argue that there is no outside to human participatory communication that would be distinct from the corporate logics of social media: the platform itself is what melds these two aspects together. This core articulation, however, is not simply something to be studied; it is something that directly intervenes in the capacity to conduct critical research. That is, the main problem with corporate social media is that they are not simply objects to be studied, they also monitor, mediate and regulate any kind of attempt to get into them, so to speak, that is, to get into their dealings with all aspects of life. Corporate social media platforms obfuscate: their logic goes against critical approaches at many levels, some of which are examined below.

As noted in our introduction, then, corporate social media present us with a paradoxical research context. On the one hand, corporate social media carry with them the promise of transparent communication that can reveal the detailed intricacies of human life: not only what people say, but also the web of intimate and public connections within which any kind of meaning is inscribed. Needless to say, such a wealth of information presents tremendous research opportunities and research ethics challenges. After all, analyzing what takes place on corporate social media does not need to be limited to messages exchanged on an interface: the communicative acts that are being tracked through Facebook data, for instance, are not simply about content, but about human behaviour. In terms of research ethics, this new capacity to examine the acts of any users in such details poses serious challenges: this kind of scrutiny was the purview of scientific fields such as psychology, and was guided by stringent research ethics protocols, including the requirements to obtain consent from research participants and to anonymize data. The fact that anybody with access to corporate social media data can undertake data-mining and analysis of that scope raises a whole new set of issues and a need for further guidelines for social scientists and humanities scholars.

However, any social scientist undertaking research using corporate social media platforms will acknowledge the incredible complexity

in getting access to data, even if the intricacies of research ethics have been adequately addressed. Corporate social media platforms tend to favour for-profit applications and uses of their services, and this has consequences in terms of accessibility of data for public and critical research. In particular, data from corporate social media platforms is accessible via application programming interfaces (API). Depending on the type of platform, API can be more or less easy to interact with and request data from. Some API such as the Facebook API, are geared towards the creation of commercial applications. As a consequence, it is impossible to just ask the API for a large amount of data. Third parties are available to launch data queries on a selection of corporate social media platforms, but at a price, thus requiring researchers to have access to funds. In terms of Internet research, these dynamics are quite new. The earlier incarnation of the World Wide Web was more transparent: most information, from text to hyperlinks and metatags, could be collected through crawlers, and several crawlers were available on an open source or free basis. The corporate social media model, however, introduces a tiered system: some information is visible to all, but that does not mean that all information can be accessed and analyzed by anyone. While it is still feasible to do a screen capture or copy and paste of what is visible at the interface level, the recording of full data – not only content, but the contextual information regarding that content which is generally accessible via the API – can be difficult, if not downright impossible, to get access to. In general, research for the public interest tends not to be recognized. Most social media platforms do not make their data available for scientific, not-for-profit research. Twitter, however, is allowing the Library of Congress to store past tweets, but the time delay means that research into current events is unfeasible. As such, there is a real and pressing challenge regarding the status of research for the public good rather than research with direct commercial applications and its relationship with corporate social media platforms that have de facto privatized access to data.

It might seem that these research challenges are restricted to corporate social media spaces: the Facebook website, for instance, or the Twitter websites or apps, or the Google + website. However, corporate social media platforms do not simply centralize all their activities within one space – they also expand them throughout the Internet. This is particularly evident with the use of digital objects such as share buttons: the ‘tweet’ button from Twitter, the ‘like’ button from Facebook, and the Google ‘+1’ button, to name but a few. These button-objects make enable users to share content with

their social networks across these different platforms. Buttons, then, create information networks that link social media platforms to the rest of the Internet. They are an evolution of the hyperlink: they make information accessible by creating paths, but they differ from the hyperlink in that they do not just create paths – they also allow for the recording of further data on user information sharing behaviours. Buttons, and other kinds of what Facebook calls ‘social plugins’, link social media data with other kinds of online information not only to collect information back to the social media website, but also to create on other websites a way of approaching information following the specific kinds of social connectivity promoted by the social media platforms: sharing with friends, for instance, but also seeing which information is seen by other friends. Corporate social media platforms cannot be defined purely as enclosed spaces – the platform promotes specific principles for viewing and sharing information in a contextual manner, that is, in a manner that makes it possible to see that information is accessed, but also interacted with, through sharing, liking and other online actions. As such, the corporate social media logic is present almost everywhere online. Doing research into modes of participatory culture and communication therefore requires taking the presence of corporate social media networks into account.

It is important, furthermore, to understand that this contextual paradox of research between transparent communication and platform obfuscation is not just limited to what kind of data is accessible. Data itself, from a critical perspective, is a problematic concept: should it be seen as a faithful representation of human behaviour or as a dehumanized recording that artificially parcels out existence into quantifiable bits? As we said above, corporate social media do not simply transmit communication among users, they transform it and impose specific logic on it. To borrow from Lawrence Lessig (2006), the platform’s code imposes specific regulations, or laws, on social acts. The consequence of this is that corporate social media give the impression that they merely render social acts visible, whereas in fact they are in the process of constructing a specific techno-social world. For instance, while I can ‘like’ something on Facebook and have ‘friends’, I cannot dislike, or hate or be bored by something and have enemies or people that are very vague acquaintances. The seeming social transparency that is the promise of corporate social media is a construct: the platform imposes its own logic, and in the case of Facebook, this logic is one of constant connectivity. The promise that social media data is in the first place a transparent trace of human behaviour is thus false: what

data reveals is the articulation of participatory and corporate logics. As such, any claim to examine a pre-existing social through social media is thus flawed. Thus, in studying modes of participatory culture on corporate social media platforms we encounter two main challenges: one concerning access to data and the ethics of data research, the other data itself and what it claims to stand for.

Digital Objects

The main challenge for critical communication research could thus be summarized as follows: how can we unpack the different articulations of corporate and participatory logics by examining *what is available to the researcher* with limited access to corporate social media data and to the social media algorithms that organize life online? Our answer is that researchers need to rethink the very site of analysis and focus on what we call '*digital objects*'. Digital objects, as previously explained, are the elements that compose social media platforms in specific context: a 'like' button is a digital object, for instance, as is a comment or any other kinds of text. Digital objects are also the results of invisible data processing that come back to us as personalized recommendations of all kinds. In doing so, the object of analysis is not simply the textual multimedia elements present on a user interface at a specific moment: it is also all the software elements that make textual elements visible, from formatting specifications to ranking algorithms. Digital objects, then, are multifaceted objects that contain cultural elements along with informational processes and design elements.

The digital object possesses three characteristics or layers. First, it is a *media object* in the classical sense of the term: it has some kind of content that signifies something; in short, it integrates a semantic layer. It can be subject to a classic critical-cultural analysis such as discourse analysis. A Facebook post, or a video posted on YouTube, can be analyzed for its content as well as its form, that is, for the different multimedia aesthetics it deploys. Yet digital objects are not simply media objects: the signification of the 'like' button, for instance, only yields limited insight into how it influences and shapes participatory communication. This point reveals a second layer of the digital object: it is a *network object*. That is to say, the digital object connects different kinds of informational networks together. The Facebook 'like' button, for instance, connects the Facebook network of a user with other digital objects and networks: for instance, with the Facebook network of another user, or with an

object, such as a news story, produced by a mainstream media site. From the perspective of the network, the digital object acts like an interface that allows for some kind of informational connection at different levels. That is, these informational connections can take place at the level of the user interface, but also at the back-end. 'Liking' a news story usually means that other hidden informational networks are activated: profiling networks, for instance, that will then adapt the content of the ads on a news website to the Facebook profile of the user. As a network object, then, the digital object is the interface through which different kinds of informational economies get attached to and act within a specific communicational context. Informational networks in the corporate social media logic produce a kind of automated recognition of the user: they identify and situate the user among different networks of relations, marketing, and advertising. This reveals the third layer of the digital object: it is also a *phatic object* (Miller, 2008), in that it establishes specific kinds of presence and relation among users. 'Liking' something, to continue with our example, is an act of presence within one's Facebook network: it not only makes a user visible to other users, it is not only about sharing meaningful content, but also about establishing one's position and relation among an ecology of users and digital objects. This is often the case when one 'likes' a political statement or position: the act of liking shows where one positions oneself in a political horizon, and is a claim as to what kinds of relations one expects from other politically involved users in one's network. Of course, these characteristics – media, network, phatic – do not act independently of each other: depending on the digital object under analysis, each characteristic will influence and shape the other ones in different ways: the media aspect of an object serves as a database for the activation of informational object, the informational network produces new media objects (new content or new stories, for instance) as well as mediates acts of presence and relationality among users.

This thick digital object is thus the site where the articulation of participatory and corporate logics can be examined through identifying the different kinds of informational logics and layers, phatic moments, media processes and their interactions. The analysis of a digital object, even if it takes place within a small sample, can thus yield greater knowledge and awareness as to how corporate social media logics enter into participatory processes. Again, contrasted with the big data approach, this 'thick data' encoded into the digital object offers a compelling site from which articulations can be mapped between users, platforms, and

communicative acts. Investigating digital objects as such can lead to a better understanding of the new forms of political activism that have recently emerged online, providing insight into how different groups and actors make use of the specific informational logic of corporate social networks to spread a cause and transform opinion. That being said, the critical approach to the study of digital objects is to some extent akin to advancing in the dark. Because aspects of the digital objects are only partially visible at the user-interface level, it is important to maintain the long-standing critical position whereby the analysis is not only about what is visible, but also about what remains invisible – and thus unquestioned and accepted as the norm.

The digital object is therefore decidedly evasive – it is in many ways akin to the evil media object described by Fuller and Goffey (2009) and further explored by Parikka (2013) in this special issue: it is complex, only partially visible, and reveals as well as hides its many layers and articulations. Yet understanding that digital objects are multifaceted, that they can hide as much as they can reveal, opens the door for a new critical approach, one akin to reverse engineering. Critical reverse engineering has been a long-standing tactics in online politics, gaining popularity through the phenomenon of Google bombing. One can recall the ‘error 404’ page that would come up as first result when searching for ‘weapons of mass destruction’ in the early days of the 2001 U.S. invasion of Iraq. Another more humorous example on Facebook was the short-lived 2008 Burger King app, which promised a free burger to anybody who would defriend ten of their Facebook friends. Here, these examples of reverse engineering of the informational logics served some specific cultural purposes: a political one in the case of the WMD Google bombing and a critique of ‘friending’ (Boyd, 2004) in the case of the Burger King Facebook app.

The digital object as a concept is not only that which hides and reveals different cultural and informational processes; it is also that which patterns and orchestrates diverse other elements, from user behaviours to other digital objects. The ‘like’ button, for instance, is an example of a digital object that appropriates third party objects, such as a news story, and articulates it with the Facebook logic of connectivity. The digital object can be used to transform other objects in its vicinity, and it also directs the kinds of interaction that users can have with it. In many ways, the digital object is akin to Celia Lury’s analysis of the brand that patterns different elements around it (2004), that is as a platform in itself. The digital object

establishes patterns of relationality with other digital objects, and with platform users. These patterns of relationality are that which give a digital object its meaningfulness as they organize how the object fits within a specific context. From a corporate social media perspective, these patterns of relationality among digital objects and users orchestrate different flows of data – from the data that is visible at the user interface level to the grey and dark networks of data-mining.

The digital object also imposes patterns of perception, and not only with regards to what is available and visible to the user. The digital object articulates different forms of being online, from an individual to a collective gaze, where one is aware that one's interactions with an object will have consequences for other users – e.g. those that are part of one's social network. As such, the digital object can foster not so much the 'imagined communities' of old (Anderson, 2006), but rather 'felt communities,' where users can become aware of the way their actions are going to find an echo and define a new attentional context. This is linked with the phatic dimension of the digital object, where the act of presence to others through the interaction with digital objects might have an impact on these other users. The digital objects thus encapsulates specific modes of 'distribution of the sensible' (Ranciere, 2004), that is, processes through which some elements become more visible than others, processes that ultimately define specific ways of being together and understanding one's existence within a community of users.

This short exposé of the concept of the digital object hopefully offers one way of reconciling disparate trends in communication research, namely the kind of research into large data that has mostly been approached from an administrative perspective with a critical ethos of looking at how specific interests, from political to corporate ones, intervene in the communication process. In doing so, traditional critical approaches to communication research have to change: until recently data was not a word commonly found in critical theory and, for many scholars, it still raises the spectre of the dehumanization of research and the imposition of technical logics onto the unfolding of life. In dealing with thick data through the concept of the digital object, thus, it is expected that a critical approach will fundamentally change the concept of data itself, and reinvent tools that look at double articulations and the superimposition of technical, economic and social logics and layers – rather than offer a simple understanding of acts of communication online. The digital object as a multi-layered object can offer a new point of departure in

dealing with these contradictions of critical research into corporate social media, but it is far from being a final answer. Rather, the critical appropriation of software tools, analytical tools and other tools that deal with what is manifested online is not simply a necessary methodological step: it is the ground through which a new critical epistemology of life online can be formulated.

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SOCIAL COMPUTING AS A PLATFORM FOR MEMORY

Neal Thomas

How are digital platforms commodifying the desire to remember? And how do their resulting affordances for recall inevitably also embed a schema for judgment into our lives? Such questions should be seen as particularly pressing ones in any consideration of how digital platforms reconfigure life in networked societies. While paying lip service to the ethos of an open, participatory Web, new social computing platforms are altering the landscape of what Zittrain (2008) calls a ‘generative’ Internet in significant ways. As users make their way onto more privately managed information spaces, there’s no question that fascinating new forms of conviviality are being enacted. But at the same time, these spaces generally restructure our relations with one another with a specific goal in mind: to generate some kind of audience commodity. Under these assumptions, the most singular and basic significances in our lives—where we were last night, what we searched for in October, who made us laugh eight years ago—are to be written down as interwoven networks of fact. Properly managed, the idea is that these networks can produce surplus value by way of strategic aggregation and reorganization, and the simple passage of time.

Technology makers have seen the writing on the wall. As information appliances connected to these commercial spaces become more common and capable, and cultural expectations shift to bring them into more intimate spheres of everyday life, certain metaphors coalesce to define an overall answer for what’s going on, and what will happen next. A dominant one to have emerged from this turn is that our future is ‘in the cloud’ (see, for example, Naughton, 2012); here users are pitched to put their entire daily social and cultural output onto giant global platforms owned by Google, Microsoft and Apple. Fantasized as a kind of transcendental hive mind for keeping our memories in trust, behind the scenes our

relations will be perpetually data-mined for novel patterns. Coley and Lockwood (2010) write of this vision that it is, 'undoubtedly a central factor, if not apotheosis, of the continuing acceleration of globalization, itself concerned with a 'totalizing' integration of cultural difference within an overall system of control' (14).

With their tone in mind, this paper explores some semiotic and philosophical dimensions of cloud computing, which I will render more prosaically as industrial social computing. By social computing I mean a broad class of digital platforms that enroll the social participation of users into computational processes that support the goals of a platform. The 'Like' buttons that Facebook deploys across the web, thumbs-up/thumbs-down mechanisms on news sites, and the Netflix recommendation engine are all relevant examples here. By industrial, I mean that in terms of scale and execution, as a medium, commercial social computing exhibits many of the hallmarks of a systematic manufacturing process: standardization, rationalization, and the constant application of overarching criteria of efficiency. As Langlois (2011: 2) describes in a prior issue of *Culture Machine*, the resulting affordances and practices of social computing have tangible effects on the organization of everyday relationships, and on the production of horizons of expectation.

Making this assumption allows me to focus more on the intellectual and *formal* commitments that drive these systems in the first place. A specific concern will be with how social computing systems conceptually organize the retrieval of signs. Like other technological media before it—the alphabet, photography or cinema—social computing technology has become deeply implicated with the retention of lived experience, through its preservation of the present in the material-semiotic trace. Following Kittler's lineage of graphematic storage technologies—the phonograph, cinematograph, typewriter ('dactylograph'), and now the computer—we might say, awkwardly enough, that industrial social computing organizes signs 'decisio-graphically'. That is, it functions through the capture, storage and aggregate 'playback' of *choices* made by networked users, as they retrieve and circulate informational entities in their day-to-day lives. In what follows I explore how the technology achieves this functionality at the level of signification: organizing the decisions of prior users to produce a future-focused horizon of meaning for current ones.

Underscoring the importance of choice or decision as a constitutive mediating feature of social computing, consider the following

remark of Google's former CEO, and now Executive Chairman Eric Schmidt. Describing the future of search in a 2010 interview in the *Wall Street Journal*, he suggests the following:

one idea is that more and more searches are done on your behalf without you needing to type. ... I actually think most people don't want Google to answer their questions ... they want Google to tell them what they should be doing next. (Eric Schmidt, quoted in Holman, 2010)

To adapt his remark to more critical concerns, under what mediating terms of anticipation and recall does a technology like Google suggest what we should 'do next'? According to what logic, or set of metaphysical and ideological commitments, is the past *organized* so as to suggest what comes next?

To rehearse the response that follows, Part One relies on the work of Bernard Stiegler to suggest that current models of the social computing user can be read more philosophically as a theory of the subject. The longstanding tendency in both software engineering and the information sciences has been to characterize the user in rather functionalistic, epistemic terms—as one who seeks the resolution of a knowledge deficiency or need, through the successful retrieval of a unit or record contained somewhere in a storage system. Underneath this basic assumption, however, lies a deeper set of semiotic confluences between philosophy, mathematics, and software design. Relativizing the user as a construct articulated from out of these fields, having been produced by certain intellectual commitments over time, allows for an alternative reading of the relationship between subject and software technique. This is especially important given the contemporary moment, where networked digital media is now potentially as much about the everyday production and circulation of existential *expression*, as it is about the retrieval of information.

Part Two turns to Félix Guattari's asignifying semiotics, as a supporting framework for understanding how social computing produces a retentive structure that shapes a user's relation to signs. It draws out the specific features of industrial social computing that, following Genosko's (2009) gloss on Guattari, "automate" dominant significations by "organizing a system of redundancy" on the levels of expression and content...' (95). Finally, Part Three applies Guattari's theory of signalactics to the example of the *k*-

nearest neighbour algorithm, using it as a generic example of how systems deploy the aggregated prior choice of past users to steer future ones. The hope with this trajectory is to give a reasonably synthetic account of how industrial social computing comes to act as what Stiegler calls a mnemotechnology, while also illustrating how the mathematical abstractions that drive social computing's algorithms act as supporting mnemotechnique.

Part One

Stiegler (2010a) points to Plato as among the earliest to consider writing methods as mnemotechniques, and the recollection that occurred with their support, *hypomnesis*, a term in tension with what he called anamnesis, or living recall (67-8). The evolution of mnemotechniques, from basic tools to complex global apparatuses for remembering, has over time lead to mnemotechnologies. In claiming that networked digital media represent a qualitatively new horizon in mnemotechnologies, Stiegler (n.d.) recasts anamnesis and hypomnesis to account for the fact that remembering does not occur according to the logic of some idealized mind. Rather, anamnesis and hypomnesis share a material origin in *technicity*. Like Harold Innis' famous examples of papyrus and clay, or Stiegler's own example of Neolithic-era knapped flint (Stiegler, 1998:176), mnemotechnics have 'always already' been a technical means for exteriorizing the living memory of individuals onto some inorganic substrate. The preservation and reactivation of knowledge and significance through them allows us to learn from the dead, pushing memory far beyond the 'retentional finitude' of any living person or group. Stiegler argues that by surpassing us in this way, mnemotechnologies do much more than help us remember; they constitute a time-consciousness, a selective logic, and therefore a projective politics of memory that we take up as a 'hypomnesic milieu' (73).

In the case of industrial social computing, the premise is that it comes to act as a general substrate upon which our living, organic retentions of memory 'protend'. Borrowed by Stiegler from Husserl's phenomenology, and resonant with Schmidt's prediction for Google users noted above, protention denotes the lived, anticipatory perception of 'what happens next' in experience. There is a flow through which each moment of protention becomes the moment of retention in the next, and it is this movement that temporalizes our becoming. Like any other mnemotechnology

before it, social computing inflects a certain frame for the formation of a present—providing a certain ground of ‘now’—as it extends our perception into the next moment. At the level of interface, the temporal inflection occurs in the moment where significance triggered by phenomenal need in the experience of a given user meets the rational unit-spacing of significations that will make it computable, driving a platform’s logic for what will be stored and retrieved.

Recalling Heidegger’s *Ereignis*, or being-as-event, it’s in this movement that industrial social computing offers a truth-bearing thesis to participating users, which Stiegler calls an *orthothesis*. Formally stipulated relations of validity, embedded in the algorithms and semantic protocols of a platform, provide a rational basis for individuals to correctly perceive how things transpire; as well as a way of recognizing the past in the present and the present in the past. With regular use, the medium chains together protentions and retentions, naturalizing itself among bodies and their habits. Stiegler (2010b) writes that through this movement, mnemotechnologies ‘always constitute a spatialization of the time of consciousness beyond consciousness and, therefore, constitute an unconsciousness, if not the unconscious’ (8). Elsewhere he suggests that the intense commercialization of digital media sets it apart from prior mnemotechnologies. Though *hypomnesis* may be an ancient idea, he writes that,

something absolutely new happens when the conditions of memorization, that is, the criteria of effacement, selection, forgetting, anticipation, retention-protention—in a word, of temporalization—becomes concentrated in a technico-industrial machine whose finality is the production of surplus value. ... There has today occurred a veritable inversion in the relation between life and media: the media now relates life each day with such force that this “relation” seems not only to anticipate but ineluctably to precede, that is, to determine, life itself. (Stiegler, 2009: 80-1)

The point here is that in its capacity to generate a hypomnesic milieu, social computing brings a complex *retentional* economy in the wake of its attentional one (8). Industrial social computing stores and re-presents discourse in ways that increasingly displace

subjects away from knowing themselves temporally through anamnesis—local and living memory—and towards knowing themselves through an exterior function of memory; one that, for platform makers, should somehow reconcile its semiotic affordances with the logic of surplus value. For Stiegler, contemporary media's capacity for capturing and retrieving the sense of events with near-simultaneity, or in *real-time*, is especially over-determining. In his example of 24-hour news, the dividing line that separates the contingent occurrence of an event and its mediated historical reception *as* event, becomes so thin as for the two to effectively coincide. In the case of social computing, recalling an information object is divided instantaneously in a similar fashion: between the object's visibility as ranked in the overall universe of objects, and the constant recalibration of that visibility through the ongoing contingency of collective choice.

Whenever it's necessary to make sense of a sum of events that transpire over a given stretch of time, a general condition is that only some cross-section of the events can matter. Some event-logic 'makes the present pass', by determining the form of the event's reception, while also framing the way in which 'what happens next' will be anticipated (118). With the rise of real-time media like social computing, the immediate and the historical come to take place in the same instant, and *sense-making*—or judgment and rationality as it connects to memory—falls instead to 'the affective participation of the masses' (120). For Stiegler, this so-called tertiary retention, or memory at the level of technics, has the effect of constantly producing a factual certitude that leaves little room for 'presenting the past' as anything more than having 'just passed' (121). It is under these circumstances of technical delegation that algorithms come more sharply into focus; inducing sense from affective participation by organizing it computationally along asignifying lines. To see how, discussion must move to the level of code and instrumental technique.

Part Two

In its 'manufacture' of sense, industrial social computing relies largely on a set of so-called *eigenformal*, or self-coalescing strategies. At the level of software design and code, such strategies capture various internal signals from the daily churn of discourse itself, applying them mathematically to organize and rank the visibility of information-objects, effectively inducing salience from collective

social behaviour. The term *eigenform* comes from the works of physicist-philosopher Heinz von Foerster, who has had a broad influence on the fields of second-order cybernetics and systems theory. Computer science owes much to his theory of objects as tokens for 'eigenbehaviours', which Kauffman (2003) summarizes in the following way:

In an observing system, what is observed is not distinct from the system itself, nor can one make a separation between the observer and the observed. The observer and the observed stand together in a coalescence of perception. From the stance of the observing system all objects are non-local, depending on the presence of the system as a whole. It is within that paradigm that these models begin to live, act and converse with us. We are the models. Map and territory are conjoined.
(2)

Observing vast regions of the web as a territory of reference, social computing leverages just such a coalescence of perception with its users. Systems like Google and Facebook capture our selection behaviour statistically, sometimes at an unnerving level of detail, so as to be constantly feeding an algorithmic process that transforms their system into an improved map.

By way of algorithmic technique, the contingent signal of whatever topic keyed in by a user is instantly averaged against similar prior results, transforming a localized event of inquiry into a standardized moment for the platform. So standardized, prior events of choice by other users stored in memory can be used to anticipate the truth-value sought in the immediate query. Whether or not this anticipation should prove correct, *all* such 'decisiographic' input from users—the links on which they are clicking, how long they stay on a page, whether they return to the service after leaving it, for example—are stored as minute signals that strengthen or weaken the visibility rank of a given information object. The strategy is a central feature of social computing's capacity for retention: the existential import of choices made while navigating a field of information is being constantly retranslated into asemantic terms for calculation, metabolizing the system so that it can produce salience. For Google, Facebook and similar systems like Amazon and Netflix, semiotic activity around documents and digital objects matters only in the highly formalized terms of objects 'having been chosen'. The

procedure can be seen more clearly by connecting Stiegler's account of industrial memory up with that of Guattari's theory of asignifying semiotics.

Against traditional, Saussurean accounts of signifying semiology, which tie an 'I-ego', or reflexive consciousness directly to the referential power of a sign, Guattari argues for what he calls a mixed semiotics (Genosko, 2002: 155). Under his scheme the sign is not formed and secured 'personologically', or through a *cogito*; it is rather produced or achieved by machinic processes and what he calls assemblages of enunciation (Guattari, 2001: 45). Their function is to split the sign into a plane of content and a plane of expression, demoting the 'I-ego' relation in favour of a more impersonal 'it'. Guattari writes that, 'It' does not represent a subject; it diagrammatizes an agency. It does not over-encode utterances, or transcend them as do the various modalities of the subject of the utterance; it prevents their falling under the tyranny of semiological constellations...' (Guattari, 1984: 135). Here traditional semiology becomes one among other instances of machinic processes, the *cogito* working as a particularly powerful and overdetermining sign-machine. Assemblages of enunciation still connect to traditional semiology, but only as a representational machine to be repurposed so that the reflexive subject does work for the assemblage, as part of its power formation. Social computing platforms present themselves along just these lines—Facebook entreats you the user to 'share and highlight your most memorable posts, photos and life events on your timeline' in a public exchange of significance, for example. Underneath, however, the technology captures this relationality only as a constant stream of computable signals, or what Guattari calls 'diagrammatic sign-particles' (Guattari, 2001: 47).

Following Guattari's account, here is how the plane of expression is established: a non-representational procedure or formal syntax is organized, by which the sign can be stratified from out of material intensities in the world. At the same time, there is a plane of content that *justifies* the particular features of this plane of expression; fitting together a set of social norms and rules of right behaviour, or in Stiegler's terms, giving it an orthothesis. Together the planes of content and expression produce an abstract machine for signification; a 'relative de-territorialization, at the level of signifying semiologies and mixed signifying/a-signifying semiotics, whose aim is to secure control of the effects of de-territorialization by means of semiotic strata...' (Guattari, 1984: 137). The basic, non-representational (but still material) capacities for expression

produce a *form* of signification, underwritten by a dominant social order that provides a logic of subjectivization. Here one can finally ask, how does social computing line up with this account of a mixed semiotics?

As explained above, anyone who clicks on a digital object, comments upon it or establishes a link to it from elsewhere is held to be making a decision – a rational choice to reference or affiliate with a specific piece of information rather than some other. It is purposive choice understood in a utilitarian, economic sense, with the observed action of decision among ranked choices being what ultimately counts. Certainly this arrangement accords with our everyday use of Google: we use it to make a context-specific decision, say as to which restaurant to patronize from a set of results, or which document among a list seems most likely to answer a health question, or what model of laptop seems to best suit our needs, based on a general ranking. What is the overarching plane of content, or social logic here? To see how the application of choice to information processing is justified in a more philosophical register, one can turn to Herbert Simon. His work classically straddles the boundary between economic theory, administrative assemblages, attention, and computer science.

Through his writings on organizational theory, and what he calls behavioural economics, Simon explains that, 'A means-ends chain is a series of anticipations that connect a value with the situations realizing it, and these situations, in turn, with the behaviours that produce them' (Simon, 1997: 83). Individuals and organizations set down initial ends in the form of ethical imperatives, or principles of behaviour. From these ends flow some set of efficiency criteria for objectively judging, or choosing between the various means deployed to achieve them on the basis of facts, and this drives preference. His distinction between means and ends authorizes a rather stark division between decisions and their semiotic import, which fits well with the pragmatics of information processing. In Simon's hands, the deliberation of ends is labeled separately as politics, bracketed from the efficient administration of means. Ultimate goals and purposes are taken as an abstract given, achieved in some prior and distinct conversation about values, such that rationality becomes a value-neutral tool for their implementation. In other words, whether serving good or nefarious purposes, behaviour is substantively rational as long as it '...is appropriate to the achievement of given goals within the limits imposed by given conditions and constraints' (Simon, 1972: 161).

Embedded into social computing platforms as an assemblage of enunciation, it is these norms that effectively produce a plane of content. If only parenthetically, it's worth mentioning that this central feature of the mnemotechnology ostensibly embeds a neoliberal logic into memory, through a technical inversion of the relationship between the social and the economic (Foucault, 2008: 240). From a semiological perspective, users may be relying on intersubjective relations to find their way to the objects and people they seek; consensus over meaning is leveraged to send people to the right resources, to signal the best place to answer a query, or to make new acquaintances. But at the level of mnemotechnics, the machine logic for recall is actually highly decisionistic, and acts more like a market. In a commentary upon Foucault's lectures concerning the neoliberal form of governmentality for example, Lemke (2001) writes that economists like Simon tend to 'transpose economic analytical schemata and criteria for economic decision-making onto spheres which are not, or certainly not exclusively, economic areas, or indeed stand out for differing from any economic rationality' (197). With such neoliberal underpinnings, the economic and the social are no longer conceived as separately delineated realms that define one another in a dialectical or political tension. Instead, an intensified economic positivism comes to *wholly determine* the social through a monological means-ends analysis (Foucault, 2008: 241). As developed below, this logic of social production fits together with social computing's asignifying plane of expression through the mathematics of topology.

Part Three

To see how social computing produces a plane of expression, it's helpful to focus on a representative example; a single algorithm whose logic shares common features with many systems. The *k*-nearest neighbour (*k*NN) algorithm fits the bill; applied to the organization of information online, *k*NN is designed to recursively observe individual decision-making over time, treating it as a useful marker for aggregating objects on the basis of preference. The goal is to localize and steer users towards information objects that fulfill their preferences; through the capture and organization of prior choice, systems suggest novel affinities towards people or things not yet seen, which resemble one's present line of choice. For computer scientists, similarity in this sense is expressed via the topological metaphor of a *feature space*, which contains neighborhoods of similar things; either people, or items, like films, books or lawn mowers.

For every pair of users involved, the system continually asks the following: of the entire set of items rated by *either* user A or user B, what proportion of those items have been rated by *both*? Seen like a Venn diagram of two people with overlapping zones of ‘have watched, bought, or befriended’, what is the union of their intersection? This process is repeated exhaustively for all pairs of users in the system. To offer predictions, in a second step the system uses the statistical procedure known as regression analysis to aggregate preference. As the user selects informational objects, the system shows them a ‘nearby-neighbourhood’ of other similar users or items. The rank of what one might be interested in, in the neighbourhood of what one is currently observing, is based on the *weighted average* of ratings performed by similar users in the past, built into the regression function of the algorithm. In the final step where a user actually acts upon a suggestion, the system shifts from the transmission of prior taste to the reception of future taste. The user has been presented with a list of objects that she may find useful, based on the average weighted response of people like her. Selecting an item from that list—visiting a suggested web page, voting up a comment presented to them as salient, or buying a book that’s been recommended—causes the system to register that selection as *itself* an expression of preference that will be useful in continuity with others who use the service in the future.

The eigenformal, or ‘auto-positional’ elements of the algorithm are enabled by theory in topology. Topology mathematically captures an abstract manifold, or set of nodes and their relations undergoing a state change, where the resulting transformation of state changes the topology endomorphically, or from the inside, without breaking its overall unity. Imagine squashing down a cube of modeling clay, stretching out a rubber band, or spreading a glob of soft butter in one direction across a piece of bread; in each case a vector of force is applied to a manifold, which changes the form in response to the force, by a function of its internal structure (Riordan, 2002). While its shape may be stretched or squashed, the form has not been torn or broken; the starting shape and end shape have essentially only shifted, creating different relationships of adjacency among points on its surface. In the case of social computing, neighbourhoods of taste are formed from the relations between people and information-objects as nodes, linked together to form a topology. Localized spaces are derived from the differential continuity of behaviour, as people make and respond to choices that position them in the topology (Lury, 2012: 21). The process feeds social computing’s ‘machinic nucleus’; its asignifying function under which the

topology of information objects will shift and change in prominence over time, making some objects more visible than others, to some people rather than others.

In pointing out these central mediating features of social computing, the hope is to have characterized the role of the user in a semiological sense more precisely, considered as an 'I-ego' protending through its machinic processes. Understanding how social computing organizes retention through a functional and normative account of protention—conceived as utilitarian *decision*—circles back to a central problem. If one follows Stiegler and Guattari in their respective claims that industrial information systems represent the intensification of capitalism along semiotic lines—through a kind of colonization of memory, which operates according to certain orthothetic commitments involving the act of decision around signs—then how might an alternative account of the metaphysical and sociotechnical relations between decision, signification and sense enrol the sign under new circumstances? Following Guattari, the goal here would be to '[launch] new machines of diagrammatic sign-particles to the detriment of semiotic fields and capitalistic abstractions' (Guattari, 2011: 50).

To conclude, one account of signification that affords certain possibilities for intervention in this respect can be found in the work of Guattari's sometime collaborator, Gilles Deleuze. In his 1968 book *The Logic of Sense*, Deleuze is at pains to critique and reconfigure a rationalist formulation of signification and reference; one that has structured the underlying truth-bearing thesis described above in important ways.

The judgment of truth and falsity in language has typically been understood through the notion of a speech act that contains or reproduces propositional content, wherein a speaker asserts that such-and-such is the case, and in so doing may or may not be correctly referring to something in the world. Against a historical backdrop of logical empiricism, assertions have been understood in the information sciences to have a disembedded validity, and reference-bearing import, as in utterances like 'Caesar crossed the Rubicon', or 'The sun is further away from the earth than the moon'. Long understood in philosophy as the best way to extract knowledge from utterances, embedded into computers as an orthothetic commitment, the approach has become a basic strategy for representing relations between people and things in the world. Social information systems like Facebook, Google+ and OkCupid

formalize everyday talk into these types of assertions, which can then be stored and transformed into knowledge statements that computational processes can manipulate in different ways; as in statements like 'Bernice watched The Lion King, and rated it 7 out of 10', or 'Regina is the capital of Saskatchewan'.

For Deleuze, the problem with such an approach is that it assumes that logical, denotative relation can be the only thing conditioning signification and sense. Under these terms of reference, conceptual implication grounds the possibility of signification, but yet must be simultaneously bracketed from the logical denotation of states of affairs, as in Frege's famous separation between sense and reference. Voss (2013) succinctly describes the operation:

within the conditioned or those propositions that we hold to be true (for example, scientific propositions describing objective states of affairs) we already find inscribed the logical form of identity of the concept as well as logical forms of the relations of concepts with one another. We then extract the logical forms of the propositional facts and stipulate them as the formal conditions of possibility for a proposition being true in relation to an objective state of affairs. (4)

This is the form of social computing's orthothesis--the way that it delegates conceptual implication--and for Deleuze it has the quality of a vicious circle. What we lose is the *genetic productivity* of signification in its relation to both denotation (states of affairs indexed to propositions) and manifestation (an 'I', or person speaking their beliefs and desires). What is this genetic productivity? It is a 'something' beyond traditional sense and reference: an *aliquid* that sits outside of propositions and states of affairs, expressing ratios of *becoming* that are entirely different from those enacted by traditional referential schema of predicative choice among objects-with-attributes.

To illustrate the point, he compares the assertion 'The tree is green' to the event of a tree 'expressing itself', as might be captured in the peculiar utterance, '*the tree greens*'; and as if this is similar to saying 'it's raining'. Deleuze here wants to capture an ongoing process rather than a stable object. Whereas the traditional analysis of language conditions sense to accord itself with the predicative concept of greenness, securing the possibility of correct reference,

Deleuze wants access to the singular, incorporeal mixture of tree, air and chlorophyll that is the tree in its *transcendental character*, expressing itself in an impersonal sense. It is for this reason that he redefines sense as *outside of individual minds entirely*. Where Frege brackets sense as a necessary but contingent phenomenon of thinking, requiring that it be subjected to the objectivity of logic, Deleuze reverses the priority, so that a radically impersonal sense pervades everything happening around us:

Sense is both the expressible or the expressed of the proposition, and the attribute of the state of affairs. It turns one side toward things and one side toward propositions. ... It is in this sense that it is an 'event': on the condition that the event is not confused with its spatio-temporal realization in a state of affairs. We will not ask therefore what is the sense of the event: the event is sense itself.
(Deleuze, 1990: 22)

To conclude alongside Deleuze in his line of thinking, sense should not be conceived as the subjective dimension of an individual mind; it is rather a generic 'differentiator of difference' that affects the chaotic field of life in such a way as to individuate series of stable identities from out of it, whether one construes these identities in biological, technological, linguistic or social terms. How might we read his approach into the future of informatics? Instead of conceiving of industrial social computing as a tool for the production of rational knowledge, does the technology not ultimately owe its success to the ways that it is putting difference 'to work on itself' in asemantic, *generic* ways, which we come to accept as rational only when they help us to achieve our *own* differentiation?

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

Paul Caplan

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 netpace, 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>

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IMMATERIAL CIVIL WAR: THE WORLD WIDE WAR ON THE WEB

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Introduction

As the online world has become increasingly the locus of collective intelligence - a concept I will discuss in more detail shortly - the once relatively peaceful and obscure backwaters of Internet governance have been wracked by what can only be termed a new world war, albeit one that is invisible. It is an immaterial civil war. The term 'immaterial civil war' refers to the fact that this war is between forces that both threaten to tear a nearly invisible – immaterial – Internet architecture apart, and an ethical conflict between the generations where the new digital natives have a distinct form of life from that of their forebears. At stake is the future of digital sovereignty: who creates the protocols, who assigns the names and numbers, that enable communication and give existence to objects on the Internet? Perhaps even more importantly, the very future of collective intelligence can be said to be at stake. Will the Internet be allowed to expand as a space for the free sharing of digital information, or will restrictions from various pre-Internet institutions be imposed upon the Internet itself? Will the Internet create its own revolutionary forms of social self-organization, or usher in a new regime of personalized surveillance? The answers to these complex and threaded questions escape easy judgment. Nevertheless, one thing is certain: the actions that determine their answers for future generations will be decided within this decade.

The Thesis of Immaterial Civil War

Until recently, the Internet as a globe-spanning 'network of networks' seemed to exist purely as a technical space, a nearly magical ether that could deliver any kind of information to anyone at

anytime – at least ideally. In reality, the uneven development of Internet access meant this was not always the case. As noted by Alan Kay, ‘the Internet was done so well that most people think of it as a natural resource like the Pacific Ocean, rather than something that was man-made. When was the last time a technology with a scale like that was so error-free?’ (quoted in Binstock, 2012). This view of the Internet as a natural resource is illusory, however, for the Internet achieves its stunning technical interoperability and equally stunning global penetration by virtue of committing to a digital peace treaty brokered by the complex social network of interlocking and sometimes even inimical institutions who control the technical infrastructure. This ‘peace treaty’ was accomplished technically by having these institutions deploy a series of standardized protocols that respected a few general social principles. The common protocols, ranging from TCP/IP to HTML, were created and are currently maintained by the ‘immaterial aristocracy’, flesh-and-blood human agents who professionally create and maintain these protocols in standards bodies. ‘Some of these are hackers, while others are government bureaucrats or representatives of corporations – although it would seem that hackers usually create the protocols that actually work and gain widespread success. To the extent that those protocols are accepted, this class that I dub the ‘immaterial aristocracy’ govern the net’ (Halpin, 2008). They operate via a small number of standards bodies, such as the IETF (Internet Engineering Task Force), or the W3C (World Wide Web Consortium), multi-stakeholder protocol governance bodies that allow individual or institutional participation with a large degree of informality, democracy, and consensus-driven decision making process, all with little or no official governmental status. It is the duty of these immaterial aristocrats to preserve, in the form of technical standards, the often inarticulate guiding ethical principles, such as net neutrality, that are conjectured to have led the Internet to its astounding growth. Their success so far cannot be underestimated: the Web as it stands today is the largest informational artifact in human history.

Yet the peace treaty of protocols is increasingly being torn apart in a ‘World War 3.0’ between the present immaterial aristocracy and an alliance of repressive government regimes working hand-in-hand with the telecommunication corporations (Gross, 2012). Interestingly, when it comes to challenging the immaterial aristocracy the instrument of choice is the ITU, the International Telecommunications Union (ITU), which is a U.N. agency where only nation-states have a deciding vote. The stakes are high for all

sides: as dramatically witnessed by the 2011 Tunisian revolution and the destruction of the traditional music business over the last decade, many pre-Internet institutions are having their very existence placed at risk by the possibility of the free and uncensored sharing of information that is potentially enabled by the Internet. The existence of the standards bodies, non-profits, and corporations that have long held immense power over the Internet is equally at stake. Since its inception the rather ad-hoc technical hegemony of the primarily American immaterial aristocracy has never before been globally challenged in the realm of realpolitik. If those bodies fail to rise to the occasion, this aristocracy will no doubt lose their digital sovereignty to define protocols and thus their *raison d'être* for existence. Nowhere has this struggle taken on such symbolic significance as at the ITU's World Conference on International Telecommunications (WCIT) on December 3-14th, 2012, which – strangely enough – took place in a desert governed by an authoritarian regime. Yet against the expectations of many (such as Michael Gross), the future of the Internet was not decided in the air-conditioned nightmare of Dubai – it was rather postponed.

Although almost no major changes to Internet governance came from the much-heralded Dubai WCIT conference, this does not mean the immaterial civil war over the control of the Internet is over. Far from it. This war is now rapidly transforming into a conflict: not between pre-Internet institutions and the open Internet, but between the very corporations that championed the open Internet against the ITU and their own users. So far we have seen only early skirmishes of what may be a decade-long struggle for control over the Internet. It is therefore of the highest theoretical and strategic importance to begin to think through what is at stake for the future of the Internet as a global commons, including the history and motivations of the various actors in this conflict and their battles.

This crucial task is motivated by the fact that so far the Internet remains a medium for the growth of collective intelligence. Collective intelligence is an often-used term that is difficult to pin down precisely. It can be understood variously as referring to: an aggregated swarm in contrast with a lone individual; an individual in contrast with the larger (often technical) cognitive scaffolding of a highly technical society; or the individual node in a network contrasted with a large network that any particular node subsides within. While defining collective intelligence precisely is beyond the scope of this essay, the inference is hopefully clear: collective

intelligence can be thought of as a particular kind of distributed cognitive system that is self-maintaining (or more precisely, autopoietic) in the face of often unpredictable problems. The theory of distributed cognition, as pioneered by cognitive anthropologists such as Hutchins (1995), points out that 'groups may have cognitive properties that differ from those individuals who constitute the group', where cognitive properties refer to memory and attention. For example, a group of sailors can pilot a ship only by virtue of their co-ordination via technical artifacts and social co-ordination. However, distributed cognition may also be autopoietic in the sense used by Maturana, forming 'a circular organization which secures the production or maintenance of the components that specify it in such a manner that the product of their functioning is the very same organization that produces them' (Maturana & Varela, 1973: 48). The classic example deployed by Maturana is that of the reproduction of the cells that maintain the existence of an animal such as a biological frog. Maturana also strongly opposes the addition of technical or social components to an autopoietic system. In marked contrast to the biological grounding of Maturana, in this essay I will follow Hutchins by hypothesizing that such self-maintaining systems may include both people and technical infrastructure, meaning groups of humans coordinating over the Internet can be considered a form of autopoietic collective intelligence.

In the peculiar frame of reference given by what I am here calling the immaterial civil war over the Internet, the problem-solving capacities of collective intelligence are far beyond those of individual humans, and the infrastructure to harness these collective capabilities is laid by the technical protocols and infrastructure that compose the Internet. The Internet gains its power by virtue of being a genuine extension of our problem-solving capacities via a trusted technical substratum open to all. Yet, depending on the results of this immaterial civil war, we risk the Internet being transformed into a foreign and hostile power capable of turning our own collective cognitive powers against us and towards goals inimical to our future survival, ranging from pure profit to total social control.

The thesis is that this immaterial civil war is both real and ongoing, and will be the defining war of the next decade. There are two obvious objections to this idea. First, that the term 'immaterial' is an objectionable misnomer, with certain unfortunate Cartesian connotations that are simply unnecessary when it comes to engaging

with the true content of immaterial labor: the centrality of information and communication to production in the 21st century. Yet even this term 'immaterial' has an element of truth in it, for it is the case that most of us cannot 'see' the dissemination of information on the Internet, as it consists of a flow of packets of data in TCP/IP across heterogeneous networks, and so what could be termed 'immaterial' is perhaps more properly regarded as 'invisible.' In other words, we no longer see the wires. Indeed, we have difficulty imagining what it would mean to 'see' bytes in-and-of-themselves. Our everyday experience of the Internet is increasingly delivered through wireless frequencies meant for mobile phones. Yet this apparent invisibility is layered upon a robustly material infrastructure: the majority of the high-speed 'backbone' of Internet-enabled networks consists of fibre-optic cables buried underground that wind their way through various regional exchanges, creating a hidden infrastructure much like a nervous system across the planet. It is precisely this materiality that allowed former Egyptian president Mubarak to infamously 'shut down' the Internet by closing off only a few access points in 2011. Wireless frequencies, while imperceptible to our eyes, are perceptible to our devices and consist of very real electro-magnetic fluctuations in our environment. The truth latent in the term 'immaterial' is that the material terms are secondary: as I have shown in detail elsewhere, information can only be realized in a substratum that is capable of supporting the requirements for digitality (Halpin, 2013). The distinguishing characteristic of information is that the 'same' information on a level of abstraction can be realized across wireless broadband, fiber-optic cables, and perhaps even in the human brain itself. I will therefore persist with the term 'immaterial' insofar as it refers, however imperfectly, to the digital nature of information and the primacy of the meaning – and thus the syntax and semantics – of protocols, in contrast to 'material' implementation details.

The second and more serious objection that can be made to the idea that immaterial civil war is both real and ongoing, and will be the defining war of the next decade, is to claim that it is pure hyperbole to declare a state of war over the Internet, as such a statement does immense injustice to the blood and dirt of material war. In popular imagination, war is thought of as being confined to various state actors who fight over material resources; in this respect, the U.S. invasion of Iraq, with its all-too-obvious goal of domination over oil production and the placement of military bases with client regimes near geopolitically strategic axes, could be considered exemplary. This is not to deny that in every war there has always been an

informational component - in terms of a battle for 'hearts and minds' - and so the justification of war in terms of propaganda, ranging from Helen of Troy to weapons of mass destruction, is as old as war itself. Yet until recently it has been difficult to imagine a war that would take place purely in the space of information, a seeming ethereal realm where there are no bombs and charred remains. Conceiving our own times using a mental model derived from industrial or even Napoleonic war, however, represents something of a failure of imagination. Wikileaks, whose release of information was interpreted by the U.S. government as an act of war, offers an obvious example. Perhaps more fitting still is that provided by China's rather explicit 'hacking war' against the United States government and its corporations. By employing intelligence information and the capture of source code, this state-sponsored hacking has enabled the former to deliver 'trade secrets' to Chinese corporations. Indeed, Richard Clarke, a U.S. Government cybersecurity advisor for thirty years, has stated that every U.S. corporation has been penetrated by such Chinese hacking attacks - while remaining not-surprisingly mute on the number of compromised U.S. government installations (Protalinski, 2012). As the seemingly immaterial realm of codes, signs, and affects becomes increasingly central to the existence of power, it is therefore possible to see the Internet as simply another terrain of war, with governments today having to formally open a division of cyberdefense on a par with the navy and army, just as they once had to formally acknowledge the existence of the sky as a battlefield with the creation of national air forces.

This leads to a disturbing implication of immaterial civil war, one that demonstrates how immaterial information is layered onto a material substratum - that immaterial war may actually precede material war. As noted by Alexander Galloway in his analysis of Debord's *Kriegspiel*, a precondition to a successful operation in warfare consists in maintaining control over lines of communication as much as control over space: 'The key is the network of lines of communication, a detail of game design entirely lacking in a game like chess. Superimposed on the game board, the lines simulate the communication and logical chains of campaign warfare; Debord's rules stipulate that all pieces on the board must stay in contact with a line, else risk destruction' (Galloway, 2009). At the same time we should not deny the role played by the fundamental transition of late capitalism in all this: namely, the fusion of material resources with cybernetic protocols that creates value-chains of production and consumption that not only cover the earth like a vast vibrating spider

web, but use these protocols to react ‘just in time’ to changes in supply and demand. These protocols are run over the Internet, of course; therefore control of these protocols is essential in any material war. This is the new geopolitics in the virtual space of the Internet. Immaterial war over the control of protocols may be just setting the stage for material war, and so the spectre of the failure of the Treaty of Versailles lurks in the shadows over Dubai.

In order to fully explain the hypothesis of immaterial civil war and its ramifications for collective intelligence, I want to begin by interrogating both the battle over an exemplary principle of the Internet – net neutrality – and the governmental and corporate actors that wish to overthrow it. This interrogation will reveal how an alliance of the immaterial aristocracy, Silicon Valley, and of Internet users, won this particular battle. The next horizon of struggle on the Internet with which I want to engage is the capture of personal data by platforms. (Is there is a danger here of conforming to perhaps too-classical a Hegelian dialectic: one whereby, in the first moment, the users of the Internet identify with their masters in Silicon Valley in the fight against an external enemy; and then, in the second moment, they realize their own latent power?) Finally, I want to look at some of the wider repercussions of this immaterial civil war: namely, how it has been participated in to an unimaginably large extent. What I want to analyze in particular is the potential for a future where digital natives recognize the importance of the Internet to their own powers of collective intelligence, and create structures of self-organization that may truly be fitting for coming generations.

The Battle of Net Neutrality

In the first battle of the immaterial civil war during 2011, many users of the Internet supported Silicon Valley in their fight against the international regulation of the Internet. The long-standing immaterial aristocrats were viewed from this perspective as mediating the desires of ordinary users against various shifting alliances between repressive governments such as Russia and China – as opposed to the United States, which in general supported the immaterial aristocracy. To really understand this struggle, however, it is necessary to delve into the origins of the very historically peculiar governance of the Internet by the immaterial aristocracy. The original foundations of the immaterial aristocracy lie with the Internet Engineering Task Force (IETF), the de-facto standards-setting body for the Internet. Reflecting its informal foundation in

an eclectic group of graduate students and enthusiasts involved in creating the software that ran the early Internet in the 1960s (government sub-contractors usually stuck to hardware), the decisions of this body are made by 'rough consensus and running code' (Halpin, 2008). In fact, the vast majority of the actual decisions are made over mailing lists, although on the rare occasions the IETF meet in person, consensus is taken by humming. In this way the IETF define the rules of protocols such as TCP/IP via RFCs, or 'Requests for Comments' publications. While the RFCs are quite technical and dry, guiding principles that give the Internet a unifying architecture are nonetheless present in these documents. Perhaps one of the most surprising guiding principles is that of network neutrality.

IETF RFC 1958, rather grandly entitled the 'Architectural Principles of the Internet,' states that 'the current exponential growth of the network seems to show that connectivity is its own reward' (Carpenter, 1996). The RFC claims this success is due to the Internet's implementation of the 'end to end argument,' which is summarized as 'certain required end-to-end functions [that] can only be performed correctly by the end-systems themselves' (Carpenter, 1996). As a matter of technical exegesis, what this means is that the network should be neutral and transparent and simply route packets of data to end-points, such as browsers and servers, and thus not inspect the content of any data traveling through the Internet. The principle further states that 'end-to-end protocol design should not rely on the maintenance of state (i.e. information about the state of the end-to-end communication)' (Carpenter, 1996). As a result, any preferential treatment or blocking of network traffic between the nodes (such as the client web browser and the server web server) violates the end-to-end principle. Violations of net neutrality that normally take the form of ISPs would likely have to engage in some level of deep packet inspection, the explicit search through the data packets sent through the Internet by the ISP. On the Internet, however, a strange technical version of universal rights for data reigns, as all data should be treated equally. This design decision was taken, not for ethical reasons, but for the mundane technical reason of keeping debugging network traffic errors simple. As stipulated by the original designers of TCP/IP like Vint Cerf, 'Black boxes would be used to connect the networks; these would later be called gateways and routers. There would be no information retained by the gateways about the individual flows of packets passing through them, thereby keeping them simple and avoiding complicated adaptation and recovery

from various failure modes' (Leiner et al., 2003). Shockingly, what the original Internet engineers had accidentally stumbled upon in net neutrality was a powerful source of what has been termed 'generativity', namely that 'system's capacity to produce unanticipated change through unfiltered contributions from broad and varied audiences' (Zittrain, 2008: 70). It is this generativity that allows the Internet to fully exploit what is informally known as Metcalfe's law, the hypothesis that the value of a network is proportional to the square of the number of nodes, which would be endpoints in this case. If endpoints on the network are not equal, the value would also thereby decrease. This principle seems to be as close as one comes to a universal law of what makes networks powerful, from the Internet to almost any network, including Ethernet networks and social networks.

What was not anticipated by the original creators of the Internet was that it would be extended beyond its role in transmitting scientific information (and the sending of messages in military scenarios, as justified in its original budget), to become a universal medium for any content, converging music, video, television, movie, and gaming. Sharing of content for free, as exemplified by the peer-to-peer BitTorrent protocol, soon blindsided many large multinational corporations. This lack of foresight has proven increasingly fatal to pre-Internet businesses, in the ironically labeled 'creative' or 'content industries', whose profits are based on their control of content. Such control is difficult if not impossible to maintain digitally - especially when, for every scheme to enforce their control, it seems an 18-year hacker (often from Sweden) will break whatever copyright protection has been baked into software or even hardware within days. Given that they are unable to technically enforce their control of copyright content, it should come as no surprise that many such businesses have turned to government regulations to guarantee their profits. Their goal has become the government regulation of internet service providers (ISPs), in particular the ability to block access to copyright content.

The Internet, despite all the hype from cultural theorists (and even hackers) who consider it to be some kind of magical peer-to-peer system, has a key point of centralization: the assignment of IP addresses and the governing of the top-level domain name system (DNS). The centralization of the domain name system was thoroughly critiqued by Galloway and many hackers, although they seemed to have missed the importance of IP address assignment (Halpin, 2008). Unlike the rather anarchic and directly democratic

process of the IETF, these day-to-day functions of the most valuable resources of the Internet - the granting of names and numbers that give existence itself on the Net - are not autonomous or globally governed democratically. Rather, they are governed *de jure* by the US. Government. To explain in brief, IP addresses are the numbers, like 152.2.210.122, that allow communication on the Internet, while domain names are human readable names, such as '<http://www.ibiblio.org>', that a domain name server maps to an IP address. The assignment of IP address blocks and the management of the top eight level domain names servers is carried out currently via IANA (The Internet Assigned Numbers Authority), but was formerly administered personally by the long-bearded IETF volunteer Jon Postel, from the birth of the Internet to his death in 1998. The U.S. Government granted a monopoly on the domain name system to Network Solutions in 1995, letting them charge users for a domain name. Postel envisaged a more democratic system of assigning domain names and numbers, but his proposal for IANA to replace the monopoly of Network Solutions led to a threat to exile him from the Internet, and eventually perhaps his death from a broken heart.. Network Solutions would however later lose its contract, with responsibility moving to ICANN, the Internet Corporation for Assigned Names and Numbers, which is run with an advisory committee of 110 member states and rotating global public meetings. The group accredits for-profit registrars to sell domain names. Yet ICANN still gives the U.S. Department of Commerce final oversight, and it is through this weak point that the so-called 'creative industries' launched their first battle to end network neutrality. By using laws such as the infamous Digital Millennium Copyright Act's 'takedown' notice in the USA and similar laws in other countries, various creative industries attempted to 'block' access to domain names, with their first and primary target being the 'Pirate Bay' BitTorrent file-sharing website. These patchwork attacks to remove content from the Net could be easily circumvented as they operated on an ad-hoc national rather than uniform global level like the Internet.

Thus, the next battle in the war over the Internet was an attempt to place the domain name system under the control of strict copyright enforcement in the form of the now infamous SOPA (Stop Online Piracy Act) bill in the United States Congress. This bill would have forced ISPs to filter out requests for content that might infringe copyright, ominously requiring them to record the IP address of the user requesting such content. The U.S. government would thus have coerced ISPs to intercept and redirect DNS requests for websites

that were claimed to be involved in piracy, in essence causing all ISPs to break net neutrality. The immaterial aristocrats at the IETF were outraged by such a technically ill-guided proposal. The IETF envisaged it would fracture the current centralized control of the domain name system (as users went out of the US to find domain name servers), and that it would violate their plans to secure the domain name system via encrypted authentication by forcing redirection at the level of the ISP. As the IETF pushed their ties in cybersecurity and the military to kill SOPA, outrage against SOPA spread to internet users themselves and Anonymous began attacks on the domain names of prominent backers of the bill. Other websites that felt they might easily fall victim to SOPA, most famously Wikipedia, carried out an 'internet blackout'. Instead of the Wikipedia page, users in the United States got a notice to 'Imagine a world without free knowledge' and a request to contact their U.S. Government. As lawmakers across the political spectrum were flooded with thousands of angry voters demanding they vote to stop SOPA, the bill was quietly withdrawn. It appeared that an alliance of Internet users and companies had won, while the IETF, ICANN, and the rest of the immaterial aristocracy remained in control.

What had failed on a national level was next taken to a global level in the form of ACTA (Anti-Counterfeiting Trade Agreement). This was a secretive multi-lateral global agreement fashioned in much the same way as the traditional globalization agreements that had provoked so-much protest from activists at the turn of the millennia in Seattle, Quebec, and beyond. Although ACTA was officially secret, its contents were leaked to Wikileaks in 2008, and it quickly became apparent that ACTA would also essentially force all agreeing bodies to pass SOPA-like laws to punish ISPs that allowed pirated content. In essence, it would again mandate the destruction of network neutrality, with countries like Japan and the United States having by this time already signed. While the immaterial aristocrats at the IETF seemed to be caught off-guard by ACTA, and companies like Google were forced by governments into non-disclosure agreements, the internet users themselves emerged as a powerful third force at multiple levels, both in traditional government and on the streets. The key battleground became Europe, as ACTA was due to be ratified by the European Parliament. Out of the struggles over the Pirate Bay, various Pirate Parties formed to elect representatives to government to defend their ability to copy files over the Internet, and inside the European Parliament they placed the 21-year old Amelia Andersdotter as their representative from Sweden. As ACTA was debated inside the

Parliament, outside activist groups like Quadranature La Net, led by Jeremie Zimmerman (a friend of Julian Assange) began a public campaign. At first no one seemed to notice, but then as stated by co-founder of Quadranature La Net, Philip Aigrain, 'Anonymous showed up' (personal communication, 2012). Under the banner of the infamous Guy Fawkes mask, the largest demonstrations since the fall of the Communist Regime rocked Eastern Europe, with tens of thousands of people in the streets in Poland and Bulgaria. Cities which had not seem demonstrations in decades, like Iași in Romania, were surprised by the sudden re-appearance of politics in the streets. Bowing to pressure from their constituents, first Poland refused to sign ACTA, with members of Polish Parliament infamously donning Guy Fawkes masks. Then, finally, in July of 2012, ACTA was defeated in the European Parliament, with the vast majority voting against. While the immaterial aristocrats had always found themselves as the *Geheimsrat* of governments, it appeared that the internet users were able to mobilize to 'hack' democracy itself in order to preserve their founding principles including net neutrality.

An alliance to challenge the immaterial aristocracy more directly was also brewing. This was conceived in order to attack them not only on the level of copyright but also to use the mandate of the United Nations to take away their informal digital sovereignty. Two other forces, besides the industries of content control, had it in their best interest to unseat the immaterial aristocracy. The first was the telecom operators. Often national monopolies or direct descendants thereof, for the last century many telephone operators have been making hefty profits from extracting rent from the usage of their telecommunications lines. This was, until recently, enacted by forcing users to pay exorbitant prices for telephone use, in particular text messages, which cost telco operators virtually nothing. Yet with the rise to maturity of voice-over-IP applications such as Skype, and text-messaging rapidly being replaced by apps such as Wazzap, profits at the large telecom operators had plummeted. There was little or no reason for most users to ask anything from telecom operators except for unlimited mobile internet access, in effect reducing them to a more modest role of ISP. Together with the content industries, the telecoms thus imagined a world where they could violate network neutrality and ask for premium rates for high-speed access to copyright protected content. Strangely enough, while nation-states – with the noticeable exception of China – had for the last two decades routinely ignored the control of the Internet, the wave of revolutions in places such as Tunisia and Egypt, and their subsequent reverberations in places as far apart as Russia and

the United States, had left many governments demanding increased control of the Internet. Interestingly, China used the selfsame technology as was proposed in SOPA and ACTA, domain name blocking and deep-packet inspection, to create the 'Great Firewall of China,' and other countries such as Iran and Pakistan were doing the same. It was just that, while SOPA and ACTA hoped to build a great firewall around copyright content, these governments were endeavouring to construct a firewall around subversive political content.

An unholy alliance was thus struck to destroy the immaterial aristocracy via one of the most 'noble' bodies of global governance, the United Nations. Enter the ITU. The International Telecommunications Union began its life as the International Telegraph Union, a body conceived to unify telegraph communications across national borders, and was eventually subsumed into the United Nations. In marked contrast to the immaterial aristocracy, rather than being composed of individuals like the IETF or organizations like the W3C, only nation-states can vote in the ITU. Despite its admirable goal of 'connecting the world,' especially helpful for developing countries, the ITU quickly came to be seen as a vehicle whereby many authoritarian and repressive regimes were able to get their way. For example, as the body that governs international telephone operations, the assignment of country codes naturally falls under the purview of the ITU. Yet when the People's Republic of China joined the United Nations and ITU in 1971, it deftly used its newfound status at the ITU to remove Taiwan's country code, as Taiwan still claims to be part of China. Taiwan spent years in a strange limbo as a result, wherein it no longer had an international area code, and thus could not be reached in a uniform manner from other countries. Eventually, employees of the ITU friendly to Taiwan managed to give them the reserved 886 calling code that did not officially belong to any country. This of course greatly angered Beijing, which made sure to replace the employees with an emissary of the Chinese government. One of the reasons the US-backed IETF internet protocols succeeded - because attempts by the ITU to develop its own computer networking protocols, the X.800 series of protocols, were both delivered years late and technically inferior to the protocols developed by the IETF - can be considered another point in the ITU's favour.

The ITU planned to take control of the Internet by revising the International Telecommunication Regulations to expand its

definition of telecommunications to include the Internet. This was to be ratified at their WCIT conference in Dubai in 2012. Under the plan the IETF would be abolished, and the role of ICANN in governing DNS would be challenged. An anti-imperialist narrative was quietly manufactured, with the Mali-born engineer Hamadoun Touré leading the developing world against the United States for the control of the Internet, although it would be quietly ignored that the main backers were China, Iran, Russia, and a horde of petty African dictators that they could use to win votes. One proposal was an internet 'tax' to fund increased connectivity in the developing world. But the real story was cybersecurity, re-branded as 'cyberpeace' by the ITU. What this meant was that to end Anonymous (and also, copyright infringement and political dissent), all internet connections had to be traceable to real names by governments via deep-packet inspection. When a joint proposal between the Arab states, China, and Russia was leaked to the specialized WCITleaks.org site, it revealed that the WCIT wanted to put the Internet under total control, so that 'internet governance [would] be effected through the development and application by governments.' The alliance of standards bodies such as the IETF, W3C, and IEE made a weakly-phrased 'Open-Stand' statement to preserve the bottom-up 'multi-stakeholder' process of the immaterial aristocracy. Vint Cerf, now working at Google and the Internet Society (a non-profit body for the IETF), attended as part of the United States delegation. When the ITU formally mustered a last-minute vote to extend its control to the Internet, the United States and its mainly European allies, hand-in-hand with Vint Cerf and the rest of the founding fathers of the Internet, simply walked out: an unprecedented event that in effect killed the ITU as a global process for control of the Internet.

The Coming Battle over Personal Data

In the second moment of struggle over Internet governance, that concerning the capture of personal data, it appears that users are finally recognizing Silicon Valley may be their enemy, and that the immaterial aristocracy are no longer able to mediate between users and the various platforms on the Net. The question today then is: Is it possible that while Internet users may have won the above first battle over net neutrality, they have ultimately lost the war in a manner they failed to anticipate? After all, the real victory in this battle did not belong to them, but to a few multinational Internet corporations, primarily from the United States. To deepen the irony,

these multinationals are ostensibly profiting from the free labour of these selfsame users, and yet claim to represent not only a free and open Internet, but the users themselves against meddling governments. Despite this grand rhetoric, where a shareholder-run company ostensibly 'represents' its labour, it is simply in the economic self-interest of these corporations to keep the Internet out of government control – or at least in the laissez-fair control of the United States government. To take Google's case as a paradigmatic example: it is the ease with which users can violate copyright that keeps users returning to Google's YouTube, and so increasing the profits Google makes by selling advertisements to users and other kinds of personal data. To take another case in point, Google championed net neutrality for many years, and the United States government itself was almost ready to endorse network neutrality by convening all American wireless providers for an agreement. However, in a behind-closed-doors deal it struck with Verizon, it was in Google's best interest to end its commitment to network neutrality for the most important networks of all, mobile networks. Speculation is rife, but already it is clear that Google's attempt to build its mobile Android platform to challenge Apple may require at the very least cutting such deals with Verizon. In a remarkable about-face, Vint Cerf, who besides being the inventor of TCP/IP is also a Google employee, suddenly stopped championing network neutrality openly. A close inspection of the United States position at WCIT in Dubai shows that Internet Freedom in reality means freedom for the market, and the fact is that the market may require some of the fundamental principles of the Internet to be ditched. This brutal reality is not grasped by many of those who hailed the victory over the ITU as a victory for the free and open Internet.

It almost goes without saying that life on the Internet is increasingly captured in a few dominant platforms. As Bruce Sterling put it, 'In 2012 it made less and less sense to talk about the Internet, the PC business, telephones, Silicon Valley, or the media, and much more sense to just study Google, Apple, Facebook, Amazon, and Microsoft' (Sterling, 2012). Forget the ITU, due to sheer market dynamics, each of these platforms is both aiming to control the Internet, and already has control of some of its key infrastructure: browsers, smartphones, search engines. Of course, a classical economist who still believes in the grand fiction of Schumpeterian 'creative destruction' would see no reason why another company could not appear to knock one of these five titans off their pedestal, pointing to the apparent royal succession of Google over Microsoft and then Facebook over Google as evidence. This misses the point,

however, that there has been a decidedly new turn in the information economy that denies such a simplistic linear reading of history and innovation. This new turn concerns the emergence of multi-sided markets, an economic formation that is illustrated by examples as diverse as credit cards companies (Visa etc.) or even dating websites. In a multi-sided market, the task of the successful business is to bring together two or more distinct groups and then profit from the extraction fees charged as a result of bringing them together. For many Internet-based companies, this plays out in no longer having to innovate themselves. Instead they build a platform that brings together apps and users – as pioneered in the pre-Internet computing realm by Microsoft and IBM. The entire point of a platform here is a deviation from the traditional open-source story, only with a proprietary layer of profit extraction added in that it is far easier to ‘outsource’ the creation of applications than to build them in house, thus in effect creating a unified yet controlled platform on which others can invent. It is therefore useful to distinguish between invention and innovation in technical systems such as the Internet and Web. The Internet and Web have intrinsic architectures defined by their standards that offer themselves as a series of constraints such that ‘the choice of possibilities in which invention consists is made in a particular space and particular time according to the play of these constants’, - although ultimately innovation lies in the ability to give these choices technical flesh so that they can interact with the wider world; ‘the rules of innovation are those of socialization’ (Stiegler, 1998: 25-26). Any application developer can be ruined if they attempt to leave a platform and its captured market of users, as exemplified by the fall of the once-powerful corporation Zynga, who created the popular Farmville application for Facebook, as soon as the social networking site decided to end their ‘special’ relationship. The immense power of the platform thus becomes apparent: Facebook controls the socialization of applications, but more importantly the socialization of users – the very life-activity of their users on the Internet.

On the Internet, for a platform to be complete it must be composed of the hardware, the software, and the channels that are used for social co-ordination in order to harness the distributed problem-solving capacities that characterize collective intelligence. Thus, the platform is founded on the control of online social life on all levels. The Internet is likely to continue to be the transport protocol of choice in most if not all platforms due to its resiliency and widespread deployment – attempts to control the protocol layer by single corporations like Microsoft have at this point been mostly cast

off as failures – but all key software and hardware harnessed by the user must be under control. In order to fully extract value from the social co-ordination of its users, the technical platform has to watch over its users like a good shepherd, from the moment the user wakes up to the moment the user falls asleep ... and now there are even applications to monitor sleep patterns.

In this respect, the primary example of a platform is Apple, as it controls the hardware production of the iPhone, the core operating system that all applications use, a Web browser Safari, and data-services such as iTunes and iCloud that host the user's data. Thus, a user wakes up into a virtual company town consisting entirely of Apple products: they wake in the morning with a buzzer from their iPhone, listen to Music via iTunes, and communicate via Apple Mail and iPhone apps. Different vendors have different strengths, but it is the goal of every platform vendor to capture all aspects of online life. Any platform that does not absolutely control a service that features prominently in everyday life is at risk of failing: Microsoft is willing to spend huge amounts of money to create their own alternative search engine Bing to counter Google's heavy advantage in terms of possessing the world's preeminent search engine, while Google must do everything it can to undermine Microsoft's advantages when it comes to operating systems and office software by producing its own rival versions in the form of Android and Google Docs. Firms that fail to develop into their own full-featured, multi-sided market platforms are at risk of being cut out of the market altogether by one of the major platforms. It is a trivial matter for a platform to redirect a user's activity to parallel services that are run by the same firm that controls that part of a platform the user needs to access 'higher-level' services (although it is often technically illegal, as various antitrust verdicts in courts have shown).

Platforms that are missing critical components will either be forced to make alliances with other platforms that threaten their key advantages, such as the strange relationship between Facebook and Microsoft, or create their own missing components, like Amazon's attempted quixotic 'Axis' browser and the persistent rumors of a Facebook smartphone. This control of online life comes with tremendous power, like the control of life in the most general case that becomes increasingly inseparable from online life. A platform can charge inventors – application developers in particular – a high cost for accessing their users: an extraction of rent. The parallel extends further, as users are effectively cognitive serfs in these new immaterial feudal arrangements. The platform controls not only the

socialization of invention, but the socialization of users, as their ability to communicate can be limited to others on the same platform (Facebook), or serve as a source of value creation through data-mining (Gmail). Perhaps even more chilling, their very memories in the form of documents, photos, and videos are owned by the platform. One can only imagine the tremendous value, and what possible chunks of flesh, could be extracted if a platform wanted to charge for access to the externalized memories of their users. Yet unlike the content industries, the truly intelligent platforms have given up on this strategy of owning content, as its far better to do as Google does and enable users to create content for the platform for free – or, more accurately, for the privilege of accessing the platform for free. The good shepherd of the proprietary platform harvests their users as sheep, first for their fleece and then for their very lives.

Given the constraints of the platform the Web becomes increasingly crucial, since as HTML editor Ian Hickson points out: ‘The Web’s technology stack is ... the only platform that is completely vendor-neutral and not centrally developed. Anyone can invent a new feature and if the market agrees, can get that feature to be a de facto part of the platform’ (Lawson, 2013). The Web’s unique status in this respect was the result of a political battle between Tim Berners-Lee, the inventor of the Web, and the various browser vendors such as Microsoft and Netscape who were intent on fracturing the Web into HTML that was ‘best viewed with Netscape Navigator’ or ‘Microsoft Internet Explorer’. Rather than attempting to create an alternative platform that would be free of the influence of proprietary firms, Berners-Lee used his role as lead author of the specifications that defined the Web to create a consortium that convened the Internet companies, and so started the second oldest of organization of the immaterial aristocracy: the World Wide Web Consortium (W3C). Unlike the anarchic IETF, the W3C is composed of organizations, primarily companies that come together in various Working Groups to create, via industry consensus, W3C Recommendations. These Recommendations (again, officially ‘recommendations’ as they have no nation-state standing, although they do adhere to a strict intellectual property agreement) are an evolving group of standards that define the Web as a universal and platform-neutral space of information. Sensitive to the issue that the immaterial aristocracy could be corrupted by undue corporate influence over a standard-making process where all work is done voluntarily (but often by professional standards experts), the W3C has its own independent staff to keep the process neutral and

preserve the core architectural values of the Web. Although technically a membership organization, the W3C does its work in the public and, up until the 'last call' for standardization, all comments from the public must be responded to, while members of the public who demonstrate expertise in the field can be let into the standardization process by W3C staff. Using this methodology, the W3C was able to create a version of HTML that worked across all browsers. While eventually Netscape was undermined by Microsoft in their nascent effort to create a platform that included the Internet, the ability of HTML to be vendor-neutral allowed for the creation of Mozilla Firefox and eventually enabled the rise of Google Chrome, which may likely become the next hegemonic platform. Still, the Web today is currently fractured between multiple platforms, with the W3C maintaining a very delicate peace between the various vendors, improving HTML (HTML5) and adding new capabilities such as Web cryptography.

However, a failure on the part of the W3C has led to the Web serving as both a platform for the universal sharing of knowledge and for universal surveillance. In Berners-Lee's original design, all users of the Web were to be treated equally and all data was to be shared for free, in keeping with the architecture of the Internet. Yet in order to keep 'state' on a user (similar to how deep packet inspection keeps 'state' on a packet), Netscape introduced a tiny, simple piece of code that could stay in a browser and relay information back to its owner about a user. Initially used to customize webpages and a crucial part of 'logging in' to websites, cookies are now tracking every click and visit of users across the Web. The capture, use, and selling of this data is now the de-facto business model of the Web, as such personal data is invaluable to marketers in the placement of what are known as 'behavioral' advertisements: ads that are targeted to a user's behavior. Due to constant improvements in machine-learning regarding this data, it can feel uncanny to users when the Web seems to know the content of their private messages and can recommend products and services to them accordingly, based on the most intimate of details. Due to government threats to regulate this practice from both the EC and USA, the W3C convened a Working Group to create a standard 'Do Not Track' (similar to 'Do Not Call' in direct marketing directors) that would let a user opt-out of being tracked by third-party cookies. However, the standard-in-making collapsed due to an argument reminiscent of a theological debate in medieval times (and remember that such arcane Christian debates were often the cause of very real conflicts during this period of history). This concerned the issue of whether users should or should

not be tracked by default. In one of the most brutal attacks in the platform wars, Apple and Microsoft had their browser turn off tracking by default. While they may claim to have done this on behalf of users, the real reason for their doing so was because it hurt Google's profit margins. Mozilla, which many idealistic open source advocates might assume would want to defend user's rights to privacy, actually survives primarily via payment from Google, and so it supports Google's interpretation of the matter. When entire platform business models are on the line, the peace treaty of the immaterial aristocrats is torn to shreds.

This is only the beginning, of course: there is even more valuable marketing data kept as people's 'private' personal data on social networking sites such as Twitter and Facebook. This data currently exists in an unregulated and unstandardized legal limbo. Attempts by various factions of the immaterial aristocracy at the W3C and IETF to standardize personal data have all been rebuffed, despite the noble goals of giving users the freedom to move from one platform to another ('data portability'), and even the ability to leave a particular platform ('the right to be forgotten'). Unlike some markets, once one is trapped in a platform, all technical forces conspire against escape. The European Commission has threatened to regulate such practices via the Data Protection Act, which embodies what can be thought of as 'the self determination of data' with a high respect for privacy. The fact that this ruling comes out of Germany is no historical accident: it is ingrained in the collective memory of Germany that the first step of the Holocaust was the collection of data about undesirables. Ironically, Facebook is now claiming to 'represent' their users against their own government and are lobbying against any data protection act – and in a 'vote' over privacy on Facebook, recently removed what little control users had over their privacy policy. The Data Protection Act may fail for an even more historically disturbing reason: various member-states have claimed a 'state of exception' to the regulation itself, as under the rubric of 'fighting terrorism' their police forces do not want to have to respect the right to privacy of data. As declining wages and mass unemployment make advertising-driven consumption less profitable, one market for personal data is the ability to control dissent. The same information that appears to enable corporations to innocently market consumer goods via behavioral advertisements, is a force as powerful as a 'nuclear weapon' when used 'against individuals by governments', according to Berners-Lee – especially given the fact that, under late capitalism, corporations and governments are often virtually indistinguishable, with the

United States being an exemplary case in point. In the words of Frank Rieger, privacy advocate and founder of the Chaos Computer Club : 'We lost the war' (Rieger, 2005)

As demonstrated by the successful struggle of users against SOPA, ACTA, and the WCIT, those platforms that are fighting for control of the net are no longer to be mediated purely by the engineering class of the immaterial aristocracy. On the contrary, the widespread penetration of the Internet has led ordinary users to both identify with the Internet in-and-of-itself, and to gain their own ability to self-organize. The slumbering giant of Internet users is awakening to its own potential force, and while these masses are currently focused primarily on net neutrality, all signs point to the possibility of an engagement in the defense of their rights to their own data. According to the old hacker's adage, one's data should have the same rights as one's own body. The immaterial aristocracy as an elite class of engineers may very well represent the transitional figure on the stage of history, preparing the way for the arrival of users who can take social and technical responsibility for life online in their own hands. The greatest contribution of the immaterial aristocracy lies in their profound respect for the equality of access and the rights for data, which are ultimately ethical positions. The first step is to dive into what, in essence, distinguishes civil war from war-in-general, according to the anonymous French philosophical collective Tiqqun: that civil war is an ethical conflict between forms-of-life. Internet users must recognize themselves as a singular community with their own technological form of life, and with their own peculiar kind of ethics: 'The differences among forms-of-life are ethical differences' (Tiqqun, 2012: 50). The elaboration and politicization of these differences we have witnessed over the last year may ultimately lead to a true war between users and those who wish to control the collective intelligence of these users for the purposes of profit and domination. In the words of Amelia Andersdotter, the young Member of European Parliament from the Pirate Party, when confronted by those who wanted to enforce copyright on the Net: 'Fuck you, this is our culture'. Yet at this same moment various companies, such as Google, Microsoft, and Netflix, are using the W3C to attempt to force so-called digital rights management into HTML5, which would prevent video and other media from being easily copied and re-used if they embedded in an HTML web-page. Over the course of a single year, even the usually beneficent immaterial aristocrats of the W3C, who were once considered guardians of an Open Web, have come to be seen as inimical to the desires of ordinary users.

Conclusions

The immaterial aristocracy that has historically governed the Internet finds itself competing with traditional governments in the battle over WCIT and ACTA. Various companies whose business model depends on the free labour of Internet users present themselves as the champions of the Internet, and they did indeed successfully outmanoeuvre governments over the course of 2011 and 2012 with the help of an unprecedentedly large mobilization of ordinary Internet users. The final result of the last round of the immaterial civil war is that the traditional, heavily corporatist, immaterial aristocrats of the IETF and W3C have maintained their control over digital sovereignty against challengers like the ITU. Yet in 2013, thanks to issues such as the control of personal data and the division of the Internet into mutually incompatible proprietary platforms, it appears that the fragile alliance between Silicon Valley and ordinary users is fraying and may soon reach a breaking point.

Behind the immaterial aristocrats are the forces of Silicon Valley and thus global capital, a relationship that constrains the potential power of collective intelligence by binding it to short-term consumerism and the free production of content for proprietary platforms like Facebook – as opposed to allowing the collective intelligence of millions of Internet users to focus on global scale problems such as climate change that the market has spectacularly failed to solve. Indeed, in terms of social innovation, the potential power of collective intelligence lies unharnessed precisely because of its capture in proprietary platforms built by short-term capitalist logic. Of course, Silicon Valley views the Internet primarily as a source of profit extraction, but the digital natives who grew up with ubiquitous net access naturally view this technical infrastructure as part of their very lives.

If the Internet is truly a public space of shared intelligence with potentially vast distributed cognitive powers, then it seems it should naturally be a global commons governed by its users. However, the governance of such a global commons is today mediated by a very small set of actors, this being the immaterial aristocracy of bodies such as the IETF and W3C. Institutionally, both the IETF and W3C developed their structures in the 1970s and 1990s, before the great mass of digital native users were even born. As such, they operate as a mix of representative democracy and anarchic meritocracy, with decisions being made via fairly open multi-stakeholder processes. Yet, cognitively, such processes usually involve only dozens or at

most hundreds of individuals. However, if the Internet is now truly to be a global commons for collective intelligence, its governance must involve millions and stretch across traditional governmental boundaries. How can the immaterial aristocracy become a true immaterial democracy that can do justice to the importance of the Internet? If it fails, will there soon be another round of immaterial civil war that pits the platforms controlled by Google and Facebook against their own users. One end-game is that the Internet will simply end up being consumed by a single victorious platform, such as Google. Another is that users will somehow band together and establish their own methods of governance, and use their potential power within these platforms to disturb value extraction, much as the traditional unions were formed by workers for the large corporations that dominated the industrial revolution, and who soon learned the power of the industrial strike.

The importance of the Internet should not be under-estimated, and a turn back to Marx can be helpful in illuminating the ramifications of immaterial civil war through another lens. That said, there are far more questions here than answers. Obviously, if Internet platforms gain their power via the control of the social life of users, how does this differ from the way in which traditional factories harness the power of workers, and can various theories of real subsumption account for the power of these new platforms? There is a need for a real inquiry that can locate the more utopian visions of theorists such as Hardt and Negri in the power dynamics of Silicon Valley, and a more grounded technical context (Hardt & Negri, 2001). After all, there has been no Internet-driven transition to communism as the various theorists of post-autonomism desired, albeit somewhat vaguely. Instead, there has been a financial crisis and massive social confusion with no clear signs of a political force emerging that can address the situation. Given the stunningly predictable crisis of capital we are currently in the midst of – if nothing else, Marx was correct about the cyclical nature of capitalist crisis – Negri, Badiou, and a whole host of contemporary philosophers have intuitively grasped that a new political force is needed to jump on the historical stage. Yet they commit the most elementary of errors by attaching such a force to the blood-stained historical failure of communism, a problem ‘in which not to use the word is inevitably to fail politically, while to use the word is to preclude success in advance’ (Jameson, 2009: 12).

Let us then name the unnameable political force that potentially stands against the dying (neo)liberal ontology of the profit-seeking

and consumerist individual: collective intelligence. From this point of view, the Web and the Internet are merely the technical underpinnings that allow this collective intelligence to flourish. However, just as the traditional workers movement existed before being fully theorized, and even dubiously reaching self-consciousness via the form of the party, the new forces arising on the Internet also lack self-consciousness of their situation, much less a well-developed strategy and an adequate organizational form. And like the traditional workers movements which featured their own cultural forms of songs and union halls, the digital natives are now developing their own unique cultural forms, too, from cat memes to Anonymous. The stretching of their collective muscles in the immaterial civil war with regard to ACTA and WCIT show that the digital natives do indeed have political power. The next battle in this war, that over personal data, will determine if they may even have the ability to wield this power against the corporate platforms that currently harness their collective intelligence in the search for profits rather than the wide-scale social innovation necessary in a world of ecological crisis and ever-increasing unemployment.

All politics is grounded in ethics, and ethics is grounded in ontology. For digital natives, the collective intelligence of the Web is part of their extended mind and the data they produce part of their extended body, all of which amounts to a very different ontological view from that based on a strict separation between the individual and the world. The full political ramifications of this ethical understanding of digital technology are just being felt in the larger world. Thus, there is more at stake in the immaterial civil war than the mere transition of power over digital sovereignty. When one speaks about defending the Web, one speaks of more than servers and software; the Web-as-technology is a stand-in term for the densely intertwined techno-ecological fabric of the world as created by late capitalism. This subtle mixing of metaphors reveals the crucial ethical content at the heart of everything from Anonymous to the Pirate Party, along with a profound ethical difference between not only pre-Internet forms of governance and digital natives, but between Silicon Valley and digital natives. When one no longer sees individuals as separate from technology, or technology as separate from nature, one glimpses the immanent totality of the web, a totality that stretches beyond the values of consumerism and profit-maximization promoted by global capitalism. The power of the Internet and the Web is that they are a mere technical infrastructure that is more amenable to our present-day cognitive grasp than the totality of existence, and this lets the World Wide Web be a

compelling cognitive stand-in for a totality that also contains within it webs of other kinds, ranging from food webs that connect solar energy, to human metabolism, as well as capitalist webs of production, distribution, and consumption. Dimly grasped by cognitive psychology and vague talk of post-humanism, this shift between viewing individuals as separate from their wider world to their being fundamentally, ethically and ontologically constituted by their wider social and technical worlds, although small, nonetheless carries the weight of a whole new world that is dying to be born.

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PLATFORM INFOMEDIATION AND JOURNALISM

Eugenia Siapera

In a May 2011 article on GIGAOM, Om Malik argues that the Internet has removed the monopoly of information distribution from the mainstream media, enabling everyone to distribute contents. It is a change, he tells us, that has led to the proliferation of information and, more broadly, to a 'democracy of distribution'. For journalism, the removal of the media's monopoly over information distribution has had mixed effects. On the one hand, it has undermined many large media brands, but on the other new journalistic forms and contents have come to proliferate (Malik, 2011; Ingram, 2011). And, as Jay Rosen has argued, the more people participate in journalism the better it is going to be (Rosen, 2011). Indeed, the past decade has seen some fascinating changes in journalism, including the development of ITS radical forms (e.g. Indymedia); participatory forms (with crowdsourced projects such as the *Guardian's* MP expenses story); open forms (Wikileaks); and citizen-based forms (collaborative news-blogs) (Siapera, 2012). What is more, all of these changes have come, quite literally, at the expense of big media, which have frequently seen their power diminished, their business model undermined, and their credibility questioned. Critics of the increased conglomeration and concentration of media ownership must surely feel assuaged. Indeed, this appears to be a story of David and Goliath, with the big media Goliaths brought to their knees by bloggers and engaged citizen-journalists everywhere.

However, things are not as they seem. While new media forms appear to have upset the typical business model and function of media outlets, and to have created new windows of opportunity for citizens, political and activist groups, these windows are in turn themselves closing very fast, and an even newer seems to be order emerging. In the meantime, most critical approaches have focused on the issue of production, and specifically the question of labour under conditions of cognitive capitalism (Scholz, 2012). While this

is undoubtedly a necessary and urgent line of inquiry, it is not the only one. In broader media ecologies, production is closely associated with other processes, and changes in one trigger changes in others, thereby leading to further shifts. This article endeavours to examine this wider ecology, with specific reference to the media and journalism industry. In order to provide an outline of the emerging order it argues that the new media ecosystem alters and emphasizes the process of information distribution, over and above the processes of production and consumption; and that, instead of a democracy of distribution, what we actually have is an increased concentration of distributive power in the hands of a select group of platforms, which operate with their own logic – the logic of infomediation.

The article begins with a discussion of media ecology, in which processes and agents of production, distribution and consumption are related in multiple and dynamic ways, but which is also characterized by an emerging logic. This logic is found in the purposeful, built-in or designed affordances that consolidate the power of the new dominant actors within this ecology: the infomediating platforms. In order to understand the shifts within media ecology, this article examines the classic conception and history of the political economy critique of media and journalism: the gist of this critique has revolved around the idea of the concentration of production and distribution in the hands of a few dominant corporations. The new, de-industrialized order of journalism, the result of a broader shift towards cognitive capitalism and immaterial precarious labour, is shown to involve a new set of processes. These include the dis-integration of processes that were previously concentrated, and the rise of distribution, and specifically the kind of distribution that is associated with infomediating platforms as the new dominant process and logic. On the basis of this exposition and analysis, a critique of platform infomediation is developed, based on three main arguments: that platforms distribute not only contents but also *people* into different categories; that the emphasis on distribution in this new media ecosystem ends up negating the productive tension between form and content, thereby liquidating meaning; and that the logic of infomediation opens up new gaps in the recently blurred division between producers and consumers, imposing its own criteria which are totally extraneous to those of content production. The result is that whatever gains were achieved for journalism in the early days of social media (blogging, citizen journalism et al), have been all but lost.

Media as Industry and as Ecology

One of the most influential theoretical frameworks for understanding the media has been the ‘circuit of culture’ model proposed by Stuart Hall (1973). In its original formulation, this model attempted to capture television in terms of a cycle of encoding and decoding processes, in which producers and institutions encode and distribute information or contents, on the basis of frameworks of knowledge, relations of production and technical infrastructures. Audiences/receivers decode these on the basis of their frameworks of knowledge, relations of productions and technical infrastructures. Hall sought to explain how various practices and processes within this circuit are bound together in a ‘structure in dominance’, in which production dominates but does not determine consumption or reception. Hall draws on Marx’s ideas of the circuit of production-distribution-consumption, which Marx saw as an organic whole (Marx, 1973 [1857]), with processes influencing and shaping one another – even if production emerges as dominant.

However the isolation of these elements – and especially the focus in Hall’s model on a structural separation between the various moments – ends up overlooking the ‘messiness’ of media systems, and the ways in which forms (provided by media producers as institutions and as technologies) cannot be so strictly separated from contents or substance (understood primarily in terms of their interpretations and decoding by users). The main possibility that this model engenders is one of accepting or ‘resisting’ media contents, reducing the complexity of the media-society nexus into a primarily reactive process. Matthew Fuller (2005) developed a critique of Hall’s structural model on similar grounds, arguing that media could be conceived more fruitfully as forming a broader ecology, a complex system of multiple elements which are dynamically interrelated, feeding off and challenging one another. Media ecology also takes into account the generative capabilities of media systems to give life to new medial forms.

While Fuller’s account of the dynamism and irreducible multiplicity of media ecologies is compelling, his focus is primarily on the ‘combinatorial production’ rather than mechanisms of domination (Fuller, 2005: 24). Fuller chooses to focus on systems such as London’s pirate radio, which show precisely this multiplicity and the ways in which regulations are evaded and reshaped. Evolving regulatory and legislative mechanisms seek to impose specific forms

on radio broadcast, only to generate a field of mutations too heterogeneous to be controlled. Fuller refers to this process as a kind of 'constant arms race' (2005: 23). Nevertheless, he recognizes that this combinatorial production is not random but takes place on the basis of the particular qualities of these elements, including the technologies themselves and their affordances, or the ways in which they circumscribe their uses, or allow themselves to be appropriated (Gibson, 1986). An analysis of the relations between and within elements in a media ecology requires an analysis of the affordances and the ways in which some elements, objects and subjects, are placed and used within such ecologies. While in J. J. Gibson's original formulation, the notion of affordance comes across as neutral, with no 'sense of a will to power', as Fuller puts it (2005: 45), thinking of affordances as embedded in the purposeful design of specific media forms or applications we can more broadly identify the logics built into these specific forms.

In these terms, the shift towards media as ecologies involves primarily a shift in perspective: from looking at a set of predetermined structures towards apprehending a dynamic plane of relations of various and multiple elements, including industries, producers, users, machines (tablets, mobile phones, PCs) and so on. Relations between and within elements must be seen as dynamic and shifting. However, it must also be emphasised that the constitutive elements within media ecologies are not equivalent nor do they enjoy the same degree of power. While it has been important to identify production as a function of multiple combinations of elements, it is equally important to identify how specific elements seek and acquire power over others, and the broader implications that this power acquisition may have. This is especially important when we move from one media paradigm, namely broadcasting, to another, namely social media, as new elements and new configurations emerge which usurp, upset or undermine previously congealed relations such as those within journalism. From this point of view, a Marxist inspired analysis may prove more appropriate since it allows a focus on antagonisms – a confrontation or a juxtaposition of logics, affordances and uses rather than Fuller's parataxis or Hall's determination. In other words, we need to combine an understanding of ecology inspired by the combination and concatenation of diverse elements, while also paying attention to the juxtapositions, antagonisms, contradictions and usurpations found in the relations between these elements. The argument here is that while in traditional media industries, relations between elements were dominated by media corporations and the

logic was one of concentration or integration, this is now shifting towards a post-industrial mode, dominated by Internet platforms, whose logic is found in the purpose-built affordance of infomEDIATION.

As an entry point to such an analysis, we can use previous analyses of media systems. These can then be examined in relation to both their insights into the emerging logics, as well as their oversights and limits, which in turn can provide useful avenues of exploration of what new media systems are becoming.

The Political Economy Critique of Media/Journalism

The political economy of media and journalism understands and examines media and journalism as an industry. The genealogy of the idea of news journalism as an industry can be traced through Adorno and Horkheimer's (1944) 'The Culture Industry: Enlightenment as Mass Deception'. In this work, Adorno and Horkheimer examined the sphere of cultural production from the point of view of its industrialization, that is, its mass production, distribution and consumption. Its main characteristics, they argued, include monopoly, standardization of outcomes, and technological rationality. The mass production of cultural products is made possible through industrial technology, which is also responsible for standardization. Cultural products and artefacts are made in order to be distributed widely and consumed by all in the same manner.

A crucial insight of this work is that the contents of the culture industry are of little importance. They are unimportant because they are identical and standardized even as they are forever seeking or appealing to novelty; they are also unimportant because the emphasis within the culture industry is on the rationalization of distribution rather than on the production of contents (Adorno, 1975: 14). This is made clear through a comparison of the notion of technique in art and in the culture industry. While in the former technique is concerned with the internal organization of the work and its inner logic, in the latter it refers to 'distribution and mechanical reproduction, and therefore remains external to its object'. Indeed, 'the culture industry finds ideological support precisely in so far as it carefully shields itself from the full potential of the techniques contained in its products' (Adorno, 1975: 14-15). In the culture industry therefore it is distribution rather than production that is the focus, and moreover, its means of protection

essentially relies on bracketing out the actual contents and meanings it distributes and circulates. We will see in subsequent sections how this tendency has come into its own in the logic of infomediaion.

The trajectory of journalism has been clearly described by Habermas who traced its transformation into a commercial enterprise, resulting in a kind of journalism that, in the words of Bucher, 'produces advertising space as a commodity that is made marketable by means of an editorial section' (in Habermas, 1989: 184). Journalistic labour is fragmented and controlled with various specializations, its outcomes are mass produced and distributed widely, and it is run primarily in order to maximize profit. It is therefore no surprise that this labour follows a well-known pattern towards monopoly, or at least oligopolistic control of the market. Graham Murdock and Peter Golding outlined this process as early as 1973. They discussed the economic cycle of the press/media industry as involving a shift from a small scale personalized production to an increasing expansion, in which 'distribution and selling become separated and commercialised', production becomes industrialised and 'consumption becomes large scale'. This period of growth is followed by saturation, resulting in crises, involving 'rising costs, declining revenue, and a changing pattern of demand' (207). It is this cycle that leads to concentration in the industry whereby a few large firms or corporations control the market. Concentration occurs through the processes of integration, diversification and internationalisation. The typical example is News Corporation, 'a global vertically integrated media company', according to their website, that owns various media across five continents.

The two most relevant implications of this structure of the media/journalism industry are: firstly, the constriction of choice; and, secondly, the control of information and consolidation of consensus (Murdock & Golding, 1973). Similarly, for US political economists such as Herbert Schiller (1991), concentration of ownership and the increasingly globalized power of media corporations lead to less content diversity and altogether to less choice. Robert McChesney (2008) argues that the political economic structures of (US) journalism mean that it cannot act as a watchdog, be truthful, or offer a wide range of informed positions. In an interesting variant of the focus on ownership, Dallas Smythe (2006) looks at the consumption side of media and journalism, arguing that audiences rather than contents are the commodity produced and sold by media corporations to advertisers.

The dominant logic of the industrial system is therefore one of concentration and centralized control of production, which in turn ensures maximisation of profits. Media corporations couldn't have been better off: concentration and the expansion of markets through globalization, along with income generated through audiences' value to advertisers safeguarded and augmented their capital. However, as Murdock and Golding, based on Marx, had predicted, new technologies and market saturation lead to crisis. For journalism the crisis has been devastating. The next section discusses the ways in which the rise of new media has led to the de-industrialization of journalism.

The De-industrialization of Journalism

The conventional story of the encounter between the Internet and journalism begins in the mid-1990s, in the era of Web 1.0, in which newspapers mostly posted their contents online in a static format. Although by 1997 there were already more than 3,500 newspapers online (Meyer, 1998), neither editors nor publishers knew what to make of the new medium. Nevertheless, their first and foremost priority was its commercial potential. Derek Bishton, editor of the Electronic Telegraph in the mid-1990s, admitted that its main purpose was to explore the commercial possibilities of the new medium (Bishton, 2001). While most newspapers had created online counterparts by the mid-2000s, it was not until the rise of Web 2.0 that the untenable nature of the situation became clear. The rapid spread of broadband Internet, along with the development of user friendly applications for the production of content, initially had a two-fold effect: firstly, the overproduction of contents; and secondly, a steeper decline in the already declining circulation figures.

The production of content, once the reserve of a specific class of people, including journalists, writers, academics and advertisers, became part of everyday life for almost all Internet users. Applications such as Blogger made it possible for people to write and post their own contents, while wikis introduced new ways of collaborative authoring. Drawing on the principles of open source, Axel Bruns (2008) coined the term *produsage* to describe such collaboration with a view to improve the ultimate outcome; while Jeff Howe (2006) used the term 'crowdsourcing' to refer to the ways in which content production has become collaborative, ongoing and processual. Content producers are here no longer salaried workers

or individual artists, but everyday people whose knowledge and experiences form an important societal resource. At the same time, an accelerated news cycle means that journalists have to produce more and more content. While the news cycle had already expanded to 24/7 coverage, since the advent of satellite television and the rise of news channels such as CNN, the Internet has exacerbated the trend for 'high-speed news' (Pavlik, 2000: 232) leading to its reformulation as a 'news cyclone' (Klinenberg, 2005).

This intensification of production and ultimately the overproduction of content may to an extent be held responsible for the drop in the number of journalists' paying customers, as evidenced in the steeper decline of newspaper circulation. It is well known that, globally, newspaper circulation figures were already decreasing – a recent report calculated that while newspapers reached over 100% of Canadian, UK and USA households in the 1950s, the figure had fallen to about 65% in 1990. However, the rise of the Internet exacerbated the trend: less than 40% of households were reached by daily newspapers in Canada, UK, and USA in 2011 (Communications Management, 2011). The Pew Centre's State of the Media study reports a fall of circulation of about 11% from 2003 to 2009 alone (Edmonds et al, 2013). These declining circulations are associated with steep decreases in advertising revenues, as advertisers received less return for their investments. In fact the loss of advertising revenue for newspapers is much steeper than the loss of circulation: in the US, ad revenues fell by 53% in the decade 2000-2010 (Edmonds et al., 2013).

However, this under-consumption of newspapers is not associated with an overall decline in the appetite for news. 2010 marked an important shift in news consumption in the USA: for the first time in history more people said they got most of their news online rather than from a newspaper – 41% as opposed to 31% (Edmonds, et al., 2013). Moreover, they spend more time online (13 minutes per day) as opposed to reading a newspaper (10 minutes) (Edmonds et al., 2013). Although overall, television still remains the news medium of choice, these numbers point to the ascendancy of the Internet over the press.

The emerging situation is paradoxical: on the one hand we have an overproduction of news, while on the other hand there is no under-consumption as such, but rather a shift in the ways in which people consume news. For the news industry, this has been devastating. Overproduction, according to Marx (1894), is the inevitable

tendency of capitalism: capital can either stay idle, and thus not profitable, or produce constantly, eventually leading to excess production. This, for Marx, is at the heart of capitalist crises. Applied to the case of journalism, we see that the industry still needs to produce as much news as possible in order to be able to compete with others within and outside the news industry, all the while seeing its consumers moving away. The highly concentrated model failed to provide any help because it is focused on print/broadcast media: it can protect some corporations from other players in the field, but not from those who completely changed the game. A reversal is already in motion, with corporations moving fast towards disintegration. Indeed, News Corporation has recently announced a split between its newspaper and entertainment sectors (Chozick, 2012).

On the other hand, for journalism as practice and as public service, these developments created a new window of opportunity. For thinkers such as Yochai Benkler (2006), the 'wealth of the network' is located in collaborative communicative structures. Radical developments such as Wikileaks (see Beckett & Balls, 2013) take journalism to a different level, while the sheer diversity of online contents couldn't be in sharper contrast to the standardized homogeneity of newspaper information. If the problem outlined in the classic media political economy is indeed the lack of choice and diversity in opinions and information, then the Internet appears to address this.

This excitement, also in evidence in the GIGAOM articles, is tempered by critical work looking at the role of digital labour in the shift towards cognitive capitalism. Specifically, the de-industrialization of journalism has to be understood within its concrete historical context. This is that of a shift from industrial to cognitive capitalism (e.g. Dyer-Witheford, 2004), in which the dominant mode of production changes from one focused on mass produced commodities to the accumulation of immaterial assets, such as information, developed and produced through digital, cognitive and/or immaterial labour (Lazzarato, 1996). Immaterial labour, defined as the kind of labour that 'produces the informational and cultural content of the commodity' (Lazzarato, 1996: 132), was initially seen as the integration of social and communication processes into the commodity, in a manner that added to its exchange value. Subsequently, the term became more loosely linked to all kinds of intellectual labour, which lead to the production of information. Parallel to this scholarship, and as the

new media became more integrated in everyday life, digital labour became a term that captured all sorts of (primarily online) activities that end up producing information or data. This includes activities that begin life as leisure activities but which end up generating surplus value, operating essentially as free labour (Terranova, 2000).

One person's produsage is therefore another's surplus value generator. Why hire people to do something when you can have it crowd sourced? In fact, this model of labour has become so successful as to form the basis of the business model of Internet giants such as Google. Value is extracted through the appropriation of data and information produced, contributed and assessed by a host of unpaid users/labourers. Google's model, as described by Matteo Pasquinelli (2009), relies exclusively on users, whose work it then appropriates through the PageRank algorithm; it subsequently uses the data generated in order to sell advertisements through AdSense. Similarly, Facebook's model is to sell user data to third party advertisers (Scholz, 2012), while Twitter sells its analytics and has now developed an ad API, which means it makes available to advertisers its full database (comprised of users' tweets and metadata), allowing advertisers to insert ads when relevant keywords appear. Recent work (Dyer-Witheford, 2010; Fuchs, 2012; Scholz, 2012; Lovink & Rasch, 2013) has developed a new robust critical political- economy of this kind of capitalism and digital labour.

Yet this debate has focused primarily on the question of production, and more specifically on labour and use/consumption-as-labour, overlooking shifts in the interrelated processes and elements of the emerging media ecology. Thus, the suggestion here is that the changes in the production process, and the new antagonisms that have arisen in turn, have led to a shift of the dominant moment within the media ecology towards distribution. Since in social media platforms production is ensured through widespread produsage this implies that distribution is becoming more and more dominant, with rather ambiguous results for digital life in general and for journalism in particular. Distribution is in turn characterised by the logic of infomediaion, as found in the practices and designs of Internet platforms. The next section will discuss this in more detail.

Platforms as Infomediaries

To a significant extent, the success of the traditional news industry can be attributed to its tight control of the product and the production process: owning the means of publishing and hiring journalistic labour has meant news industries could exert almost total control over contents, while even professional ideologies, such as news values, closely conformed to journalism's business model. Since the new/social media opened up production to everyone with access to the relevant technology, this monopoly over production was lost. As a result, the process of distribution, of efficiently disseminating information from producers to users and vice versa acquired an increased importance, precisely because this process could be controlled and managed more than the process of production. The ability to control and manage distribution depends on access to the contents themselves. This privileges Internet platforms, because they offer services to users/content producers and therefore already have a foot in the distribution market.

While in computer science the term platform is taken to mean any kind of programmable system (Andreesen, 2007), Internet platforms are here taken to refer to large scale applications that mediate between the Web-at-large and users in specific ways. Most Internet users have little understanding of the technical backbone of the Internet and/or its programming languages. Users' experience of the Internet is mainly through its main platforms, such as Google, Facebook, YouTube, Yahoo and so on. The term platform is significant as it retains from its original, computer-science definition the idea of programmability. However, for most users, this programmability takes the form of a rather limited customization and circumscribed interactivity. While it is beyond the scope of this essay to show how such platforms condition users' experiences, this section will discuss how they have become inextricably bound to news and journalism, and the increasing dominance of the logic of platform infomEDIATION. (InfomEDIATION is here understood as the purposely built-in or designed affordance of Internet platforms.)

SmyrnaioS (2012) discusses those platforms that operate in the space between news producers and the public. Drawing on relevant work in economics, information science and management, he refers to them as infomEDIARIES, as they mediate between information producers and consumers. For SmyrnaioS, the importance of these infomEDIARIES lies in this mediation between information production and consumption. It can take place either through automatic

systems such as the algorithms used by Google, or through social filtering, tagging and sharing, as with Facebook and Twitter. But in entering and more or less controlling the field of online news distribution and circulation, infomediaries end up imposing their own rules and values on content producers, such as news media. Moreover, since they are in competition with them for advertising income, they undermine the viability of the traditional journalistic business model.

Similar, if less critical, arguments have been pursued in the economics and management literature. For instance, Aguila-Obra, Padilla-Melendez and Serarols-Tarres (2006) discuss infomediaries from the point of view of value creation. Following the idea of a value chain in which a product or service becomes enriched through other processes, thereby adding to its value, they hold that news infomediaries add value by entering into the packaging, reproduction and distribution stages - alongside traditional news media, alternative news media and new media.

While for Aguila-Obra et al. this infomediation takes place alongside other news players, more recent work shows an increasing domination of the distribution of news and related contents by intermediaries. In a study for the Reuters Institute for Journalism, Newman (2012) reports that in the US 36% of news is accessed through social media, while Facebook is by far the most important network for news, accounting for 55% of all news sharing in the UK. Specifically for the UK, while 55% of the sample use an online news site for news, 30% use search engines, 22% news aggregators, and 20% social media. Significantly, 43% of younger people (16-24 year olds) only ever access news on social media sites.

In another Reuters report, Foster (2012) uses the term 'digital intermediaries' to refer to what we call here infomediaries. He then goes on to divide them into four types: news aggregators, such as Yahoo News; search engines such as Google; social media such as Facebook; and digital stores/devices such as Apple. Foster discusses the different implications of these intermediaries in terms of their impact on news plurality. For Foster this impact may take four different forms: firstly, in terms of control over the news they carry; secondly, in terms of editorial-like decisions regarding news content they link to or carry; thirdly, in terms of the economic impact they have on the news market; and finally, in terms of the political influence they yield. Foster discusses some of the dilemmas and openings created when private companies are responsible for the

distribution and dissemination of information and news related content. Their practices, he holds, must be a matter of public debate and policy. In addition, their business model, which is identical to that of news companies (i.e. it relies on advertising), has made it harder for news suppliers to make money. On the other hand, these infomediaries have allowed some news suppliers to reach wider audiences/readers. Some findings, for instance, indicate that both *The Guardian* and *The Daily Telegraph* have experienced increased traffic since they partnered with Facebook (Smyrnaio, 2012). This relies on the use of an Open Graph application that allows users to share (on Facebook, Twitter, Reddit etc.) an article they have read. Finally, given the increased importance and economic power enjoyed by corporations such as Google and Apple, it is likely that they will become important political players, at least as important as News Corporation and other traditional media organizations were and to an extent still are.

More recent online traffic statistics shows the clear dominance of infomediaries. Table 1 below shows the top ten sites on the web and their traffic statistics. The striking thing about this list is that only one, Wikipedia, produces its own content. All others package and distribute content by third parties, including the Chinese QQ, which is a Yahoo type portal, and the two e-market sites, Amazon and Taobao, an e-Bay style site. The first actual news site is CNN interactive at no. 72.

Website Name	Percentage of estimated global internet users in a three-month period
Google	44%
Facebook	43%
YouTube	34%
Yahoo!	20%
Baidu	12%
Wikipedia	12%
Windows Live	8%
QQ	8%
Amazon	7%
Taobao	5%

Table 1 - Top ten Internet sites by traffic. Source: Alexa.com, April-May 2013. Twitter comes in at number 13.

Although in statistics differentiated by country these observations are slightly different, with news sites making an appearance typically around the numbers 15-20, the trend here is clear: the distribution of online news and related content is increasingly dominated by search engines and social networking sites. Moreover, as content increases online, the role of infomediaries in mediating between content and news supply and consumption is likely to be even more important. Algorithmic or social filtering will be necessary in order to be able to sift through the masses of news related information and similar data on the web. Table 2 offers an idea of how much content is produced daily – and as this information is based on 2011 usage, it is likely that numbers have increased since then.

Website	Contents produced/uploaded daily
Twitter	140 million tweets
Facebook	1.5 billion pieces (status updates, links, video, photos, comments etc)
Tumblr	10 million posts
Blogs	1.6 million posts
YouTube	2 million videos
Flickr	5 million images

Table 2 - Web contents in 2011. Source: The Content Strategist.

This over-production of content, which includes news and related information, creates serious issues for traditional news producers, because while they still can and do produce news, they cannot distribute it as efficiently to readers. The processes of both packaging and distribution have been taken over by infomediaries who circumscribe and reproduce contents in their own way. Thus, content on Twitter must have 140 characters, while on YouTube it must contain video and audio material. Korinna Patelis (2013np) has analysed Facebook's interface as text revealing its underlying tactics, which include 'archiving and unifying content in order to then separate, index, and categorize it'. For Patelis, Facebook is standardizing content at the level of metadata, and while it is ostensibly offering customization tools to users, these are limited and already standardized.

The logic of platform infomEDIATION is one of bringing together information producers and information users, through providing them with the space to congregate and communicate (exchange

contents). This kind of mediation operates at two levels: at the first level, infomediaries collect or gather as many producer-users as possible; while at the second level they harvest the data and information generated in order to sell it to interested parties – advertisers or data processing companies. The terms producers and users of information subsume two very different categories: primary and secondary content producer/users. The former produce content and information in their everyday usage of such platforms; the latter then buy and use this information as raw material in order to produce secondary data and information (e.g. reports on consumption patterns, combinations of demographics and use patterns, marketing reports and so on). InfomEDIATION can be seen as a recruitment strategy for the production of more information by others for free: infomediaries rely on the primary producers, and the more they are the better the process works. As Pasquinelli (2009) has shown with respect to Google's PageRank, the system of dynamic hierarchies on which Google operates is viable only insofar as producer/users do in fact use it constantly. In order to get people to keep on using their platforms, infomediaries rely on the constant production of new content, which they then distribute, recruiting more primary and secondary information producer/users and the cycle goes on. InfomEDIATION is the reification of distribution, in which platforms that do not produce any contents at all sell the information and contents produced by their users, thereby making their reach a highly valued commodity.

While at a first glance the outsourcing of distribution and the resulting disintegration of the traditional news concentration model may not be seen as necessarily negative, the effects of dominance of infomEDIATION, real and potential, need to be discussed and understood. Moreover, unlike what commentators have written until now (i.e. mainly that the potential impact of infomEDIATION is located at the levels of gate-keeping and content plurality), the argument to be made here is that their impact is more fundamental because they alter the process of news and content production, producing a ripple effect across all related processes.

A Critique of Platform InfomEDIATION

We have seen in the above discussion that online news and related content tends to be over-produced by, amongst others: professional journalists; citizens; interested parties; and politicians. This has triggered a set of responses in the other elements of this media

ecology; specifically, the contents produced must somehow reach their consumers, who cannot consume all of these in an equal manner. This leads to a prioritisation of the process of distribution, as the main determinant of which contents will reach which audiences. While in the traditional business model of the news industry the process of distribution was controlled by the producers themselves (the news companies) through vertical integration, the Internet has disrupted this control and new players have moved in, acquiring top billing in the process of news (and other) content distribution.

Now if the process of distribution is controlled by a handful of platforms acting as infomediaries, it is likely that both processes of production and consumption will be affected. Firstly, Marx (1973) has made the argument that distribution is not only the distribution of the goods and services produced, it is also the distribution of resources and the resulting distribution of people into classes. Infomediaries must therefore be seen as involved not only in the distribution of news contents, but also in that of news-related resources that may then introduce new hierarchies of news and other information use, literacy and absorption. Moreover, these hierarchies are likely to be related to the ways in which infomediaries 'value' and monetize their audiences: since not all users are of equivalent value to advertisers, new segments are created and managed in ways that allow infomediaries to extract more value. This kind of segmentation is likely to impact on the actual distribution of news contents, which is then customized to fit the appropriate kind of audiences. A recent study by Evans et al. (2012) segmented Facebook users into six types (see Table 3). Other studies and marketing-based reports use different categorizations, but the common assumption is that not all users are the same, and that their activities matter in terms of the value that is produced for the infomediating platforms. Thus, one of the issues involved in occupying the space of news and related content distribution is that it imposes, and operates on, a set of divisions of users. Moreover, the main division on which infomediating platforms operate is between primary producer-users, who can be professional or amateur content producer/users and who are providing all the labour, and the secondary producer/users who are in fact the platforms' paying customers.

Facebook User Types

1. **Fans** join interest groups based on politics, art, and music, and they often link their Facebook account to other websites.

2. Branders prefer public to private networking, and they often use Facebook as a tool for business, building a personal brand, or accumulating social capital.
3. Social-Searchers employ Facebook to learn about news, media, and entertainment, but they show little interest in apps and games.
4. Influencers share videos, links, and good deals with others, and they rarely use the private forms of messaging or sharing available on Facebook.
5. Gamers are motivated by games, apps, and coupons; they interact with strangers as often as acquaintances, and though fewer in number they log the most time on Facebook.
6. Neutrals are unmotivated by most of Facebook's features including status updates, and they report being members only to keep connected to the events of family and friends.

Table 3 – Facebook User Types. Source: Evans et al. (2012:37)

A second issue is that, given the main function of these platforms is to distribute and disseminate news and other information, but without producing it, they have a parasitic relationship to news production. They rely on it, but they do not really contribute to it. An indication of this fraught relationship is provided by the war of words between Rupert Murdoch and Google. Murdoch, who at one point had blocked his newspapers' pay-walled content from appearing on Google searches, referring to Google as a 'parasite' and 'content kleptomaniac' (Rushton, 2012). The reversal of News Corporation's decision to block their content from Google is an indication of the increasing power over Internet visibility enjoyed by infomediating platforms such as Google.

However, this kind of relationship has further implications: in relying on content but without any kind of production norms, guidelines or principles they completely empty or negate the actual meaning carried by these contents.¹ This is in fact an extension of the argument made by Adorno in *The Culture Industry Reconsidered* (1975). His contention was that the standardization of production processes in the culture industries resulted in the standardization of all contents, which now had no form or technique but were only distributed and mechanically reproduced. This appears to be part of the dynamic deployed by platform infomediaion: it relies on linking content producers to users or consumers. It has minimal if any involvement in these contents and their meaning – its focus is on the data/information produced by users, their habits and demographics. So any gains resulting from the shift toward produsage and the

engagement of more and more diverse people in the process of producing news and related content are negated insofar as they rely on a handful of infomediating platforms, which 'mechanically reproduce' contents removing any uniqueness, 'aura' or technique in the sense of innovation in the form taken by news and related information.²

To elaborate further on this idea, Adorno located the power of the artistic work in the dialectic between the artist's unique take and artistic techniques of his or her time (2005). Art is constantly renewed through this ongoing tension between its forms (which are the result of art's history) and contents (which are selected from current empirical reality), and because of this its meaning is always contemporary and relevant (Adorno, 2004). It is also because of this tension that art can stand critically both within and outside society. Now journalism is not high art, but insofar as it too exists in a state of tension between its various forms (news, editorials, analysis, but also infographics, wikis, blog and microblog posts) and its contents (drawn from the world), it can have meaning and remain contemporary. However, in the age of digital reproduction and continuous distribution and the pressures they exert on production and consumption, this tension is resolved in contents that mix and match forms without reflecting on either, ending up in the liquidation of all meaning. The rise of affective news (Papacharissi & Oliveira, 2012), which mix opinions and facts, news and sentiments, data and misinformation is an illustration of this point: everything is mixed and it all becomes equivalent or alternatively ranked on the basis of its reproduction (e.g. through likes or retweets). As a result of this basic equivalence, all meaning is emptied. Lolcats and infographics sit side by side, or one after the other, in timelines, subjected to the same processes of 'like' and 'share'.

Just to be clear, it is not that journalism requires clarity of form; but it does require this tension and reflection between forms and contents, because this is essential in maintaining the ability to mean (i.e. to distinguish between different events, approaches, data, opinions, sentiments and so on). But since the emphasis is on the continuous reproducibility and distribution of contents, which lead to the treatment of all content as equivalent, this tension can no longer be maintained. The only distinctions placed on content distributed by infomediaries are those that reflect their internal processes of user segmentation or their calculations and algorithmic functions. This is not a democracy of distribution that allows journalism to flourish, but the imposition of a hegemony of

distribution infused by the logic of infomediation effectively removing any efficacy that journalism could have.

These arguments on meaning echo Jodi Dean's critique of communicative capitalism and her ideas on the endless circulation of content as foreclosing politics and removing political efficacy from political communication (Dean, 2005). However, while for Dean the emphasis is on political discourses and political action, the current argument is more concerned with how platform-based distribution, as the purposive and instrumental process of collecting and shifting very large amounts of contents, not merely circulation as the random linking and sharing between people, leads to a broader liquidation of all meaning. Thus, even innovative journalistic forms, existing outside of infomediating platforms, such as data journalism and infographics, collaborative and participatory writing found on crowd-sourced journalism and so on, are stripped of their meaning because of the dynamics of platform infomediation (algorithms or networked-based, grafting persons onto the mechanics of distribution) which collect and distribute all these indistinguishably. Any significance they carry, any tensions or contradictions between their forms and contents that would both make and advance meaning, are therefore liquidated.

A final element in the critique of platform infomediation concerns the very practice of mediation itself. The genealogy of the concept of intermediation and intermediaries can be traced through the work of Pierre Bourdieu (1984: 359), who spoke of the rise of a new class, a *petite bourgeoisie* emerging from occupations such as marketing, fashion and public relations. This new class provides a bridge between the high and lowbrow tastes of the middle and working class respectively, but also helps to create new symbolic values. In subsequent work, the concept of cultural intermediaries came to refer to the cultural work of this class of people in mediating between creative artists and consumers, and more broadly between production and consumption (Negus, 2002). The actual work of these people is to help shape both use and exchange values, through using the techniques of their trade. Building on an argument made by Nicholas Garnham (2000), Keith Negus argues that the insertion of this class between production and consumption ends up widening rather than bridging the distance between them. Instead of filling in gaps, cultural intermediaries have been instrumental in reproducing and often exaggerating this distance.

While in cultural production more broadly there is a clear distinction between producers and consumers, in online production this is blurred. But platform infomediaion comes in-between producers and user/consumers who rely on them for distribution. In so doing, it places a wedge between production and consumption, which ends up negating the gains of produsage, crowdsourcing and other collaborative forms of production. As with cultural intermediaries, rather than bridging and bringing together producers and consumers of information, infomediaion opens up new gaps into which it inserts itself. Moreover, in doing so, and to the extent that infomediaion is also involved in the production of use and exchange values, it creates new hierarchies and re-orders such values on the basis of its own criteria, and hence is heteronomous to the actual cultural products (contents). Thus, rather than horizontal produsage in Bruns' normative sense of constant improvement, infomediaries insert new hierarchies drawing on criteria completely extraneous to these contents. These criteria often involve processes internal to the distribution of information itself. Google's PageRank relies on counting backlinks to webpages and by weighing these links differently; this, Pasquinelli (2009) has argued, is a kind of value condensation feeding on attention and reflecting the broader regime of spectacle and visibility. But in essence this means that the more a particular content is distributed (thereby soliciting more attention) the more value it will have. For instance, the more a tweet is retweeted (i.e. redistributed), the more 'important' or 'influential' it is considered to be – distribution therefore stands in for the actual value or worth of a particular piece of content. It is no accident that there are many tactics concerning how to get more visibility, that is more distribution, for your contents, and all of them are unrelated to the actual contents themselves (and/or to their form).

For journalism, this aspect of infomediaion represents another loss: while the new forms of journalism, especially those found in re-connecting producers and users, may have involved some gains for journalism as a public service more broadly (Siapera, 2012), the increasing reliance on infomediaion subsumes and co-opts these gains. Moreover, while in the print/broadcast model, journalism was seen to retain some of its values (Kovach & Rosenstiel, 2001), what we see here is a completely different logic – that of distribution – applied to journalistic contents. The value of journalistic contents is therefore re-signified as the value of their distribution. This is why individual journalists, whether in contracted work or as freelancers, are now building their own secondary distribution networks within

social media platforms: their value and worth as journalists is equated with the extent of their distribution network.

Conclusions: Reflections on Journalism in the Emerging Media Ecology

Returning to the opening discussion on the democracy of distribution and its regeneration of journalism, it is clear that however this situation is apprehended, the term 'democracy' is the least appropriate. The emerging media ecology involves an antagonism between media corporations and Internet platforms. This antagonism is currently forming a kind of platform hegemony, which imposes its own logic on all kinds of contents. The rise of platform infomediaion is the result of a complex set of processes, which include the increased possibilities for content production and the actual user/producer practices. This overproduction, which means that contents produced cannot be consumed or absorbed by users in their entirety, has prioritized distribution, firstly as a means of hosting or supporting contents, and secondly as mediating between information producers and users. Both overproduction and platform infomediaion have undermined the traditional business and production model of journalism and the logic of concentration and control of production. But platform infomediaion may prove more pernicious for journalism for three main reasons: firstly, because it inserts itself between journalism's producers and consumers, re-distributing news resources and literacies on its own bases, drawing on market-based segmentation; secondly, because it diffuses the tensions between journalistic forms and contents, emptying both traditional and more recent and innovative journalistic forms of their meaning; and thirdly, because it re-creates recently abolished gaps between producers and users, and in doing so, imposes its own logic and criteria for success, which are primarily based on further distribution.

For most those working in or close to the erstwhile journalism industry, the future of the profession lies in finding new successful ways of generating profit. Typically, these are to be found in creating some sort of synergy between the distribution platforms and news producers. There is a lot invested in the development of relevant apps for smartphones and tablets (Reuters Institute Report, 2012). Other thinking in this area follows the logic of 'don't hate the platforms, be the platforms', urging (large) media companies to incorporate their own platform-based distribution alongside their

content production (Picard, 2012). A more thoughtful line of argument urges journalism to respond to the changing environment by more thoroughly incorporating the logics of social and digital media, thereby evolving more organically and replenishing their power in this manner (Anderson et al., 2012). The future of journalism, according to this line of thought, lies in its ability to adapt to the current environment by adopting social media practices.

However, none of these positions addresses the fundamental shift in the media ecology, associated with the overproduction of content, and which has given prominence to content distribution and the logic of infomediaion. For journalism to have a future it must address the three inter-related problems created by the rise of platform infomediaion: the distribution and reordering of news producer/users and news-related resources; the liquidation of meaning; and the imposition of an extraneous logic and criteria of success. This is by no means an easy feat. But it could begin with a more thorough and focused understanding of the emerging media ecology, with the role of platforms as agents of distribution, and with a critique of the contradictions involved.

The positive take is that there is a plane of new possibilities, which the logic of infomediaion may be only temporarily foreclosing. New patterns can emerge from unexpected alliances and combinations. New research could usefully point to such combinations and the ways in which they recruit or graft platforms to their objectives. Already new and radical forms of journalism are emerging – for instance, the pirate ERT in Greece, broadcasting online as the government shut down transmitters, and using platforms to advertise its new sites and programmes (Siapera & Papadopoulou, 2013). These re-direct attention from distribution networks to substantial matters and in doing so they recruit people found in and through platforms. But for these new practices to have an impact on journalism and to compete with the logic of infomediaion, they must be the outcome of purposeful and conscious collective action aimed at countering the logics of accumulation of capital and profit extraction which underlie infomediaion. Journalism's future depends on it.

Notes

¹ Some social infomediators such as Facebook impose controls mainly on material seen as obscene or offensive. Algorithmic infomediators such as Google do not impose any control on contents (in most countries), but the actual algorithms they use in order to produce search results are secret.

² While it may be argued that for instance Twitter has introduced innovation in the form taken by contents, there is no possibility for innovation within Twitter, unless it is introduced by the corporation itself. Formally, therefore, all content on Twitter is the same: it consists of a maximum of 140 characters. On the other hand, Twitter users have to an extent imposed their own form on Twitter as they exchanged news contents leading to the well-known shift from 'What are you doing' to 'What is happening'. Since then however Twitter normalized this new form and made it part of its brand.

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PLATFORM COMMUNISM

Joss Hands

The Active social forces work exactly like natural forces: blindly, forcibly, destructively, so long as we do not understand, and reckon with, them. But when once we understand them, when once we grasp their action, their direction, their effects, it depends only upon ourselves to subject them more and more to our own will, and by means of them to reach our own ends. And this holds quite especially of the mighty productive forces of today. (Engels, 1978: 38)

In a hypercomplex environment that cannot be properly understood and governed by the individual mind, people will follow simplified pathways and will use complexity- reducing interfaces. (Berardi, 2012: 15)

Communist Digitality

The return of communism as a serious political aim was firmly heralded in March 2009 when the conference *The Idea of Communism* was convened by Slavoj Žižek and Costas Douzinas. Having initially been scheduled to take place in a modest conference room in Birkbeck College, it had to be moved to the Institute of Education's Logan Hall, a 933-seat theatre which was subsequently supplemented by spill-over video rooms for those unable to secure a place – even with tickets priced at over a £100 for the three day event. An irony that the event was a sell-out was not lost on the attendees. The resonance of the unabashed use of the term communism, and its seeming success, was such that the conference garnered a fair amount of press interest, with *The Guardian* newspaper reporting that this was 'the hottest ticket in town this weekend' (Campbell, 2009).

The question at the heart of the event, as proclaimed by the organisers in the edited collection published subsequent to the conference, was 'whether "communism" is still the name to be used to designate radical emancipatory projects' and the conclusion amongst the participants that 'one should remain faithful to the name "communism"' (Douzinas & Žižek, 2010: viii). What this

means in practice was judged to be that ‘we have to start again and again and beginnings are always the hardest. But it may be that the beginning has already happened, and it is now a question of fidelity to that beginning. This then is the task ahead’ (x).

Given the centrality of digital communication to contemporary formations and conceptualisations of identity, self-awareness, social life and activism– as well as the importance of immaterial production to the global economy – the urgency of the debates around *The Idea of Communism* compel us to extend the question of communism to the heart of our current thinking about digital culture. It is about the relationship between the digital as an actually existing realm and the horizon of communist possibility. In the context of digital society, culture and economics there has long been a debate about the value of the emergence of digital public spheres, peer-to-peer production, free, libre and open source software (FLOSS), the creative commons and so forth. However, an engagement with the notion of a communism that includes a commitment to a direct and concerted political challenge to neoliberalism has been wanting. There has been a preference for the language of collaboration, of participation, notions of horizontal structures and distributed organisation without the concomitant challenge to capital as a whole. This long-term absence of a serious commitment to a communist agenda has undoubtedly allowed for a somewhat porous borderline between certain forms of decentralised neoliberal practices of production and surplus value generation, with cooperative production in common. Jodi Dean, in her reflection on the ‘Communist Horizon’ (2012), makes the case that the focus on democracy in recent social and political movements has allowed capital off the hook.

It is in that spirit that I shall explore here what the communist hypothesis offers for defining what a ‘platform communism’ might look like. The focus on digital platforms is a vital element in understanding the new media ecology in which we are all now captured. Platforms are simply where the people are, where the power lies and where capital is most fully engaged. Dealing with platform politics requires more than just the taxonomic analysis of platforms; it should also include looking at alternative practices and the pragmatics of antagonism and collective modes of production. Doing only the former risks treating the problem as one of a pre-figurative politics the character of which is already decided. And while this is inevitably one element of my approach here, I shall also take a more general theoretical perspective focussed on how

platforms fit into the broader picture of social and political change and rupture. Two key questions are fundamental to this. Firstly, what actually constitutes a platform? And, secondly, what is communism?

A platform is, in its most general sense, a software framework running on the world wide web or Internet, in the forms of social media interfaces, apps, or most commonly 'Web 2.0' portals that gather users in interfaces with each other and with the Web and Internet itself; key is the provision for user generated content and intensive interaction. As such, this definition would stretch to include major players such as Google, Facebook, Twitter, YouTube, Amazon; but also non-proprietary and open source platforms such as diaspora, Indymedia and Wikipedia. The second question, as to what is communism, presents a more complex problem, to which a more developed answer is needed. I will answer it with reference to three different, related and sometimes interlinked variations on the recent debates over communism.

The Idea(s) of Communism

The return to communism, the concerted attempt to reclaim the name of communism, has not simply been a semantic gesture, an empty rebranding exercise or an electoral realignment; not a *new* communism but rather a rebirth of communisms in dialogue. The multiple nature of what, one might say are, the *ideas* of communism have been taking form. To take just three strands as illustrative, those that I will focus on are foregrounded in the work of Alain Badiou, Slavoj Žižek and the group of thinkers categorised under the umbrella term of *Autonomous Marxism*.

Alain Badiou has been one of the leading philosophers to formulate an unapologetic commitment to a 21st century communism. Badiou's mathematical turn has led him towards a rehabilitated notion of the dialectic and a commitment to sharp historical revolutionary breaks. As a philosopher who has attempted to think against the prevailing limits of philosophy, Badiou has constructed a complex philosophical system that attempts to revitalise notions of the universal and truth, albeit with a sharply original viewpoint. His argument, hinges on his concept of the event. An event in Badiou's terms is a rift in the normal fabric of the world that momentarily shifts the stable structures of perception, meaning, subjectivity and so forth. The event reveals a truth that otherwise would remain

uncovered – the event cannot be predicted, it does not fit into a pre-existing paradigm of understanding, precisely because it exists outside of the prescribed practices and socially and politically legislated modes of existence. An ‘event is a surprise’ because ‘[i]f it were not the case, it would mean that would have been predictable as a fact, and so would be inscribed in the history of the State, which is a contradiction in terms’ (2010a: 12). The state here functions as the totalising horizon of the possible, the realm which sees over ‘a life with neither decision or choice.... whose conventional mediations are the family, work, the homeland, property, religion, customs, and so forth’ (11). *Events* thus break through this horizon. Badiou also relates the event to the notion of ‘the exception’ (2009: 13) and to the ‘outside’ in philosophical thought.

Badiou argues that the purpose and definition of philosophy is to open up choices, to interrogate the fissures that appear between different regimes of truth – to ‘throw light on the value of exception. The value of the event. The value of the break. And to do this against the continuity of life, against social conservatism’ (12). The practice of philosophy, in having fidelity to the event thus means ‘to be in the exception, in the sense of the event, to keep one’s distance from power, and to accept the consequences of a decision’ (13). The political conclusion of Badiou’s understanding is that notions of politics, such as normal, actually existing democracy, for example, play no role in philosophy whatsoever and precious little role in social change or emancipation, given that all these conservative forces are able to do is elicit small changes or nuanced shifts based on appeals to the least decisive or bold members of a polity, such as swing voters. As such ‘you are in the presence of the feeling of the institution, of the regular functioning of institutions’ (19).

A central part of this process, of thinking philosophy in a relation to politics and truth, its ‘truth procedure’, is that of ‘subjectivation’. By subjectivation Badiou does not mean a process of becoming a subject in the standard bourgeois individualist sense of the term, but rather a form of awakening or activation as part of a collective. Badiou’s thought, while diverging in many respects from a Maoist view, has celebrated elements of Maoist thinking and has defended features of the Maoist programme, for example notably the Chinese Cultural Revolution. Badiou sees the Cultural Revolution as the central political moment of recent times stating that it was ‘the only true political creation of the sixties and seventies’ (Badiou, 2005: 481). While it was ultimately a failure, Badiou still recognises it as a process in which much revolutionary practice was realised and

brought into being. It forged a process of ‘revolutionarization’ which entailed the on-going challenge to bureaucracy, including party bureaucracy, to contest the internal constitution of the subject, to engage in ‘great exchanges of experience’ (482). Its failure was due not to the incorrect aims of the Cultural Revolution, but ‘because it turned out to be impossible to unfold the political innovation within the framework of the party state’ (484). In that regard we can understand the Cultural Revolution in Badiou’s definition of political truth. It was an eruption that pierced the staid secular hierarchy of the Chinese communist party, and the unfolding of that revolution saw the slow failure of fidelity to that truth. As he says, it produced, amongst other things ‘totally unpredictable situations, new political statements, texts without precedent, etc.’ (486). Out of this experience, however, have come a number of successive political truths and situations; primarily springing from the fact that the Cultural Revolution showed the limitations of revolutions within the confines of the party-state, which on all subsequent occasions have emerged from beyond such boundaries.

However, this evolving tradition is not the only development in the recent revival of interest in communism, there is also the strand of contemporary communist thought that can be identified with the political philosopher Slavoj Žižek, influenced by Lacanian psychoanalytical thinking and elements of Leninist political philosophy. Žižek has argued that the liberal hegemony, symptomatic of the parliamentarianism of neoliberal democracies - which proclaims its constant support for freedom - is one of the greatest mechanisms for presenting a ‘formal freedom’ in the sense that Lenin used the term, while proscribing any kind of ‘true choice’, given that ‘Formal freedom is the freedom of choice *within* the coordinates of the existing power relations, while actual freedom designates the site of an intervention that undermine these very coordinates’ (Žižek, 2002: 544). Thus in the current climate, at least this was the argument in 2002, it is tempting to step back from action given that this ‘will be an act *within* the hegemonic ideological coordinates’ (545) and as such remain within a ‘certain limit’. Rather, according to Žižek, ‘to reinvent Lenin’s legacy today is to reinvent the politics of truth’ (547). What this means for Žižek is not an abstract truth of transcendent knowledge, or one of negotiated compromise, but precisely that of complete one sided commitment. This is in contradistinction to the proclaimed range of current tendencies in left thought. The abiding tendency is that of the comfortable intellectual indulging in the ‘narcissism of the lost cause’, in deconstructive thinking the moment of realisation of

communism remains forever deferred as a 'dream of presence' (2009: 88). Rather what we see in practice is that 'all successful revolutions ... followed the same model, seizing a local opportunity in an extreme and critical situation' (89). The problem with the tradition of revolutionary thought typified in deconstruction is the investment of a group of intellectuals whose genuine commitment is to the retention of the status quo. For example the funnelling of the revolutionary desire of "radical academics" who 'silently count on the long-term stability of the American capitalist model' into activities, such as 'excessive Political Correct zeal', a gesture that 'obliges no one to do anything determinate' (2001: 5), a practice that Žižek defines more broadly as interpassivity; that is action that is undertaken unconsciously to avoid confronting prevailing conditions, given that they are always acts 'WITHIN the hegemonic ideological coordinates' (4).

Žižek sees in Lenin the capacity to shock, to act with faith on a revolutionary path even when the prevailing conditions are against this, even if the party begs to differ. There is also recognition that 'the intervention should be *political*, not economic' (554) and as such 'Lenin stands for the compelling freedom to suspend the stale, existing (post)ideological coordinates' (553). However, this is not to revive the great man of history thesis or to fetishise the vanguard party. In his edited collection of Lenin's writing Žižek argues that while bypassing the intransigent party Lenin tapped into a 'revolutionary micropolitics' which instigated 'the incredible explosion of grass-roots democracy, of local committees sprouting up all around Russia's big cities...taking matters into their own hands' (2002b: 7). The key is the moment of distributed vision instigated as the world undergoes a major rupture. This is something of an inverse variation on Naomi Klein's *Shock Doctrine* thesis, in which the 'taking matters into their own hands' becomes the imperative. This is not, as Žižek argues in the introduction to his selection of Lenin's writings, a utopia for a distant moment but '*the urge of the moment is the true utopia*' and in that moment the imperative is to 'invent a new communal social form without a standing army, police or bureaucracy, in which all could take part in the administration of social matters' (2002: 5). And Lenin's greatness lay in his forging of the moment for revolution, in the wake of the disaster of 1914 and against majority opinion, '*he wasn't afraid to succeed*' so that 'instead of waiting until the time was ripe, Lenin organized a pre-emptive strike' (6). Ultimately, Žižek's reading of Lenin places truth as a form of political fidelity and communism as a political act of rupture, a breaking free of the very conditions of

constraint, thinking beyond a politico-economic universe ever turned in upon itself at the edges.

Autonomous Marxism is the final incarnation of the communist hypothesis I shall now turn to. It has its roots in the workerist movement of 1970s Italy, and passes through the lens of Deleuze and Guattari's immanent philosophy, inflected again by the influence of Spinozian ontology. Its most well-known recent variation is to be found in the work of Michael Hardt and Antonio Negri. Hardt and Negri's trilogy, *Empire* (2000), *Multitude* (2004) and *Commonwealth* (2009), sets out a vision for a 21st century autonomist communism, fitting for the globalized deterritorialized capitalism of the information age, but still proclaiming, 'joy of being communist' (2000: 413). This strand of communist thinking disavows the dialectical tradition, instead following a productive understanding of class struggle rooted in Spinoza's ontology and latterly combined with the vitalism of Deleuze and Guattari. The production of multitude as the emergent category of revolutionary activity is that which arises from the shift to immaterial labour that Hardt and Negri, following from Maurizio Lazzarato, see as the decisive shift of the digital era. Hardt, in his contribution to the 'Idea of Communism' conference describes the increasing hegemony of such production and sees its development as one that 'returns to centre stage the conflict between the common and property as such' (2009: 135). This is particularly intense in the realm of the common that capital expropriates from immaterial labour, but the sharing of which actually increases productivity. Working through the contradictions of cognitive capitalism now means that capital no longer creates value through profit but in a return to rent, 'patents and copyrights, for example, generate rent in the sense that they guarantee an income based on the ownership of material or immaterial property', the key point being that 'capital remains generally external to the processes of the production of the common' (2009: 137). The use of rent is a way of valorising the common, without capital intervening in the production process and undermining its productivity. It provides the conditions for multitude to extract itself, and yet at the same time explains the increasing securitisation of the state; ever more modes of control, ever more draconian forms of policing and repressive violence. Finance, Hardt tells us, 'expropriates the common and exerts control at a distance' (138).

The move towards communism in *Autonomia* is non-dialectical and positive, a process without vanguards and not rooted in the ontology

of the event, though it still suggests significant struggle - especially in the multitude's capacity to recognise itself, to manifest a collective interest. Given the centrality of rent, the creation of a platform communism must ultimately rest on the throwing off of the capacity of capital to extract rent. The first difficulty with regard to this is that the forms of rent are not always obvious, as the mechanisms of valorisation are profoundly enfolded in everyday social life. Yet capital still contains the seeds of its own destruction, not automatically, but 'through the increasing centrality of the common in capitalist production – the production of ideas, affects, social relations and forms of life – are emerging the conditions and weapons for a communist project' (143). Indeed, in a recent interview Michael Hardt reiterates the importance of retaining the word communism as part of this struggle, so as to resist the reduction of the idea to be defined by its opponents; he tells us that it is 'important for us to recognise alternatives within the tradition and affirm the streams we value most. We thus feel the need to struggle over the concept of communism and insist on what we consider its proper meaning' (2012: np).

While exhibiting many similarities, the differences between the Badiou, Žižek and autonomist variations of communism need to be noted. While these are perhaps subtle they are nonetheless significant for thinking through the multifarious possibilities of platform communism. Žižek does not offer a positive prescription of the shape of future communism, which would undermine his fundamental commitment to communism as processual, in line with 'Marx's notion of communism not as an ideal, but as a movement' (2009: 88). However what he does claim is that the communist movement necessarily emerges from antagonism, or in particular, four antagonisms: ecological catastrophe; private property in the predominant form of intellectual property; new techno-scientific developments; and new forms of apartheid (91). The distinct element of Žižek's thinking, which is of particular note for us, is the internal character of the antagonism that pushes against capital's constitution of the entirety of life. This distinctly dialectical position entails the capacity to break open these antagonisms and forge them into class positions capable of creating the communist moment. Here his interpretation of a Leninist commitment is clear in that what he sees is the multiple coagulation of elements around a specific antagonism, but one which is universalised in its opposition to capital by the forth antagonism. This vital fourth antagonism is located in the exploitation of labour - as that which capital cannot do without, even when the others may be overcome in variations of

socialism and communitarianism, here exists the specific need for communism: 'it is only this reference to the Excluded that justifies the use of the term communism' (97). What we see in Žižek and Autonomia is also a remnant of the subject as agent - perhaps a fragment of the Marx of the 1844 Manuscripts, that is missing from Badiou - for example when Žižek argues that the antagonisms also have in common 'the process of proletarianization, of the reduction of human agents to pure subjects deprived of their substance' (99). This claim implies such a substance, or rather quality, as species being. This position also provides means of resistance. Exclusion activates significance of the 'part of no-part' in which the excluded come to represent the universal. We have, Žižek tells us, 'a name for the intrusion of the Excluded into the socio-political space: democracy' (99). This suggests a more agent based drive towards subjectivation than Badiou offers, a notion that clearly articulates with the autonomy of the multitude as a collective agent.

Badiou, then, in the crudest terms, invokes the event as emerging from outside the situation, the intervention of the other as absolute. As he suggests, the event is *of* but not *in* the situation. Here, I will argue, lies the limitation for thinking the Badiouian event as the pivot of a specifically 'platform' communism, given the closedness of most platforms within looped cybernetic systems. For Žižek the event is still of powerful significance, the break that opens up the situation, but through internal antagonisms that to some degree are always already present within capital, but through a dialectical struggle within it. The Autonomist approach lends powerful theoretical ammunition to this perspective by suggesting a process less of the event per se, than it is of the unfolding and decomposition of capital in the exodus of multitude from capital: it is its crippling withdrawal that destroys capital's capacity to generate surpluses.

While the three strands in clear ways are distinct, and indeed at odds, they also have much in common, and all have something to add in their commitment to the common – as I will go on to explore more fully later in this article. So it is on the basis of these distinct, but overlapping, visions that I will draw my discussion of platform communism. The potential, and in some cases actuality, that I have identified are by no means exhaustive but are an attempt to build a framework for further exploration. The danger of drifting into a technological utopianism is clear, so I will also note the limitations and dangers of these strands of communist thought as they articulate with the politics of platforms.

Towards a Platform Communism: Evental Horizons

In cosmology the event horizon is the edge of all that happens and all that can be seen. Analogous to such a horizon, in social media, is the edge of the social: that which is in between and hidden amongst the interstices of the network's rhizomes. These interstices are *evental horizons* in the sense that we can see the social disappearing into the unseen regions of code, protocol and the 'dark' net regions of the unmapped. Yet at the point of disappearance we need to ask whether something new, fresh and 'true' can emerge? This is the Badiouian question, and it requires an understanding of what might stop this from happening in digital networks and platforms; what needs to be overcome, in the first instance, is *control*.

The details for the control society, as originally framed in Gilles Deleuze's *Postscript on Control Societies* (1995), are well known and widely discussed, but as applied to platforms we see at stake not only individual and collective social relations but also the material substrates of platforms and the networks upon which they depend. Alexander Galloway (2004) and Alexander Galloway & Eugene Thacker (2007), argue that it is in the protocols, the algorithms and the source code - which drive our digital communications systems - that control resides. Wendy Hui Kyong Chun has also argued that in many respects digital networks come to underpin what Michel Foucault referred to as governmentality, in profound and integrated ways. For example, Chun tells us that graphical user interfaces (GUIs) augment the acceptance of the logic of neoliberalism within computer users by supplementing the idea of the self-contained rationally driven economic unit; we see this in the way that GUIs help 'move their users from grudging acceptance to feelings of mastery and eagerness' and also help produce "informed" individuals who can overcome the chaos of global capitalism' (2011: 8). Chun tells us that 'new media empowers people by informing them of their future' (8). Of course this is simply a fantasy and far from reality as she goes on to explain, 'The dream is: the resurgence of the seemingly sovereign individual, the subject driven to know...the dream is the more that an individual knows, the better decisions he or she can make' (8). In her more recent writing Chun has developed this critique to include the analysis of crises as the driving force of new media, arguing that '[c]odes and crises together produce (the illusion of) mythical and mystical sovereign subjects who weld together norm with reality, word with action' (92).

The possibility of the *event* requires something radically new to enter the world, something unknown and unknowable. Control thus presents a fundamental problem for a Badiouian politics of digital rebellion, given the parameters of digital *events* that, like any other, necessitate the radically new. If the digital realm is one that is fundamentally characterised by its prescriptive nature then the realm of the digital has almost become defined, according to Richard Grusin, especially since 9/11, as one of pre-mediation. Grusin argues that media, and digital media in particular, now truncate or short circuit the possibility of events entirely. Consumers of media are framed within a set of technical and semiotic boundaries that keep them within the scope of acceptable possibilities, of choices within the prevailing political parameters of not only actions but also affects. If all possible pathways are being chased down by processes of premediation, then decisions are based either on a movement along algorithmic pathways, whose parameters are by definition already pre-empted, or affective responses that have become embedded in unanswerable preconscious iterations of cybernetic self-comforting.

Here we can see not only digital networks in their own terms, but also the extent to which they have become entwined with a wider military-industrial-entertainment complex. Badiou himself, in his exegesis on love, implies the difficulty of a platform event when he discusses the process of online dating. According to Badiou dating sites offer only an antiseptic version of love, that is a 'love comprehensively insured against all risks' (2012: 6). Badiou associates such a love with the promise of a "zero deaths" war' (8) wherein the risks are all systemically offset and the daters 'won't find it difficult to dispatch the other person if they do not suit' (9). While it is not overtly stated, the conjecture is that a dating platform filters out all contingencies and possibilities for encounter. While such filters obtain in all kinds of situations, in a protocological digital network the algorithm that controls selection processes and eliminates those unsuitable from view instigates a material bar from the exposure to chance. 'Safety-First love, like everything governed by the norm of safety, implies the absence of risks for people who have a good insurance policy' (9). This logic is the same one in operation across major social networking platforms, all of which maintain strict protocological limits on encounters, they gather the processes of linking and distribution under a single prescriptive proprietorial framework and patterning. Yet it is precisely here, in the singular framework of protocol, that attempts to subvert this risk adverse logic are always present.

The possibility that a digital *event* might happen needs to be explored with the protocols of the network and platform in mind. In what sense could we understand a digital platform as offering the chance for a rupture of the presented world and the breaking through of a truth? To begin to answer this question we need to ask whether the control situation described above can be challenged, thus if the platform infrastructure itself can be hacked and re-directed from control to freedom. We also need to ascertain whether capital's constant crises and systemic anomalies and breaks always produce control, or whether cracks and spaces can nevertheless appear - whether from within code itself or from elsewhere - and as such if platforms open possibilities for the radically new? Beyond this we need to ask if an avenue, or perhaps even a *line of flight*, can open up onto the communist horizon.

One model that offers such a potential is the use of the 'exploit'; that is a systemic flaw, break or even opening that can be worked at, pushed and leveraged against the system itself. The concept is developed by Alex Galloway and Eugene Thacker who argue that '*within protocological networks, political acts generally happen not by shifting power from one place to another but by exploiting power differentials already existing in the system*' (2007: 81). These include the power of viruses or worms that often do not damage systems but rather find paths and ways to use the protocological controls against themselves. Often such exploits also generate emergent effects, evolving from within systems and acting as non-human agents. Galloway and Thacker, while recognising that such entities as viruses and worms are not a concrete model for 'progressive' politics, argue that they can give us a glimpse at both 'the plasticity and fragility of control in networks' (95).

One key tactic for resistance that Galloway and Thacker induce from this logic is that of disappearance; to become hidden in the society of control is to short-circuit its capacity to accumulate data. Seb Franklin (2009) builds on Galloway and Thacker's theory of the exploit and tells us that it is exactly in the ambiguity of being unclassifiable as either user (consumer) or producer (labourer), that resistance can be found. Thus it is 'not a question of hiding, or living off the grid, but living on the grid, in potentially full informatic view, but in a way that makes one's technical specification or classification impossible' (Franklin, 2009: np). The simple flashing of an infra-red beam into a camera, or the practice of 'circuit bending' in which technologies are diverted and misdirected, not with highly technical programming but rudimentary hacking using only basic technical

knowledge. This would include practices of becoming anonymous, of encryption and use of 'dark' nets using software such as Tor. These are consistent with Galloway and Thacker's taxonomy of the exploit as passing through the stages of *Vector*, *Flaw* and *Transgression* (97).

However, it is ambiguous whether the outcomes of such tactics can be related to the emergence of an *event*. The disappearance and the use of exploits is still operating deep within the parameters of the control systems of protocol, and as such would be more akin to an internal tremor or remodulation. In that regard the Žižekian conception of the working through of an intrinsic antagonism would be the necessary supplement to this understanding of political action, the act of pushing an antagonism to breaking point – of forcing it beyond an internal contradiction into a generalised revolutionary situation. Therefore such hacks and exploits may well interpose in the operation of control long enough to create disruptions that escape from behind the *evental horizon*, but aren't themselves *events*. They are rather *shocks* that bend, stretch and rupture; such *shocks* are characterised by their unpredictable ramifications and knock-on effects, including unforeseen emergent features. Any protocological network *event*, in that sense, may not be a 'pure event' as such, but is just such a *shock* - a spanner in the smooth systemic modulations of probability.

This process still relies on the intervention of those who render themselves invisible or unclassifiable, and therefore will and agency remain components of such a politics. To put it another way, disappearance and the hidden actions undertaken behind the *evental horizon* are a form of resistant pre-mediation, contributing to the forcing of what Galloway and Thacker would call *impulsion* or *hypertrophy*. This practice is designed not to resist technology but to 'push technology into a hypertrophic state, further than it is meant to go' (98). This raises the question of a subjectivation prior to such exploits. Here Žižek's return to Lenin is helpful in clarifying this standpoint, wherein Leninism entails multiple agents coalescing around a one-sided commitment to forcing the exploit.

One such example is *Face-to-Facebook*, an artwork that was based on an exploit. The instigators, Paolo Cirio and Alessandro Ludovico, harvested more than one million Facebook profiles using custom software. Then, using an adapted face recognition algorithm they categorised the faces and matched them, much in the way that Mark Zuckerberg did with his original 'facemesh' algorithm, reworking the

database into a mock dating website. The potential to realise a desired potential - the unspoken feature of the platform - to meet potential partners, is clearly a move to circumvent the 'safety-first' love described by Badiou. The project authors tell us the user's 'smiles will finally reach what they unconsciously really want: more relationships with unknown people', but also the 'project starts to dismantle the trust that 500 million people have put in Facebook'. They also explicitly recognise that 'we are trying to formulate a simple hack that everybody can potentially use...that shows, once more, how fragile and potentially manipulable the online environment actually is' (Ludovico & Cirio).

This hack operates in the mode of hypertrophy, pushing Facebook beyond its limits, re-engineering that which is enmeshed in its desiring circuits. While it remains difficult to see this as the engineering of an *event*, it is a ludic form of a programmed *shock*. In circumscribing the algorithmic control of encounters - the limit so disliked by Badiou - it brings to the fore the experience of a local truth that choices are simply a series of forked pathways that undermine the aleatory at every junction. We can therefore identify the concept of the hack as a central element of any platform communism, but the hack in the specific sense used by McKenzie Wark (2004): a creative act, a moment of generative abstraction that opens a way for new occurrences and things, new connections and ideas to be made. In many ways such a perspective is still in line with the broader philosophy of the event: hacks create *shocks*, and *shocks* ripple out, mutating distorting and shifting power. So it is that *Face-to-Facebook* creates receptivity, preparing the ground for subjectivation by providing the experience of usually concealed truths about the experience of online-dating.

It may thus be apposite to talk about fidelity to the hack as one appropriate procedure of platform communism. One other concrete example of this, though by no means complete and in many ways gestural, is the hacker collective Anonymous's political awakening. Anonymous sprang up out of the 'dark net'; primarily the chat rooms and notice boards of '4 Chan'. It consisted originally of assemblages of cynical mocking 'trollers' circulating memes through underground websites and attacking those they understood as pompous, self-important, or just plain stupid. Anonymous's political commitment was activated through a confrontation with an external antagonist in the form of the Church of Scientology. Once this confrontation had taken place the *ad hoc* group - previously tied together by little more than a sense of humour, a fascination with

technology and a dislike of authority - found a resonance and a collective purpose. This manifested in a series of cooperative acts of disruption that spiralled to include attacks on such stalwarts of capital as Amazon and eBay, the first for un-hosting Wikileaks and the second for refusing to process donations to the same. While Anonymous is not an overtly communist, or even anti-capitalist, collective its actions and its mode of coming together show a pathway that could be diverted towards such ends. While the fissure and moment of subjectivation was not brought into being using mainstream commercial platforms such as *Facebook* or *Twitter*, mainstream social networking platforms were used in highly effective supplementary ways to spread the word and to find sympathetic individuals who could be brought into action – precisely in the zone of ambiguity between user and programmer. Here we have the leveraging of hypertrophy over control on a sufficient scale to affect broader social change.

Platform Intellect

On a protocological level the limitations of commercial platforms for a platform communism are clear. These include restrictions of access to source code, algorithmic management of data and the conversion of their users' activities into a commodity and the users into providers of free labour. In that regard the affordances of commercial platforms are always already defined by the limits of their paymasters, shareholders and advertisers. The exploits so far discussed work primarily on this protocological or software layer. However, there is also a natural language layer and an affective layer of such platforms that remain relatively vulnerable, primarily because capital still relies on the revenue generated by users as the core of its business. In short, commercial platforms have to leave some social interaction that is relatively free and open for their users because they are reliant on them to generate their revenue. As such there is an absolute limit on social media platforms' capacity to control communication. It is this absolute limit that provides the antagonistic space for what can be described as a natural language exploit; enabling communicative action and unforced affective flows to take place.

Thus Facebook, Twitter and a number of other large scale commercial platforms, such as YouTube, Google+, Tubmlr, Digg, eBay, Pinterest - while being fundamentally entrenched in capital economy and functioning towards the valorisation of social labour -

still offer opportunities for large scale connectivity and for deliberation and coordination on a broad scale. This then provides an opportunity for anti-capitalist political coordination and organisation to take place. There are numerous examples of this, and while I do not intend to revisit a sterile 'Twitter revolution' debate, such natural language layer exploits have been clearly seen in the use of platforms in the array of uprisings around the world from 2009 onwards, as well as with the various continuing Occupy and anti-austerity movements. What these movements reveal is the folly of understanding the Internet as anything other than fully integrated with matter, bodies, space and discourse. This is not to discount the significance, constraints and affordances of code, but to recognise that platforms are also dependant on general intellect.

It is in the notion of general intellect that Autonomous Marxism finds its inspiration, and it is to Autonomous Marxism that I will again now turn. The nature of digital capital as parasitic on social labour means it cannot contain or eliminate the processes of communication that fuel and perpetuate the general intellect. Marx's prediction in the 'fragment on machines' (1973) that general intellect would be absorbed into constant capital, has proved unfounded to the extent that the value creating power of the human brain has yet to be fully captured by the way of a 'real subsumption'. The human brain, with its capacities for invention, empathy and understanding, is therefore an element of the means of production that is deeply elusive to capital. Capital's solution is to instigate a full-spectrum platform biopower. That is an array of interrelated platforms that attempt to encroach on all aspects of human life, including the general intellect. But capital has failed, even as it has inflicted severe wounds on the brain of labour in that failure. Capital is restricted to a formal, rather than a real, subsumption of the social, so long as elements of social relations remain at least partially inseparable from, and parasitic on, the human brain. These include aspects of unconscious and affective brain activity. In that regard we can see a parallel 'exploit' at work operating not only at the level of code but also at the level of the use of platforms: that is, the excess capacities of the multitude to organise and create using the means provided by capital.

One of the most compelling recent thinkers to have reflected on these issues, and who is closely associated with the autonomist tradition, is Franco 'Bifo' Berardi. In Berardi's *The Uprising* (2012) he critiques the current condition of the 'infosphere' as being 'too dense and too fast for a conscious elaboration of information' (2012:

15). The rampant neo-liberal deracination of the social has meant that Europe itself has become a 'sad project of destroying, of devastating, of dismantling the general intellect' (39), and that democracy is now under severe threat once 'techno-financial automatisms have taken the place of political decisions' (53). What we see then is a failure of solidarity because cognitive labour has been subjected to 'techno-linguistic automatisms'. In a situation in which 'you cannot build solidarity between fragments of time' (55) the aim must be to dismantle these mechanisms and reconnect using a different logic, the purpose of which is not 'product growth, profit and accumulation' (64). This is the only way to combat what Berardi has elsewhere referred to as the 'schizo-economy', given its reliance on the human brain, and tendency to produce a 'psychic collapse' (2007: 80). The result of this is a call to action: 'following the example of Wikileaks, we must organize a long lasting process of dismantling and rewriting the techno-linguistic automatisms enslaving us all' (54). The primary objective of the current struggle must be to create a 'psycho-affective reactivation of the social body' (2012: 55) because 'only when the general intellect is able to reconnect with the social body will we be able to start a process of real autonomization' (55). Berardi's specific solution to this problem is a call to reinvigorate the power of language as dislocated from the exchangeability of capital, through a poetic and ironic stance wherein '[p]oetry is the reopening of the indefinite, the ironic active exceeding the established meaning of words' (158). In other words, the antagonism through which the human brain has eluded the real subsumption can be re-invigorated by linguistic forms such as poetry, or to put it bluntly: poetry as hacking.

Thus Autonomous Marxism offers one further route to imagine platform communism, which is through an opening in the natural language layer of platforms in an exodus from the reified language of capital. There has been success in building new kinds of publics along these lines and new creative interventions in the politics of space with, for example, the Occupy movement. Although it is looking like Occupy has so far failed in longer-term institution building it does not mean that platform communism should not aspire to go beyond disruptions of commercial or hegemonic platforms. Platform communism also needs to work towards creating commons based platforms oriented towards the longer term nourishing of the social brain and the building of new kinds of commons based institutions to achieve Berardi's aims.

For example AAAAARG.ORG is a publishing platform for the sharing of digitalised books and articles. It is not in the strict sense open, as it is password protected, but thus as such operates on a tactic of invisibility. However, passwords are distributed according to request and the books offered as a common pool resource to a community that is highly sympathetic towards the principles and the value of open knowledge. It offers a glimpse of both disruption and commoning by its users, taking commonly available hardware, scanners and simple encoding software to turn printed material into PDF format. This then allows sharing of the results, taking advantage of the Web's distributed form and the easy availability of security measures originally designed to protect capital. AAAAARG.ORG has also avoided the Web's most centralised control protocol, the domain name system, by simple tricks such as shifting the number of A letters in its URL. Beyond this the platform is still antagonistic, as well as being merely prefigurative. It disrupts through de-commodifying books and making them common, undermining the artificial scarcity that capital's copyright regime is designed to create.

This may not appear distinct from the Google Books project, as far as its immediate impact on publishing goes, but the longer-term implications are quite distinct as a process of commoning. This is exemplified in that AAAAARG.ORG is also a platform for deliberation. It provides a space for discussions on the books it makes common and operates as a platform for the organisation of 'The Public School'; a project for the sharing of knowledge and expertise, formed as an *ad hoc* commons based university. In Cornelia Sollfrank's interview with the founder of AAAAARG.ORG, in this special issue, Sean Dockray discusses the inspiration for the platform as being a love of books and learning, and so it was founded as an expression of curiosity and free creation. The accusations and ramifications that have led to it being categorised as a 'pirate' operation, and the legal actions against it, are clearly then reactions to its threats to profit: its power to *shock*.

In the case of both commons oriented and purely antagonistic platforms the question becomes whether they can be maintained and developed, given the cost of upkeep in both immediate economic and political terms, in often hostile legal, political and technical contexts. This is exemplified in the push against net neutrality from influential elements within the US government, as well as the recent legal ruling in the UK that has forced a number of ISPs to shut down access to file sharing websites such as *The Pirate*

Bay and *Kick Ass Torrents*. There are also a number of smaller ongoing struggles, for example the publisher Verso issued injunctions against AAAAARG.ORG, forcing it to remove certain titles from its platform. This was somewhat ironic given that it is Verso that publishes a number of the recent books exploring the communist hypothesis, including editions by Alain Badiou, Jodi Dean and Slavoj Žižek. Given the massive state, corporate and legal systems at work, the capacity of one individual or group to maintain disruptive or commons based platforms may not be sustainable - no matter their technical skills. The greater impact of AAAAARG.ORG and others may well be in loss, and in the sense of outrage when people find their assumed right to access and share knowledge – to be part of the general intellect - has been curtailed by legal, state and corporate apparatuses.

What thus remains vital for a broader communist hypothesis is the forcing of action, the pragmatics of coordination and the movement beyond prefigurative zones towards mass exodus. The facility for platforms to support the affiliations and sympathies of the multitude needs to be established. These should assist in locating, as Bifo puts it, the ‘common ground of understanding among the interlocutors, a sympathy among those who are involved in the ironic act’ (168). The aim also needs to be for such platforms to be materially maintained while being permanently dislocated from capital. These are not technically difficult problems, but rather political and economic obstacles. Therefore, what is indisputably necessary for an on-going platform communism is firstly, to act and to communicate, to move towards subtraction from capital; and secondly, to produce ‘common’ platforms able to help sustain and maintain the communist horizon as a living reality. That includes building spaces, places and subjectivities (in Badiou’s sense) that provide the momentum for exodus and for subtraction from capital, and in the long-term help in healing the psychic wounds capital inflicts. Such platforms would constitute a counter *dispositif*. Vitally the counter *dispositif* needs to incorporate the offline world correspondingly - platforms alone will do nothing – so as to reclaim all dimensions of space and time; here the extensive material and spatial character of platforms must be well understood. Whatever the details of any specific platforms to come, we can be sure it is in the becoming common that we will find the most powerful opening for realising platform communism.

Conclusion: From Platform to Full Communism

To contribute to the realisation of a truly 'full' communism platforms needs to become part of a greater revolutionary process, in which the overall power to valorise and absorb creativity is wrestled from capital. In their summary of key themes from the *Idea of Communism* conference Douzinas and Žižek argue that, above all,

Neo-Liberal capitalist exploitation and domination takes the form of new enclosures of the commons (language and communication, intellectual property, genetic material natural resources and forms of governance). Communism, by returning to the concept of the 'common', confronts capitalist privatizations with a view to building a new commonwealth. (Douzinas & Žižek, 2010: xi)

This commonwealth should aim to 'bring about freedom and equality. Freedom cannot flourish without equality and equality does not exist without freedom' (x).

Within all strands of communist thought the notion of the common has been of central importance. This is also true of all three variations of the communist hypothesis that have been employed in this article. While the emergence of 'Web 2.0' was lauded as a move towards openness and creative liberation it was quite clearly a way of capturing for profit the freely offered time of its users. There are many other liberatory narratives from various proponents of a frictionless, collaborative non-exploitative capitalism, often holding up *Wikipedia* and other open source projects like Linux or Apache, (Benkler, 2006; Shirky 2011) but only in so far as they provide useful recourses for generating bigger surpluses and more value. So it is that while such examples do offer a model of cooperation and an overcoming of certain of Žižek's four antagonisms, they do not challenge the fundamental antagonism, the one which is unavoidably anti-capitalist: exploitation and the division of the classes. Thus the struggle for the common - which is also the underpinning logic of platform communism - must include the challenge to capitalism as such. Žižek's claim that it is the antagonisms *within* capital where the opportunity lies is therefore tactically most helpful here. This distinctly dialectical position entails the imperative to turn antagonisms into class positions capable of creating the communist moment. It is the 'apartheid'

between capital and labour that capital cannot do without, even when other antagonisms may be papered over. Here exists the specific need for communism, 'it is only this reference to the excluded that justifies the use of the term communism' (97).

This is in line with Badiou's communist invariants, which are 'intellectual patterns, always actualized in a different fashion' (2008: 35). These have their roots in 'the universal aspiration of the exploited to topple every principle of exploitation and oppression' (Bosteels, 2011: 277). Such a commitment to the key communist invariant - the ending of exploitation and oppression - is a constituent of an on-going historical movement in which the digital age must be included, and to which 'platformification' must belong. As Žižek argues, '[w]ithout the World Wide Web' socialism would be impossible...[o]ur task is here merely to lop off what capitalistically mutilates this excellent apparatus, to make it even bigger, even more democratic, even more comprehensive' (2002: 17).

Such a possibility is indicated in the notion of 'commonism', as described by Nick Dyer-Witheford, when he analyses what the digital organization of the common would require. In the first instance, a planner commons that would ensure, through the forms of deliberation and organisation, both a fair process of decision making in planning and the fair distribution of resources and opportunities. He tells us that a 'twenty-first century communism can be envisioned as a complex unity of terrestrial, planner, and networked commons, in which each reinforces and enables the other' (Dyer-Witheford, 2006). Dyer-Witheford also develops this argument in the strongest terms in his article in this special issue, where he lays out how a vision of digital communism or K-ommunism could be organised to take advantage of the massive leaps in computer power that have occurred since the Soviet vision of a 'Red Plenty'.

Another related aspiration that is argued for by Dmytri Kleiner in his *Telekommunist Manifesto* (2010) is that of 'venture communism' (a notion also discussed in Cornelia Sollfrank's interview with Kleiner - also in this special issue. Such a concept is one of peer-to-peer wealth generation on a scale that allows for the marshalling of shared resources for the enrichment of the common. It is necessary that 'workers are able to form their own capital, and thereby retain the entire product of their labour', which means a prefigurative stage of worker organisation in order to create enough common wealth to

create common means of production. Such an aim is ‘a battle for capacities’. So it is that ‘[c]hange then requires the application of enough wealth to overcome the wealth of those who resist such a change’ (Kleiner, 2010: 10).

Thus the necessary transition from a *platform* to a *full* communism must be a dialectically related movement between the disruption and hypertrophy of exiting commercial platforms and the creation and expansion of platforms of common organisation, production and distribution in a movement towards the common good.

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RED PLENTY PLATFORMS

Nick Dyer-Witheford

Introduction: Red Plenty

Shortly after the great Wall Street meltdown of 2008, a novel about obscure and remote historical events provided an unexpected node for discussion of the ongoing crisis. Francis Spufford's *Red Plenty* (2010) offered a fictionalized account of the failed attempt by Soviet cyberneticians of the 1960s to establish a fully computerized system of economic planning. Mixing historical figures – Leonid Kantorovich, inventor of linear programming equations; Sergei Alexeievich Lebedev, pioneering Soviet computer designer; Nikita Khrushchev, First Secretary of the Communist Party – with imaginary ones, and setting them all in motion through Kremlin corridors, rural collectives, industrial factories and the Siberian science-city of Akademgorodok, *Red Plenty* succeeded in the unlikely mission of making cybernetic planning a page-turner. But the interest it attracted from economists, computer scientists and political activists was not solely due to its narrative of scientific endeavor and political intrigue; it also owed much to timing. Appearing amidst austerity and unemployment, as the world market still teetered on the brink of collapse, *Red Plenty* could be interpreted in different ways: a) as a cautionary tale that, recalling Soviet debacles, reminds us capitalism remains the only game in town, even if it has behaved badly ('There Is No Alternative'); or b) contra-wise, as a recollection of unrealized potentialities, whispering not just the quaint *altermondialiste* slogan, 'another world is possible', but what David Harvey (2010: np) identifies as the more cogent and subversive possibility, that of 'another communism'.

This paper takes Spufford's novel as a starting point from which to embark on an examination of the computing platforms that would be necessary for a contemporary 'red plenty'. It is not a discussion of the merits and demerits of hacktivism, digital disobedience, electronic fabrics of struggle, tweets in the street and Facebook

revolutions, but of digital communism. This is a topic that has already been touched on by the wave of rethinking life after capitalism triggered by the 1989 implosion of the USSR, in proposals for 'participatory economics' (Albert & Hahnel, 1991), a 'new socialism' (Cockshott & Cottrell, 1993), 'twenty first century socialism' (Dieterich, 2006), or forms of 'commonwealth' (Hardt & Negri, 2009). Unlike some of these sources, however, this essay does not aim to provide detailed, often competitive, 'blue-prints' for a new society, but rather what Greig de Peuter, in a personal conversation, once called 'red-prints'- approximating orientations to revolutionary possibilities.

In discussing computing and communism it is almost impossible to escape accusations of abandoning struggles and subjects to a machinic determinism. Certainly all automatic, teleological, and evolutionary models, including schematic choreographies of forces and relations of production, should be rejected. Just as important, however, is the avoidance of a contrary humanist determinism, which overstates the autonomy and ontological privilege of 'man versus machine'. Here, modes of production, and the struggles that convulse them, are understood as combinations of human and machine agents, entangled, hybridized and co-determined Deleuzo-DeLandian 'assemblages' (Thorburn, 2013).

That is why the estimate sent to me by Benjamin Peters, historian of Soviet cybernetics, that, compared with the machines available to the planners of *Red Plenty* in, say, 1969, the processing power of the fastest computer in 2019 will represent 'roughly a 100,000,000,000 fold increase in operations per second', is exciting, a factoid that is, as Peters remarks, 'not itself meaningful but still suggestive'. The argument that follows explores this suggestivity. This article thus looks at the most direct through-line from Soviet cybernetics' continuing attempts to theorize forms of economic planning based on labour time algorithms and super-computing. It then discusses how concerns about authoritarian central planning might be affected by social media and software agents, before going on to consider whether planning is redundant in a world of automata, copying and replication. In partial answer to that last question, 'Red Plenty Platforms' scans the role of cybernetics in the planetary bio-crisis, concluding with some general observations about cybernetics on today's 'communist horizon' (Dean, 2012). First, however, it reviews some of the problems, both practical and theoretical, that were grappled with by the Soviet planners depicted in *Red Plenty*.

Is Capitalism a Computer?

Digital philosophers suggest the universe may be a computer simulation programmed by aliens: without engaging this position, there are grounds for considering a more mid-range proposition, namely that capitalism is a computer. This is the contention implicit in one of the most serious intellectual challenges mounted against communist thought, ‘the socialist calculation problem’, formulated by ‘Austrian school’ economists such as Ludwig von Mises (1935) and Frederick Hayek (1945). Writing in the period defined by the success of the Russian revolution, these economists attacked the premises and feasibility of the centrally planned economy. All social systems, they recognized, need some form of resource planning. The market, however, enacts a distributed, spontaneous and emergent, non-coercive plan – what Hayek (1976: 38) called the ‘catallaxy’. Prices provide a synoptic, abstracted signal of heterogeneous and changing needs and conditions, to which entrepreneurial investment responds. A command economy, in contrast, must be both despotic and impractical, as calculating an optimal distribution of scarce resources depends on innumerable local knowledges about consumption needs and production conditions that no central reporting method could compile and evaluate.

The Austrian economists thus offered an update of Adam Smith’s celebration of capital’s ‘invisible hand’, now re-envisioned as a quasi-cybernetic information system:

It is more than a metaphor to describe the price system as a kind of machinery for registering change, or a system of telecommunications which enables individual producers to watch merely the movement of a few pointers as an engineer might watch the hands of a few dials, in order to adjust their activities to changes of which they may never know more than is reflected in the price movement. (Hayek, 1945: 527)

Although he referred to telecommunications and engineering, Hayek, writing in the final year of the Second World War, might as well have invoked the giant mainframe computers of the Manhattan Project, for what he proposed was that the market acted as an automatic calculating engine: a computer.

This was, however, a two-sided argument deployed polemically against socialism. For if the market acts *as* a computer, why not replace it *with* a computer? If central planning suffered from a calculation problem, why not just solve it with real calculation machines? This was precisely the point made by Hayek's opponent, the economist Oskar Lange, who, retrospectively reviewing the 'socialist calculation' debate, remarked: 'today my task would be much simpler. My answer to Hayek ... would be: so what's the trouble? Let us put the simultaneous equations on an electronic computer and we shall obtain the solution in less than a second' (1967: 159). Such was the project of the cyberneticians featured in *Red Plenty*, a project driven by the realization that the apparently successful Soviet industrial economy, despite its triumphs in the 1940s and '50s, was slowly stagnating amidst organizational incoherence and informational bottlenecks.

Their effort depended on a conceptual tool, the input-output table, whose development is associated with two Russian mathematicians: the émigré Wassily Leontief, who worked in the US, and the Soviet Union's Kantorovich, the central protagonist of *Red Plenty*. Input-output tables – which, it was recently discovered, are amongst the intellectual foundations of Google's PageRank algorithm (Franceschet, 2010) – chart the complex interdependence of a modern economy by showing how outputs from one industry (e.g. steel or cotton) provide inputs for another (say, cars or clothing), so that one can estimate the change in demand resulting from a change in production of final goods. By the 1960s such tables were an accepted instrument of large scale industrial organizations: Leontief's work played a role in the logistics of the US Air Force's massive bomber offensive against Germany. However, the complexity of an entire national economy was believed to preclude their application at such a level.

Soviet computer scientists set out to surmount this problem. As early as the 1930s, Kantorovich had improved input-output tables with the mathematical method of linear programming that estimated the best, or 'optimizing', combination of production techniques to meet a given target. The cyberneticians of the 1960s aimed to implement this breakthrough on a massive scale by establishing a modern computing infrastructure to rapidly carry out the millions of calculations required by Gosplan, the State Board for Planning that oversaw economic five year plans. After a decade of experimentation, their attempt collapsed, frustrated by the pitiful state of the Soviet computer industry – which, being some two

decades behind that of the US, missed the personal computer revolution and did not develop an equivalent to the Internet. It was thus utterly inadequate to the task set for it. All this, alongside political opposition from a *nomenklatura* that, seeing in the new scientific planning method a threat to its bureaucratic power, compelled abandonment of the project (Castells, 2000; Gerovitch, 2008; Peters, 2012).

This was not the only twentieth century project of ‘cybernetic revolutionaries’; as remarkable was the attempt by Salvador Allende’s Chilean regime to introduce a more decentralized version of electronic planning, ‘Project Cybersyn’ (Medina, 2005). Led by the Canadian cybernetician Stafford Beer, this was conceived as a system of communication and control that would enable the socialist regime to collect economic data, and relay it to government decision makers, even while embedding within its technology safeguards against state micro-management and encouragement for many-sided discussions of planning decisions. This was an attempt at socio-technical engineering of democratic socialism that today perhaps seems more attractive than the post-Stalinist manoeuvres of the Soviet computer planners. But it met an even more brutal fate; Project Cybersyn was extinguished in the Pinochet coup of 1973.

In the end the failure of the USSR to adapt to a world of software and networks contributed to its economic/military defeat by the United States. Its disintegration, in which, as Alec Nove (1983) demonstrated, information bottlenecks and reporting falsifications played a major role, seemed to vindicate the Austrian economists. Hayek’s praise of market catallaxy thus became central to the ‘neo-liberal thought collective’ (Mirowski, 2009) that led the subsequent victory march of global capitalism.

The combined pressure of the practical disaster of the USSR and the theoretical argument of the Austrian school exerted immense force inside what remained of the left, pressuring it to reduce and reset the limit of radical aspiration to, at most, an economy of collectively owned enterprises coordinated by price signals. The many variants on such ‘market socialist’ proposals have evoked rebuttals from Marxists who refuse to concede to commodity exchange. Perhaps because they grant to the market the automatic information-processing functions ascribed by the Austrian economists and market socialists, they may address issues of technological innovation or public data availability, yet do not seem to engage deeply with the potentialities of contemporary computing.

Today, post-crash, claims that markets are infallible information machines may seem less credible than they did a quarter of century ago. The parasitic energy-theft that underlies price-signal transmissions (exploitation at the point of production); the inability of individual commodity exchanges to register collective consequences (the so-called ‘externalities’); and the recursivity of a chrematistic system that loops back on itself in financial speculation, have all become more salient in the midst of global capital’s economic and ecological implosion. But identifying such flaws does not excuse communists from the requirement to specify how another system of resource allocation – one avoiding the ‘serfdom’ of the statist subjugation Hayek (1944) predicted – might work.

Labour Algorithms

Despite the fall of actually-existing socialism, the idea of computerized economic planning continued to be developed by small groups of theorists, who have advanced its conceptual scope further than anything attempted by Soviet cyberneticians. Two schools have been of particular importance: the ‘New Socialism’ of Scottish computer scientists Paul Cockshott and Alan Cottrell (1993); and the German ‘Bremen School’, which includes Peter Arno (2002) and Heinz Dieterich (2006), the latter an advocate of Venezuelan-style ‘Twenty First Century Socialism’. These tendencies have recently converged (Cockshott, Cottrell & Dieterich, 2010). However, because little of the Bremen group’s work is translated, the focus here will be on the New Socialism of Cockshott and Cottrell.

The distinguishing mark of the New Socialist project is its classic Marxist rigor. Accordingly, its twenty-first century super-computer planning follows to the letter the logic of the late nineteenth century *Critique of the Gotha Program* (Marx, 1970), which famously suggests that at the first, ‘lower’ stage to communism, before conditions of abundance allow ‘to each according to his needs’, remuneration will be determined by the hours of socially necessary labour required to produce goods and services. In the capitalist workplace, workers are paid for the reproduction of the capacity to labour, rather than for the labour actually extracted from them; it is this that enables the capitalist to secure surplus value.

The elimination of this state of affairs, Cockshott and Cottrell contend, requires nothing less than the abolition of money—that is,

the elimination of the fungible general medium of exchange that, through a series of metamorphoses of money in and out of the commodity form, creates the self-expanding value that is capital. In their new Socialism, work would be remunerated in labour certificates; an hour's work could be exchanged for goods taking, on a socially average basis, an equivalent time to produce. The certificates would be extinguished in this exchange; they would not circulate, and could not be used for speculation. Because workers would be paid the full social value of their labour, there would be no owner profits, and no capitalists to direct resource allocation. Workers would, however, be taxed to establish a pool of labour-time resources available for social investments made by planning boards whose mandate would be set by democratic decisions on overall social goals.

Labour time thus provides the 'objective unit of value' for the New Socialism (Cockshott & Cottrell 2003: 3). It is at this point that its proponents invoke the capacities of information technology. Such a system would require an enumeration of the labour time expended, both directly and indirectly, in the creation of goods and services, to assess the number certificates for which these goods and services can be exchanged, and to enable the planning of their production. The basic tool of the input-output table reappears, with special attention to labour time, both as an input necessary for the production of goods, and as an output that itself requires the inputs of training and education. However, here the New Socialists have to confront a basic objection. Since the fall of the USSR it has been conventionally accepted that the scale of information processing attempted by its cyberneticians was simply too large to be feasible. Writing in the 1980s, Nove (1983) suggested that such an effort, involving the production of some twelve million discrete items, would demand a complexity input-output calculation impossible even with computers. This claim was repeated in recent discussions of *Red Plenty*, with critics of central planning suggesting that, even using a contemporary 'desktop machine', solving the equations would take 'roughly a thousand years' (Shalizi, 2012).

Cockshott and Cottrell's answer involves new tools, both conceptual and technical. The theoretical advances are drawn from branches of computing science that deal with abbreviating the number of discrete steps needed to complete a calculation. Such analysis, they suggest, shows their opponents' objections are based on 'pathologically inefficient' methods (Cockshott, in Shalizi, 2012). The input-output structure of the economy is, they point out,

‘sparse’—that is to say, only a small fraction of the goods are directly used to produce any other good. Not everything is an input for everything else: yogurt is not used to produce steel. The majority of the equations invoked to suggest insuperable complexity are therefore gratuitous. An algorithm can be designed to short-cut through input-output tables, ignoring blank entries, iteratively repeating the process until it arrives at a result of an acceptable order of accuracy.

The time would be further reduced by massive increases in computer processing speed yielded by Moore’s Law. Suggesting high-level economic planning is done on a ‘desktop machine’ is disingenuous. The issue is supercomputing capacity. According to an email communication from Benjamin Peters, in 1969, the time of *Red Plenty*, the ‘undisputed workhorse’ of the Soviet information economy was the BESM-6 (‘bol’shaya elektronicheskaya schetnaya mashina’ – literally the ‘large/major electronic calculating machine’), which could perform at an operating speed of 800,000 flops or ‘floating operations per second’ – that is, at 8 megaflops, or 10^6 flops. By 2013, however, supercomputers used in climate modelling, material testing and astronomical calculations are commonly exceeding 10 quadrillion flops or ten ‘petaflops’. The holder of the crown at the time of writing is Cray’s Titan at the Oak Ridge National Laboratory achieving some 17.6 petaflops (10^{15}) (Wikipedia, 2013). Supercomputers with an ‘exaflop’ capacity (10^{18} flops) are predicted from China by 2019 (Dorrier, 2012). Thus, as Peters (2013) says, ‘giving the Soviets a bit generously 10^7 flops in 1969, we can find $(10^{18} - 10^7 = 10^{11})$. . . a 100,000,000,000 fold increase’ by today.

With these capacities, Cockshott and Cottrell’s suggestion that the computer requirements for large scale economic planning could be handled by facilities comparable to those now used for meteorological purposes, seems at least plausible. The ‘calculation problem’, however, involves not just data processing but the actual *availability* of data; Hayek’s claim was not merely that central planners cannot crunch economic numbers fast enough, but that the numbers in a sense do not exist prior to price setting, which provide an otherwise absent measure of production performance and consumption activity. Again, Cockshott and Cottrell suggest the answer lies in computers being used as a means of harvesting economic information. Writing in the early 1990s, and invoking levels of network infrastructure available in Britain at the time, they suggest a coordinating system consisting of few personal computers

in each production unit, using standard programming packages, would process local production data and send it by 'telex' to a central planning facility, which every twenty minutes or so would send out a radio broadcast of adjusted statistical data to be input at local levels. This is a scenario too reminiscent of the ramshackle techno-futurism of Terry Gilliam's *Brazil*. To bring the New Socialists up to date we should instead refer to Fredric Jameson's iconoclastic vision of Wal-Mart as 'the shape of a Utopian future looming through the mist' (2009: 423). His point is that, if one for a moment ignores the gross exploitation of workers and suppliers, Wal-Mart is an entity whose colossal organizational powers model the planned processes necessary to raise global standards of living. And as Jameson recognizes, and other authors document in detail (Lichtenstein, 2006), this power rests on computers, networks and information. By the mid 2000s Wal-Mart's data-centers were actively tracking over 680 million distinct products per week and over 20-million customer transactions per day, facilitated by a computer system second in capacity only to that of the Pentagon. Barcode scanners and point of sale computer systems identify each item sold, and store this information. Satellite telecommunications link directly from stores to the central computer system, and from that system to the computers of suppliers, to allow automatic reordering. The company's early adoption of Universal Product Codes had led to a 'higher stage' requirement for Radio Frequency Identification (RFID) tags in all products to enable tracking of commodities, workers and consumers within and beyond its global supply chain.

Wal-Mart is significant because it stands 'at the front-edge of a seismic shift in the corporate imaginary'. It is a shift that links the notion of a 'logistics revolution' with 'just-in-time-production', and 'harnesses emerging digital and cybernetic technologies for managing production, distribution and sales in as swift and efficient a manner as possible' (Haiven & Stonemouth, 2009: np). This shift is spurred by the emergence of an 'Internet of Things', relating digital information to real world physical items through a network of sensor-instrumented products, users and locations. Enabled by the spread of sophisticated 4G Wireless networks, data storage-on-demand services via the 'cloud' from firms like Amazon, and, especially, by the latest internet protocol IPV6's enlargement in addressability, which provides unique digital identifiers for a 'truly humongous 340 billion billion billion billion' items, such device to device communication by now probably exceed in data volume the person-to-person traffic of the Internet (Economist, 2012; np). As Benjamin Bratton (2013) observes, such addressability, combined

with digital coding compressed to the sub-microscopic level, opens up a virtually limitless capacity for the identification of not just of things and people, but also of their most elementary components and their relationships.

Thus the trajectory of both information processing speeds and data gathering capacities points to the suppression of the ‘socialist calculation problem.’ However, to speak of planning in such panoptic contexts is to inevitably invoke fears of omniscient state control. The New Socialists come from a vanguard Marxist-Leninist lineage, with a self-avowed ‘Jacobin’ centralist perspective (Cockshott, Cottrell, & Dieterich, 2011). To consider how cybernetic planning might be developed in more transparent and participatory modes, we need to look to different communist traditions.

Communist Agents

Historically, the anti-statist tendency in Marxism has been largely carried in a very different ‘worker council’ tradition, that, against the powers of party and state has insisted on the role of workplace assemblies as the loci of decision-making, organization and power. In an essay antediluvian by digital standards, ‘Workers’ Councils and the Economics of a Self-Managed Society,’ written in 1957 but republished in 1972, immediately after the Soviet crushing of Hungary’s Workers Councils, Cornelius Castoriadis noted the frequent failure of this tradition to address the economic problems of a ‘totally self-managed society.’ The question, he wrote, had to be situated ‘firmly in the era of the computer, of the knowledge explosion, of wireless and television, of input-output matrices’, abandoning ‘socialist or anarchist utopias of earlier years’ because ‘the technological infrastructures ... are so immeasurably different as to make comparisons rather meaningless’ (Castoriadis, 1972: np). Like the planners of *Red Plenty*, Castoriadis imagines an economic plan determined with input-output tables and optimizing equations governing overall resource allocation (e.g. the balance between investment and consumption), but with implementation in the hands of local councils. His crucial point, however, is that there should be *several* plans available for collective selection. This would be the mission of ‘the plan factory’, a ‘highly mechanized and automated specific enterprise’, using ‘a computer’ whose ‘memory’ would ‘store the technical coefficients and the initial productive capacity of each sector’ (Castoriadis, 1972: np). This central

workshop would be supported by others studying the regional implications of specific plans, technological innovations, and algorithmic improvements. The 'plan factory' would not determine what social targets should be adopted; merely generate options, assess consequences, and, after a plan has been democratically chosen, up-date and revise it as necessary. Castoriadis would agree with Raymond Williams's (1983) later observation that there is nothing intrinsically authoritarian about planning, providing there is always more than one plan.

This early concept of cybernetic self-management is a precursor of a more recent envisioning of post-capitalism, Michael Albert and Robin Hahnel's (1991) 'Participatory Economics' or 'Parecon'. This too emerges from a 'workers council' tradition, though from an anarchist, rather than Marxist line of thought. Their work is famous for its model of 'decentralized participatory planning' (Albert, 2003: 122), alternative to both market mechanisms and central planning. Councils are, again, the basic societal units for democratic decision, but in Parecon these include not just worker but consumer councils, too. Resource allocation is determined by these organizations' bids for different levels of production and consumption, which over a series of rounds of negotiation are progressively reconciled by Iteration Facilitation Boards. At successive stages of the planning process, worker and consumer councils are encouraged by the IFBs to revise their proposals in knowledge of each other's inputs, until enough convergence is produced to put a few possible plans to a vote.

Parecon has been the topic of considerable controversy. One of the most frequent objections is that it exemplifies the problem Oscar Wilde identified when he remarked that 'socialism is a good idea but it takes too many evenings' – i.e. it seems to require endless meetings. Hahnel (2008: np) suggests both that increased social interactivity is a positive feature of Parecon, and that its complexity would not necessarily be greater than that of many routine requirements of capitalist everyday life – shopping, taxes, finances, etc. But it does appear that conducting the tiered and iterative planning cycles they imagine at a speed sufficient to get anything done, would demand a very sophisticated network infrastructure and a high level of technologically mediated participation: extensive data banks accessed by councils and individuals subjects, electronic swipe cards for the measurement of labour and consumption, off-the shelf software for proposal preparations, and just-time-inventory systems for production (Albert, 2003: 133).

In fact Parecon seems to call for a digital development that post-dates its proposal: social media. A society of participatory, informed, democratic and timely collective planning would require fast, varied and interactive communicative platforms where proposals could be circulated, responded to, at length or briefly, trends identified, reputations established, revisions and amendments generated, and so on. It would, in short, demand that Facebook, Twitter, Tumblr, Flickr and other Web 2.0 platforms not only themselves become operations self-managed by their workers (including their unpaid prosumer contributors), but also become fora for planning: Gosplan with 'tweets' and 'likes'. We also have to think of these organs transformed in directions pioneered by experiments in alternative social networks, such as Diaspora, Crabgrass, Lorea, freed of profit incentives and centralized control and taking more 'distributed' and 'federated' forms (Cabello et al., 2013; Seignani, 2013), becoming, as Hu and Halpin (2013) propose, networks that in their very format prioritize group projects over individual identities, or as platforms of 'collective individuation'; not, perhaps social media as much as 'council media'.

Yet perhaps the idea of everyone watching mobile screens lest they miss, not a Facebook poke, but voting the seventh iteration of the participatory plan, duplicates unattractive features of everyday life in high-tech capitalism. So we might speculate further, and suggest that what decentralized collective planning really needs is not just council media but communist agents: communist software agents. Software agents are complex programmed entities capable of acting 'with a certain degree of autonomy... on behalf of a user (or another program)' (Wikipedia, 2013b: np). Such agents manifest 'goal-direction, selection, prioritization and initiation of tasks'; they can activate themselves, assess and react to context, exhibit aspects of artificial intelligence, such as learning, and can communicate and cooperate with other agents (Wikipedia, 2013b: np).

Commercially, software 'bidding agents' are able to consistently outperform human agents so that 'Humans are on the verge of losing their status as the sole economic species on the planet' (Kephart, 2002: 7207). The ability of such entities to create 'perfect competition' in electronic markets makes them a favorite of Austrian School-influenced economists (Mirowski, 2002). As pre-programmed buyers and sellers capable of processing vast amounts of market data, software agents have transformed electronic commerce because of their ability to quickly search the Internet, identify best offers, aggregate this information for users, or, indeed,

make purchases autonomously. However, the arena in which such agents truly excel is in the financial sector, where high frequency trading is entirely dependent on software 'bots' capable of responding to arbitrage possibilities in milliseconds.

One can't help but ask, however, what if software agents could manifest a different politics? Noting that Multi-Agent System models can be thought of as a means to answer problems of resource allocation, Don Greenwood (2007: 8) has suggested they could be geared toward solving the 'socialist calculation problem'. As planning tools, Multi-Agent Systems, he notes, have the advantage over real markets that 'the goals and constraints faced by agents can be pre-specified by the designer of the model' (Greenwood, 2007: 9). It is possible to design agents with macro-level objectives that involve more than just the maximization of individual self-interest; two 'welfare' principles that economists have experimented with incorporating are equality and environmental protection sustainability.

Perhaps, then, we should envisage the repeated decision-cycles of democratic planning as being, not just debated and deliberated in social media, but partially delegated to a series of communist software agents, who absorb the attentional demands of the process, running at the pace of high-speed trading algorithms, scuttling through data rich networks, making recommendations to human participants ('if you liked the geo-engineering plus nanotechnology but no-nukes five year plan, you might like ...'), communicating and cooperating with each other at a variety of levels, preprogrammed to specific thresholds and configurations of decision ('keep CO2 emissions below 300 parts a million, increase incomes of the lower quintile ... and no rise in labour hours necessary for a cup of coffee'). In the age of autonomous machines, this may be what a workers' council would look like.

Automata, Copies and Replicators

Yet, is planning necessary at all? Centralized, neo-socialist planning schemes and decentralized, networked councilist versions both see computers as calculative instruments, a means to measure, particularly to measure work: their aim is to abolish capitalist exploitation by returning to workers the full worth of their labour time. There is, however, another line of communist futurism which understands computers not so much as instruments of planning as

machines of abundance. There are, we might say, two ways to beat Hayek's capitalist catallaxy. One is to out-calculate it. The other is to explode it: scarcity is replaced with plenitude, ending the need for either prices or planning. For Marxists, 'plenty' yields the transition from the 'lower' phase of communism, which still must grapple with problems of scarcity, to the higher phase of 'from each according to his abilities, to each according to his needs'. A popular metaphor for the technological conditions necessary for this latter moment is the Star Trek 'replicator', which automatically, and with a limitless energy, provides for human needs (Fraise, 2011). This essay is not going to adjudicate what level of needs satisfaction should be considered 'enough', or what combination of growth and redistribution is adequate to attain it: this surely would be *the* issue facing the collective planners of the future. It will, however, identify three cybernetic tendencies that point towards the 'higher' phase of communism: automation, copying and peer-to-peer production.

Automation has been the most central to the communist imagination. Its classic statement is the now-famous 'Fragment on Machines' in *Grundrisse*, where, looking at the industrial factory of his age, Marx (1973: 690-711) predicts capital's tendency to mechanize production will, by destroying the need for waged labour, blow up the entire system. The founder of cybernetics, Norbert Wiener (1950), saw its main consequence to be the computerized elimination of jobs. This digital 'end of work' thesis has been developed very bluntly by thinkers such as Andre Gorz (1985) and Jeremy Rifkin (1995). Over the late twentieth century, however, capital has notably avoided this scenario. Far from totally automating work, it has both sought out global reservoirs of cheap labour, and followed a 'march through the sectors' that pushes a moving front of labour commodification through agriculture, industry and services.

Since 2000, however, the automation debate has been renewed. Continuing reductions in computing costs, improvements in vision and touch technologies, the military investments of the 9/11 wars in drones and autonomous vehicles, and wage demands by workers in China, India and other sources of formerly cheap labour has spurred a 'new wave of robots... far more adept than those now commonly used by automakers and other heavy manufacturers', more flexible and easier to train, that are now replacing workers not just in manufacturing but in distribution, circulation and service processes such as warehousing, call centres and even elder care (Markoff, 2012: np). Erik Brynjolfsson and Andrew McAfee (2011: 9),

economists at the Massachusetts Institute of Technology, have sounded an alarm that the ‘pace and scale of this encroachment into human skills’ is now reaching a new level with ‘profound economic implications.’ These concerns are being echoed by mainstream economists (Krugman, 2012).

Within capital, automation threatens workers with unemployment or production speed-up. If, however, there were no dominant structural tendency for increases in productivity to lead to unemployment or greater output without reduction in labour time, automation could systematically yield to less time spent in formal workplaces. In a communist framework that protected access to the use value of goods and services, robotization creates the prospect of a passage from the realm of necessity to freedom. It reintroduces the goal – closed down both within the Stakhanovite Soviet experiment and in the wage-raising trades unionism of the West – of liberating time from work, with all this allows both in terms of human self-development and communal engagement.

Juliet Schor’s (1991) estimate, that if American workers had taken gains won from productivity increases since the 1950s, not in wages but in time off, they would by 2000 have been working a twenty hour week. It indicates the scale of possible change. Proposals for a ‘basic income’ have recently figured in left politics. There are certainly criticisms to be made of these insofar as they are advanced as a reformist strategy, with the risk of becoming merely a rationalized welfare provision supporting neoliberal precarity. But it would be hard to envision a meaningful communist future that did not institute such measures to acknowledge the reductions in socially necessary labour time made possible by advances in science and technology, destroying Hayek’s calculation problem by progressively subtracting from it the capitalist *ur*-commodity, labour power.

If robots undermine the centrality of the wage relation, the Internet presents a parallel possibility, priceless goods. Mainstream economists have long recognized the anomalous features of non-rivalrous informational goods, which can be endlessly copied at almost zero cost, all but instantaneously circulated, and shared without detracting from their use value. As intellectual and cultural production have become increasingly digitized, these tendencies to make the Internet ‘a place of plenty’ (Siefkes, 2012: np) have become increasingly problematic for the price system. Capital has struggled to maintain the commodity form in cyberspace, either by

attempts to enforce intellectual property, or by treating informational flows as advertising accelerators for other commodities. Nonetheless, the drift to software decommodification has proven ineradicable, and been intensified by the capacities to conduct this circulation outside of centrally controlled servers, through peer-to-peer networks. Piracy, which now accounts for the majority of digital music, games, film and other software distributed in Asia, Africa, Latin America and Eastern Europe (Karaganis et al., 2011) is the clandestine and criminalized manifestation of this tendency; and the free and open source software movement its organized expression.

The latter has been the focus of interest on the libertarian left since the inauguration of the Free Software Foundation (by Richard Stallman in 1984), which released code under a General Public License (GPL), guaranteeing users the freedom to repurpose, study, customize, redistribute, and change it. As Jacob Rigi (2012) observes, the so-called ‘copyleft’ clause in the GPL, which requires that any program using GPL code is itself issued under GPL, is a ‘dialectical negation’ of copyright, because it simultaneously preserves and abolishes property in software, formulating ‘an all-inclusive global property right’. This development was elaborated by Linus Torvalds’ organization in the early 1990s of the online voluntary collective cooperative method for open-source software production. As Rigi (2012) says, the combination of GPL license and Linux-style open source collective programming ‘represents the gist of the P2P [peer-to-peer] mode of production’; he sees in this an instantiation of Marx’s ‘higher communism’, acknowledging the collective nature of scientific knowledge, and rejecting any scarcity-based demand for ‘equivalence between contribution to social production and share of social product’.

Open source software has attained considerable practical success (Weber, 2004), while P2P production has developed in various directions, with its political inflection ranging from libertarian capitalism, to liberal views of the new ‘wealth of networks’ (Benkler, 2006) as supplementary to and compatible with markets, to specifically communist versions, such as the Oekonux project (Meretz, 2012), with the ecumenical Foundation for P2P Alternatives (Bauwens, 2012) working across the entire spectrum. However, even if one regards open source and P2P as a germinal of a new mode of production, difficulties in cultivating this seed have become apparent. One such difficulty is the relative ease with which capital has incorporated this seed as a contribution to downstream

commodification processes: indeed, the whole tendency of Web 2.0 could be said to be the containment of 'new' P2P production and circulation methods firmly within the shell of capitalist 'old' commodity forms. The other issue has been what Graham Seaman (2002) terms the 'washing machine problem' – the gulf between virtual and material production, cornucopian software and industrial production, which seems to restrict P2P practices, however progressive, to a small subset of total economic activity.

Over the last decade, however, this gap has been narrowed by the rapid development of forms of computer controlled micro-fabrication devices: additive 3D printing is the most famous, but there are a variety of others, including subtractive micro-mills and other miniaturized and digitized engineering devices that put industrial capacities within the grasp of 'hack labs', households and small communities. These have provided the basis for an emerging 'maker' movement, which links these digital manufacturing units to the networked circulation of design, suggesting to some that the 'P2P mode of production can be extended to most branches of material production' (Rigi, 2012). These technologies are also associated with the proliferation of robots and small-scale automata; indeed, the holy grail of the 'maker' movement is the self-replicating replicator, the perfect von Neumann machine. Extrapolation from these tendencies places the 'fabbers' and 'replicators' of sci-fi imagination much closer to realization than seemed possible even quite recently.

Even the most market-oriented of 'makers' don't hesitate to point out that such developments appear to return the means of production back to popular hands (Doctorow, 2009; Anderson, 2012). But as the example of open source suggests, there is no intrinsic communizing logic in the maker movement, which could as easily result in a proliferation of micro-entrepreneurship as in a micro-industrial commons. In his critique of liberal P2P enthusiasts, Tony Smith observes that full development of commons-based peer production is 'incompatible with the property and production relations of capital' (2012: 178); as long as these relations persist those involved in volunteer peer production will continue to be explicated in the wage work on which they depend, their creations will be appropriated by capital as 'free gifts', and the wider development of such projects starved of resources.

However, in a world where investments were determined without systemically favouring the commodification of knowledge, and

without the possibility of combining common goods with proprietary knowledge, the ‘immense emancipatory promise’ of peer-to-peer production could be fulfilled (Smith, 2012: 179). As Smith remarks, capital contains within itself a tendency to develop technologies ‘that allow certain types of use-values to be distributed in unlimited numbers to individuals at marginal costs approaching zero’ (2006, 341): ‘In any form of socialism worthy of the name, the costs of the infrastructure and social labour required to produce products such as these would be socialized and the products would be directly distributed as free public goods to any and all who wanted them’. Although Smith is sceptical that this tendency could, ‘in the foreseeable future’ become prevalent throughout the economy, he concedes that if it did, the Soviet experience, ‘plagued by scarcity issues’, would be ‘completely irrelevant to the socialist project’ (2006: 241-2).

Anthropocene Knowledge Infrastructures

An abundant communist society of high automation, free software, and in-home replicators might, however, as Fraise (2011) suggests, need planning more than ever – not to overcome scarcity but to address the problems of plenty, which perversely today threaten shortages of the very conditions for life itself. Global climate change and a host of interlinked ecological problems challenge all the positions we have discussed to this point. Bio-crisis brings planning back on stage, or indeed calculation – but calculation according to metrics measuring limits, thresholds and gradients of the survival of species, human and otherwise. Discussing the imperatives for such ecosocialist planning, Michael Lowy (2009) points out how this would require a far more comprehensive social steering than mere ‘workers control’, or even the negotiated reconciliation of worker and consumer interests suggested by schemes such as Parecon. Rather, it implies a far-reaching remaking of the economic systems, including the discontinuation of certain industries, such as industrial fishing and destructive logging, the reshaping of transportation methods, ‘a revolution in the energy-system’ and the drive for a ‘solar communism’ (Lowy, 2009: np).

Such transformations would involve cybernetics along two major axes, as both contributors to the current bio-crisis and as potential means for its resolution. On the first of these axes, the ecological costs of nominally ‘clean’ digital technologies have become increasing apparent: the electrical energy requirements of cloud

computing data-centres; the demands of chip manufacture for fresh water and minerals, the latter from large scale extractive enterprises; and the resulting prodigious quantities of toxic e-waste. Making every home a fab-lab mini-factory will only speed-up planetary heat death. Contrary to all idealistic notions of virtual worlds, cybernetics are themselves inextricably part of the very industrial system whose operations have to be placed under scrutiny in a new system of metabolic regulation that aims for both red and green plenty.

However, cybernetic systems are also a potential part of any resolution of the bio-crisis – or, indeed, of even fully recognizing it. Paul Edwards's (2010) *A Vast Machine* analyzes the global system of climatological measurement and projection – the apparatus of weather stations, satellites, sensors, digitally archived records and massive computer simulations, which, like the Internet itself, originated in US Cold War planning – on which comprehension of global warming rests. This infrastructure generates information so vast in quantity and from data platforms so diverse in quality and form that it can be understood only on the basis of computer analysis. Knowledge about climate change is dependent on computer models: simulations of weather and climate; reanalysis models, which recreate climate history from historical data; and data models, combining and adjusting measurements from multiple sources.

By revealing the contingency of conditions for species survival, and the possibility for their anthropogenic change, such 'knowledge infrastructures' of people, artifacts, and institutions (Edwards, 2010: 17) – not just for climate measurement, but also for the monitoring of ocean acidification, deforestation, species loss, fresh water availability – reveal the blind spot of Hayek's catallaxy in which the very grounds for human existence figure as an arbitrary 'externality'. So-called 'green capital' attempts to subordinate such bio-data to price signals. It is easy to point to the fallacy of pricing non-linear and catastrophic events: what is the proper tag for the last tiger, or the carbon emission that triggers uncontrollable methane release? But bio-data and bio-simulations also now have to be included in any concept of communist collective planning. Insofar as that project aims at a realm of freedom that escapes the necessity of toil, the common goods it creates will have to be generated with cleaner energy, and the free knowledge it circulates have metabolic regulation as a priority. Issues of the proper remuneration of labor time require integration into ecological calculations. No bio-deal that does not recognize the aspirations of millions of planetary

proletarians to escape inequality and immiseration will succeed, yet labour metrics themselves need to be rethought as part of a broader calculation of the energy expenditures compatible with collective survival.

Conclusion: For K-ommunism?

Marx (1964), in his famous, or notorious, comparison of the ‘worst of architects’ and the ‘best of bees’, saw the former distinguished by an ability to ‘erect in imagination’ the structure he will create. Today, with our improved knowledge of bee communities, this distinction reeks of anthropocentrism. Yet even alongside bees, beavers and other primates, humans manifest a hypertrophic planning capacity. The Soviet experience, of which the cyberneticians featured in *Red Plenty* were part, was only a narrow, historically specific and tragic instantiation of this capability, whose authoritarianism occludes the most crucial point in the Marxist concept of planning, namely that it is intended as a means of communal election of which, of a variety of trajectories, collective human ‘species-becoming’ might follow (Dyer-Witthford, 2004).

A new cybernetic communism, itself one of these options, would, we have seen, involve some of the following elements: use of the most advanced super-computing to algorithmically calculate labour time and resource requirements, at global, regional and local levels, of multiple possible paths of human development; selection from these paths by layered democratic discussion conducted across assemblies that include socialized digital networks and swarms of software agents; light-speed updating and constant revision of the selected plans by streams of big data from production and consumption sources; the passage of increasing numbers of goods and services into the realm of the free or of direct production as use values once automation, copy-left, peer-to-peer commons and other forms of micro-replication take hold; the informing of the entire process by parameters set from the simulations, sensors and satellite systems measuring and monitoring the species metabolic interchange with the planetary environment.

This would indeed be a communism heir to Lenin’s ‘soviets plus electricity’, with its roots in red futurism, constructivism, tektology and cybernetics, together with the left-science fiction imaginaries of authors such as Iain M. Banks, Ken McLeod and Chris Moriarty. It would be a social matrix encouraging increasingly sophisticated

forms of artificial intelligence as allies of human emancipation. For those who fear the march of the machine it holds only this comfort: whatever singularities might spring from its networks would not be those of entities initially programmed for unconstrained profit expansion and the military defense of property, but rather for human welfare and ecological protection. Such a communism is consonant with a left accelerationist politic that, in place of anarcho-primitivisms, defensive localism and Fordist nostalgia, 'pushes towards a future that is more modern, an alternative modernity that neoliberalism is inherently unable to generate' (Williams & Srnicek, 2013). If it needs a name, one can take the K-prefix with which some designate 'Kybernetic' endeavors, and call it 'K-ommunism'. The possible space for such a communism now exists only between the converging lines of civilizational collapse and capitalist consolidation. In this narrowing corridor, it would arise not out of any given, teleological logic, but piece by piece from countless societal breakdowns and conflicts; a post-capitalist mode of production emerging in a context of massive mid-twenty-first century crisis, assembling itself from a hundred years of non-linear computerized communist history to create the platforms of a future red plenty.

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INFORMATION AS POLITICS

Tim Jordan

The Introduction

Information has become a politics, not just a political issue. Anonymous and their Ops, Twitter in Iran, Facebook in the Arab Spring, the human flesh search in China; these are some examples of the way information search, use and retrieval is embedded in political and popular movements. The question being explored in work that looks at the relationship between digitisation and political change involves the place of information in twenty-first century politics (Postigo, 2012; Gerbaudo, 2012; Coleman, 2012; Hands 2010). This work implies the issue of whether it has become important to say something more general about information as a politics. Is there an information revolution that is as needed and is as fundamentally socially changing as a workers' revolution or a women's revolution? In the context of such an information politics, the platform is a key component of the information landscape denoting something about their architectures, whether defining computer structures, operating systems, cloud infrastructures and so on. To understand platforms we will need to understand the politics of information (Gillespie, 2010).

While the work on digitisation and politics has emerged, it is also striking that there has been a significant resurgence of interest in and claims for the legitimacy of Marxist theories of society. Many of these interventions also locate new Marxist theory in relation to the rise of new information dependant socio-technological structures. The work of autonomist and post-autonomist thinkers in relation to precarity and technology, to immaterial labour and to the importance of networks is striking. In addition, the financial crisis of the West has given increased credence and heart to Marxist theorists (Lazzaratto & Jordan, 2012; Harvey, 2010; Boltanski & Chiapello, 2007). Complex Marxist theoretical debates have regained purpose and drive, after a time that was perceived to have at least diminished

if not dismissed Marx's thought (Badiou, 2010, Douzinas & Žižek, 2010). At this point, early in the twenty-first century, it has become important, if we are to understand the politics of platforms, that the re-rise of a complex and varied Marxist political platform be questioned for the way it has framed understanding of the politics of information, networked or communicative societies (Gillespie, 2010). Fuchs and Dyer-Witheford review this work across the range of Marxist concepts and how it has contributed to understandings developed in Internet Studies, demonstrating both the extent and power of these interventions. In addition, while Fuchs and Dyer-Witheford connect the recent financial crisis to this resurgence they also make it clear that Marxism was important to debates about the Internet prior to this crisis (Fuchs & Dyer-Witheford, 2012).

I wish to explore the consequence of this coincidence of Marxist and information platforms. It seems important to recognise that understanding the politics of information and of platforms now requires understanding the Marxist framing of informational landscapes. To manage this extensive debate, I will focus on two interventions each of which may be seen as representative of a way of reinvigorating Marxism via informational contexts. The two paths reassert the importance of a Marxist vision that is faithful to Marx in new networked contexts. The second path takes in other thought and is willing to extensively rethink its roots. For the former, Jodi Dean's book *The Communist Horizon* (2012) is a clear enunciation of the importance of communism in the context of communicative capitalism. For the latter, Hardt and Negri's *Multitude* (2005) takes forward the tradition of Marxist theory both into a definition of new revolutionary subjectivity and into a close association with platforms and information through its focus on networks and immateriality.

Such a juxtaposition of Dean and Hardt and Negri is important for understanding platforms because, I claim, the question of a radical or transformative politics of information, which must frame the question of what platforms mean in the current socio-technological juncture, cannot now be separated from the question of the meaning of Marxism for radical thought and organisation. The intent here is to question what kind of understandings of platforms in information societies we are given by this resurgence of Marxism and communism. Following this I will suggest there is a need for a more multiple view of political antagonisms which does not take Marxism as its overarching framework but that also does not dissolve into a liberalism that equates social differences with radicalism. From an information politics that is open to but not subsumed by the

resurgence of Marx it will be possible to start to articulate more clearly the politics of platforms.

The Communist Limited Horizon

Jodi Dean's work has reasserted the critical and liberatory potential of Marxist thinking in relation to twenty first century society, which she terms 'communicative capitalism'. She has particularly traced the recuperative qualities of communicative capitalism, in which what are often taken to be liberatory potentials in networked technologies turn out to fuel further profiting for communicative capitalists (Dean, 2010). In 2012, Dean turned to a defence of communism and its Marxist roots in the context of both communicative capitalism and the protests, particularly Occupy Wall Street, of the second wave alter-globalisation movement. Dean here is critical not only of capitalists and their exploitations but also of the failure of the Left to regenerate itself and to grasp the radical and necessary solution she sees in communism.

The dominance of capitalism, the capitalist *system*, is material. Rather than entrapping us in a paranoid fantasy, an analysis that treats capitalism as a global system of appropriation, exploitation, and circulation that enriches the few as it dispossesses the many *and* that has to expend an enormous amount of energy in doing so can anger, incite, and galvanize. (Dean, 2012: 5-6)

The emphasis on system is important here as Dean's articulation of the communist horizon, that she argues the Left has lost, is exactly the articulation of a particular systemic account of a political antagonism. Marxism is here the theory of what needs to be changed in society and is rooted in the theory of surplus-value as the definition of exploitation. This can be seen if we turn to Dean's analysis of issues of the commons and some of the most familiar platforms that information societies offer in social media such as Facebook and Twitter. In this way, the argument is located closely to issues of platforms and how the kind of theoretical frame Dean develops affects understanding them.

Dean argues that capitalism has subsumed communication in such a way that in networked societies communication is entirely within capitalist structures (Dean, 2012: 128). She extends this analysis to

how some of our most personal and intimate relations have been seized on by capitalism through its use of information technology enabled platforms that commodify such relations. Social networks are the most obvious subjects for analysis here but Dean's point applies widely across communication dependant on new information and Internet technologies:

Communicative capitalism seizes, privatizes, and attempts to monetize the social substance. It doesn't depend on the commodity-thing. It directly exploits the social relation at the heart of value. Social relations don't have to take the fantastic form of the commodity to generate value for capitalism. Via networked, personalized communication and information technologies, capitalism has found a more straightforward way to appropriate value. (Dean, 2012: 129)

Here we see how Dean's analysis of new information technologies is connected closely to a revival of classical Marxist analysis, such as where value can be found. This allows Dean to identify the specific value form of communicative capitalism in the way that the common, that is 'the potential of creativity, thought, knowledge, and communication as themselves always plural, open and productive' (Dean, 2012: 134-5), is always in surplus and that this requires a new form of expropriation of value. Alongside old value forms for expropriation from labour, Dean argues this is a new form of exploitation that thrives on 'communicative capitalism's injunction to connect, participate, and share' (Dean, 2012: 134). Dean builds on a range of Marxist work, developing in conversation with Žižek, Pasquinelli, Marazzi and others in a way that itself suggests the resurgence of Marxist theory in the context of understanding the effects of digitisation and the rise of Internet technologies.

A difficulty Dean acknowledges and then faces is reconciling this systematic vision with the diverse and multiple forms of action that seem to have emerged to contest the nature of networked societies, not all of which are Marxist or communist. Gerbaudo's and Castells' surveys of recent activism and previous analyses of the first wave of alter-globalisation protests in the 1990s all suggest this to be the case. Not that class-based or Marxist-inspired movements are absent but that Marxism did not provide a systematic account that activists found persuasive and used or which seemed able to conceptualise the demands and nature of many movements (Gerbaudo, 2012;

Hands, 2011; Castells 2012). However, such academic and activist work is also a target of Dean's critique as a considerable amount of her analysis is directed to the failures of the Left, both in analysis and action, to see the importance of the critique she is committed to. Dean's point is that given the analysis of communicative capitalism, such as the form of exploitation outlined above, then only a communist movement rooted in Marxism can really critique and change society (2012: 154-6).

It is hard to avoid the implication that if communicative capitalism is a systematic and integrative form of exploitation of the kind Dean defines then only a movement that addresses this can change society in fundamental ways. As Dean notes, all else can simply be recuperated to continue to feed the system (144-5). Her critique of Occupy follows along these thoughts in its questioning of Occupy's failure to integrate political differences within a collective cause, the collective cause being conceived of as communist, and her argument that therefore Occupy never collects itself into a powerful movement that might revolutionise society. She points out that while occupation can be a tactical method for drawing together all the different parts of society that have political grievances, it ignores 'the antagonism that connects the movement to its setting' (220). Here we see Dean critiquing Occupy for its failure to transform a politics validated by her own framework rather than evaluating it according to its own multiple, complex and at times contradictory terms. Does Dean consider platforms in a similar way? While she at times acknowledges other kinds of exploitations, such as sexism, the drive of her analysis is to connect the nature of communicative capitalism as a systemic form of exploitation to communism as the only movement that can fundamentally question the core dynamic of this system (203-4).

Such an approach raises the spectre of the 1970s and 1980s debates within the radical Left by which many other forms of exploitation asserted the legitimacy of their claims in their own right and not as integrated within a systemic Marxism. The struggle of second wave feminism, as recounted by many such feminists, was all too often initially against a Marxist understanding that reduced sexism to its role within a class-based theory; for example as the means by which labour is reproduced (Rowbotham, Wainwright & Segal, 1979). This story is all too common from the history of what came to be called 'new social movements' and which was repeated in the conflicts within many of the Social Forums that emerged in the first wave alter globalisation movement (Lent, 2001; Fisher & Ponniah,

2003). It also raises the issue of whether Dean's analysis will have similar problems understanding information politics. While Dean is aware of this issue, it is hard to understand the systemic and integrative nature of her analysis and her very strong attacks on the Left for failing to collectivise around a communist horizon, as not reproducing this problem. This is also a long standing argument within the radical left, followed through in activist contexts in arguments over where actions should be focused and in theoretical debates, of which Laclau and Mouffe's intervention is probably the best known (1995: 190-2).

This is not just a historical point or one for Left organising but is noted here primarily for its effects on understanding the politics of platforms. If Dean's arguments are accepted as defining the major framework for understanding and opposing exploitation then we should analyse the politics of platforms in the context of networked societies from within a Marxist framework. However, and in an analogy to the complaint of many in new social movements, it is important to ask what particular political configuration or antagonism might be specific to information platforms? While the Marxist critique is important and has been rightly influential, it can be conceived of as one theoretical frame from within which platforms will be viewed. The risk of Dean's approach is that she finds a Marxist account of information politics because she already knows this account will understand the system such politics are part of and that the only key components of an information politics are the ones that Marxism can identify. In short, any aspects of an information politics that are not easily understood within Marxism will either be invisible or their importance diminished. Just as feminists can object that understanding reproduction rights primarily as an issue of reproduction of labour power both diminishes the importance of such rights to ending sexism, and misunderstands key dimensions of them (even while acknowledging the connection to labour), we should be concerned that an account like Dean's of communicative capitalism may only address part of the picture. Until information politics are also analysed in their own terms we may be missing key dynamics, simply because Marxist accounts already-always know that the key issues are in value, labour, surplus-value and so on. Where Dean issues a call for unity and a radical response in the face of an economic crisis - for example when she asserts that 'The Left should be committed to the collective power of the people' (2012: 60) - I would be one who could not avoid asking the question 'which people?'

We see in Dean both the close integration of a Marxist account of society, along with its roots in the re-rise of Marxist theory in work like Žižek's and Marazzi's, with the nature of networked or information societies. The new nature of exploitation as the 'injunction to connect, participate, and share' (Dean, 2012: 134) can hardly be conceived of prior to the rise of the Internet and of digitisation while at the same time we see this injunction derived from a theory which does not put an understanding of information politics as its primary focus. This is a problematic position because it fails to offer a way of understanding a political antagonism for its own dynamics if those dynamics may not be class-based—whether that antagonism is patriarchal or informational. If platforms are embedded in information politics then understanding platforms in their own terms also means understanding information politics in its own terms. This distinction between examining a politics within its own frame or seeing it through the lens of Marxism can now be further developed by examining a second trend within the re-rise of Marxist theory that pursues a more differential and multiple, indeed multitudinous, account of the nature of politics in networked worlds. Hardt and Negri's account of multitude is not just a second form of reinvigorated Marxism in information societies but is also one that pursues a very different, almost opposite, intellectual trajectory to Dean's by focusing on differentiation and singularity instead of the unity of communism.

The Multitude

It may seem odd to some to locate Hardt and Negri's series of interventions into the state of modern politics by calling it Marxist because, however strong Negri's links are to autonomist thinking, an important part of their intervention is to connect autonomist insights to a range of thinkers, such as Foucault, Deleuze and latterly Haraway, whose relationship to Marxism is complex, thereby generating a view of modern politics that integrates but is not necessarily subsumed by a Marxist frame. There should however be no doubt about the strength of the Marxist roots of this work (Wright, 2002). What is striking in the context of this article's arguments is that Hardt and Negri take a strong Marxist base and develop it extensively as an analysis of networks and network society. For the present argument, this is useful because it provides a contrast to Dean's return to communism and Marxism. Again, the question is, what will developing a Marxist framework, however

complex and open to other thought, mean when it is focused on information and platform politics?

That Hardt and Negri have in mind the nature of a network or informational kind of politics can be seen in their theory of networks as a constitutive feature of Empire's mechanisms of control and conflict and most importantly, for this discussion, in their conception of the liberation movement of the multitude as itself networked (Hardt & Negri, 2005: xiii-xiv). The multitude is densely defined by Hardt and Negri in this way:

The multitude is composed of a set of singularities—and by singularity here we mean a social subject whose difference cannot be reduced to a sameness, a difference that remains different. ... The multitude is an internally different, multiple social subject whose constitution and action is based not on identity or unity (or, much less, indifference) but on what it has in common. (Hardt & Negri, 2005: 99-100)

The singularity is a collective subject with something in common within its subjectivity, which cannot be reduced to sameness with other such subjects, and the multitude is the political struggle of these singularities. The complexity of such a position (complex enough to challenge its coherence) is that a singularity cannot have its difference reduced to sameness but, at the same time, the multitude cannot be constituted out of singularities unless singularities have something in common in the sense of being part of the multitude. Hardt and Negri define singularity little more than I have already quoted and they extend it into an understanding of exploitation, locating the multitude's commonality as all the different, singular relationships to exploitation (Virno, 2004).

Hardt and Negri begin from Marx's definition of exploitation in the extraction of surplus value but argue that under Empire the fundamental form of labour has shifted to immaterial labour in which the labour might be material but the products are immaterial; code, knowledge, affect and care. Labour in this latter sense produces collective goods that cannot be measured in terms of time; this means the old Marxist version of surplus value cannot function for immaterial labour. However, such labour produces common or collective goods which all can use, such as knowledge. Exploitation shifts, for Hardt and Negri, in this context to 'the expropriation of

the commons.' (2005: 150). Such expropriations can be seen in Google's extraction of profit through advertisements that are built on top of the common created by the links of the World Wide Web that Google mines to create search. Or it can be seen in the attempts to expropriate through patenting things that are common to people in the information that constitutes certain forms of DNA. This also means that though derived from revising Marx's concept of exploitation, the multitude covers a wide range of forms of exploitation, each singularity has its own relationship to the expropriation of its singular commons (Hardt & Negri, 2005: 150-7).

Exploitation is, then, tied to the kinds of network societies that produce informational platforms because '[s]ingularities interact and communicate socially on the basis of the common, and their social communication in turn produces the common' (Hardt & Negri, 2005: 198). This centrality of communication marks Hardt and Negri's theory as one, as does their theory of immaterial labour, that makes little sense outside of late twentieth century shifts in information processing and information technologies. This extends to the characteristic form of organisation they ascribe to the multitude that activists of the 1990s christened 'dis-organisation' and which has strong affinities to networked forms of social relations (2005: 217). Just as was argued in relation to Dean, it is worth questioning whether this frames information politics for-itself or whether information and platform politics are only framed where they interact with the multitude or are part of the multitude.

Exploitation for Hardt and Negri now resides in the idea that each singularity forms an internally differentiated collective that has a relationship to the expropriation of the commons. This common relationship is based on the claim that each singularity forms itself through communication which makes communication an essential part of the common. This is a dizzying back and forward between the moments when no difference can be reduced, though each difference also generates the same relationship to a specific instantiation of expropriation of common goods. Dean, from her rather sharper definition of exploitation, criticises Hardt and Negri's work here because this dizzying back and forth obscures social antagonism:

The multitude is a generative and creative force,
the productive power that capitalism depends on,
mobilizes, and tries to control. Yet the concept

includes too much—everyone in fact – and the cost of this inclusion is antagonism. Rather than labor against capital, haves against have-nots, the 99 per cent against the 1 per cent, we have a multitude of singularities combining and recombining in mobile, fluid, communicative, and affective networks. (Dean, 2012: 78)

The problem Dean points to is that the concept of multitude has difficulty expressing division (2012: 79). We might temper some of Dean's account by remembering Hardt and Negri's insistence on examining the poor as part of the topography of expropriation. However, her point is also surely accurate that the idea of producing something in common, which is then expropriated, has none of the specificity of Marxist ideas of exploitation. For example, a more specific idea might be that of Pasquinelli's who, among others, argues that this relationship has become one of rent rather than expropriation of surplus-value (as will be discussed in more detail later) (Pasquinelli, 2008: 92-4). If one issue is, as I have also already noted, the coherence of this account in which there is the complexity of singularities that are claimed to be irreconcilable and internally differentiated but which also construct the one of the multitude while reconciling their internal differences such that a singularity can be asserted in the first place, then a second issue is the one Dean identifies: a lack of political focus. Hardt and Negri at this point appear close to being the inverse of Dean. They radically refuse any conceptualisation that would frame other struggle from the viewpoint of one struggle, but in doing so they lose the ability to focus on antagonism in the face of multiple singularities.

Again we can see a key theoretical inheritance from Marx that only makes sense amid the kinds of informational politics that have become central to late twentieth and early twenty-first century societies. The analysis of platforms and informational politics is closely bound up with the re-conceptualisation of Marx in Hardt and Negri.

Multi-Polar Politics

Twin, if nearly opposite, problems emerge from looking at Dean and at Hardt and Negri for an understanding of the politics of informational platforms. On the one hand, Dean's work recuperates and, in principle, obscures things about platforms that may not fit

clearly within a Marxist paradigm. On the other hand, Hardt and Negri's allegiance to multitude dissipates a political focus into many different, often difficult to conceptualise, struggles meaning informational platforms will only be understandable in local contexts in relation to specific singularities. If Dean is too integrative to allow a view of informational politics in its own right, then surely Hardt and Negri are too vague to achieve the power Dean draws from identifying a political antagonism. Two questions come to the fore now. Is there a way of framing radical, revolutionary politics that steps between reduction to a struggle or dissipation into many struggles? If this is possible, would it allow platforms to be framed as part of a specific politics of information?

The power and insight of Dean's analysis is that there is a form of exploitation that we can identify as a structural component of capitalist societies. This defines as a material system the production of inequality, poverty and so on and therefore also makes the case to change this system. The power and insight of Hardt and Negri's work is the recognition that there are different kinds of radical struggles and that these cannot be understood from the viewpoint of a different struggle but must be understood for the singularity of their own embedded, materially enacted exploitation. The question, then, is how to put these two seemingly contradictory viewpoints into one theory.

Such a path is related, but different in some crucial ways, to the one Laclau and Mouffe have pursued. The opposition Laclau and Mouffe work on is not quite the same as the one I have drawn between Dean and Hardt and Negri's work, as Laclau in particular has worked on the opposition between particularism and universalism. Yet it is clear they hold to some of the critique of Marxism as overly-integrative and move somewhat toward Hardt and Negri in seeing a multiple horizon for the Left (Laclau & Mouffe, 1985: 190-3). At this point two reactions emerge within their work as they try to articulate the positive basis for radical leftism, as opposed to their criticism of the Left.

One reaction is the attempt by Laclau to hold on to radicalism in his argument that each difference may at some point take on universality. Each specific struggle may take on the cloak of universalism, for example by relying on universal human rights, in order to articulate and pursue their liberation (Laclau, 1995). Such a view implies and leads to the second, and much better known, argument that this means the key struggle is for a radical democracy

because radical democracy ensures the openness of the political field in which liberatory movements can emerge to claim a universality: 'Nowadays, the crucial issue is how to establish a new political frontier capable of giving a real impulse to democracy. I believe that this requires redefining the left as a horizon where the many different struggles against subordination could find a space of inscription (Mouffe, 1993: 6).

Such a view leads to radical democracy as the maintenance of the possibility of a particularism translating to a universal. However, this transforms the Left from movements engaged with exploitation into a commitment to a radicalised democracy that can allow different struggles to co-exist. The shift does not do away with the idea of exploitation but it shifts the focus to maintaining and extending radical democracy. Laclau and Mouffe drift from the radicalism of relations of exploitation to end up focusing on the way the field of radicalism is maintained so that singularities or particularities, when rendered as collective struggles, can surface to claim a universality that underpins radical change. The focus becomes not the radical change but the maintenance of such change's possibility and focus on exploitation is lost.

Even while accepting Laclau and Mouffe's, and implicitly Hardt and Negri's, point that a multi-pole politics has to pay attention to the field within which it exists, the still missing component compared to Dean is that of the relationship that constitutes an antagonism. Drawing on the model of exploitation, I suggest that what constitutes a political antagonism based on exploitation is a relationship between groups of actor/actants in which this relationship constitutes a systematic form in which one group benefits by extracting something from another group and that this 'other group' is automatically impoverished in some way by this extraction. This extraction is the definition of what constitutes a political antagonism, not that it is the only relationship that may exist between collectives but that it is the kind of relationship that matters in defining exploitation. Not all social relations need be integrated or subsumed within a theory of exploitation, only those social relations that constitute and maintain forms of extraction that enrich some by impoverishing others are strictly speaking relevant. These relations will be seen in specific instances of actions that will, in their form, give shape to a general structure of exploitation that defines a political antagonism.

Take the now outdated US government policy of 'don't ask, don't tell' in relation to gay and lesbian people serving in the US military. It created a hetero-normativity by making homosexuality invisible. It was a daily enacted and strongly enforced (by removing those who did not conform) extraction of visibility for one group by enforcing invisibility on another. Such relations of visibility/invisibility can be seen as one strand of the more general political antagonism that exploits gay, lesbian, bisexual and transgender people (Dow, 2001; Britton & Williams, 1995). Such an axis of visibility/invisibility is not the whole story of this political antagonism but it is an example of how daily acts of exploitation relate to a general form of exploitation. It also demonstrates how across both its general form and its specific moments exploitation is made when one group systematically benefits by depriving another group.

Such a set of relations, I suggest, also clearly holds for class theory as a theory of exploitation. There are the daily enacted struggles over working time, productivity and so on that are connected to the more general relation. This more general relation identifies how impoverishment comes by alienating labour and extracting through this value for one group that originally rested with others, whether in the form of surplus-value or, as some have suggested in current times, in the form of rent (Dean, 2012: 132-3; Pasquinelli, 2008: 91-8). Relations of class exploitation form a political antagonism that retains its powerful identification of extraction and its concomitant critique and call for change. In a multi-pole politics such an analysis can also be understood as one form of exploitation among others.

The point is made, I hope, that in principle a radical conception of exploitation can remain within a differentiated and multi-polar radical politics. One last example is relevant to connect the idea of multi-polar politics to the final argument of this paper in which I will claim that information should now be conceived of as a political antagonism and accordingly as one pole within twenty-first century radical, multi-polar politics. Consider Facebook; as Pasquinelli argues well, this is not really a relationship of surplus value but is instead a form of rent. But rent of what? (Pasquinelli, 2008: 92-4). Facebook, and other social media, famously produce social relations of different sorts. They produce connections expressed in the rather odd technological moments that are named for their sociality: friend, like, poke (Papacharissi, 2011). Surely, this is an extractive relationship legally enforced through 'terms and conditions' and securely enforced through Facebook corporation's ability to ban, remove and exclude users. It is an extractive relationship in which

sociality is taken by those who own the architecture and attempt to turn it into profit through advertising. Surely in the critical work on social media that builds this kind of an analysis we see some of the first components of a theory of information as a political antagonism. In the final section I will outline elements of such a theory of information politics.

Information as a Political Antagonism

To complete the argument, I will outline how underlying dynamics of exploitation in information environments might be theorised. I will first explain how dynamics can be understood in terms of forces and then outline three dynamics of recursion, devices, and networks and protocols. This will sketch out a theory of informational exploitation that, at the very least, demonstrates in-principle the viability of a theory of information as a political antagonism.¹

Forces will be understood as the characteristic kinds of conflicts and dynamics of a political antagonism. Forces in this sense define in the abstract the nature of a political antagonism by theorising the kinds of inter-relations and the nature of entities being inter-related that construct a relationship of exploitation. This draws on Deleuze's interpretation of Nietzsche in which forces are those relations in which dominations emerge. Tracing forces should offer insights into the nature of the political antagonism; that is, such a tracing should map out some of the abstract relations that constitute a relationship of exploitation. Further, Deleuze argues for the importance of understanding Nietzsche as offering a general semiology in which all kinds of phenomena—things, organisms, societies, cultures—are reflections of states of forces. 'We can ask, for any given thing, what state of exterior and interior forces it presupposes. Nietzsche was responsible for creating a whole typology to distinguish active, acted and reactive forces and to analyse their combinations' (Deleuze, 1983: x). Deleuze argues for a Nietzsche that sees every body, and not just a physical human body, as constituted by a 'plurality of irreducible forces' in which some forces are dominant and others dominated. Without extending theoretically here in a way that would require too much space, I will take this idea of forces and adjust it by assuming such forces attain repeated patterns that we can diagnose. Those repeated patterns are what I will call the dynamics that make up a political antagonism, and I will suggest three as a starting point for a politics of information: recursion, devices, and network and protocols.

Recursion refers to the use of a process within itself, this is so characteristic of software and computing that recursion is one of the foundational ideas of computing science, as seen for example in the Turing-Church thesis. In this context, we might think of the Universal Turing Machine, a machine that can mimic and operate as any other machine. Other machines recur within the Universal Turing Machine, much as a movie player or a music player may recur within a computer (Petzold, 2008; Davis, 2000). Recursions occur almost ubiquitously and at many levels of information-dependant environments. They are also not a version of the return of the same, but each time something recurs it in some way builds and offers a new difference within an informational environment.

This means that the addition of a difference through recursion may be harvested by whoever controls or oversees the particular environment in which a recursion occurs. For example, if we understand the addition of personal information on social media as a recursion, in the sense that social media is in part made up of this information so the addition adds the 'itself' of identity to the existing identity the social media is tracking, then we can see that recursion in the moment of differentiation opens up a 'something' that is additional and different but which will fall into the lap of whoever controls that particular environment. If this opens up the spectre, as outlined above, of environments that sell these identities back to us in the form of advertising, they also open up more radical informational responses in code that is protected by copyleft-like licenses that create an informational environment built around distribution (Coleman, 2012: 185-200). Harvesting in and for a commons is possible, as the platform of the World Wide Web and the World Wide Web Consortium show, though we are more familiar with being harvested by a corporation. Recursion is a dynamic of extraction of differences from those who produce them.

Recursion has a second effect in that it produces exponential increases in information flows because forms of recursion are used again within themselves. This is most obvious with software code that can be reused or plugged in and this effect covers such extensive recursive systems as the Internet itself, which has been deeply embedded within other information systems. This is a partial explanation for the phenomenon of information richness or even information overload and glut that is widely discussed (Jordan, 1999: 117-28). Exponential increases in information can threaten to overwhelm anyone in an information environment as the number of

posts, the need to update and so on increases beyond capacities to respond. Actors and actants do not always scale.

Devices emerge at this point as a term for those things, which may be hardware, software, firmware or some other combination, that we place in-between ourselves and our information flows to try and manage them. Who would be without a spam filter for their email? But also, who has not lost an email they wanted to a spam filter that incorrectly identified that email? Such devices as spam filters interpose themselves to control excess information but also, in their recursions, can produce further information and potentially further need for devices. And so we end up training our spam filters so that we are managing that device properly but we are also recursing it by adding more information to it. Ultimately, this can lead to spirals in which devices responding to information overload both deal with one form while producing a new form of overload, leading to further devices and so on.

This process embeds devices within each of our informational environments, leaving us dependant on these devices that then disappear, leaving their particular politics and cultures difficult to see and impossible to avoid relying on. We might in this context think of packet inspection on the Internet, particularly in the context of net neutrality debates. Packet inspection can be configured to allow some types of information packets flowing over the Internet to be prioritised over other packets. In this sense, it constitutes a moment when devices that construct the Internet and on which we have no choice but to rely, extract an advantage of speed for some packets by taking it from other packets. The device that creates deep packet inspection is hidden within internet technologies that the vast majority of users will not only not see but may never be aware of, yet it also constitutes a relationship of exploitation based on expropriation of speed. Devices extract obedience to their hidden mores and politics, as they become ever more buried within infrastructures.

Finally, there is considerable evidence now of networks as a key dis-organisational form in informational environments – by looking at anything from technological architectures to social media – but networks are all too often discussed without attention to the protocols that define what or who is connecting and how they connect. Galloway's assertion of protocols as a new form of control may have some difficulties of detail but it is surely correct in its most important, larger claim that protocols are forms of control in the

kind of decentralised environments of which networks are a key example (Galloway, 2004). For every network there is an accompanying protocol that defines who can connect and how they can connect to that network. The over-emphasis on flat, non-hierarchical network connections to the exclusion in many cases, such as Castells (2012), of consideration of the protocols that are embedded in each such network, is a major difficulty in grasping the politics of networks.

The key here is to recognise the contradictory forms networks and protocols seem to have even though they are essential to each other. Where protocols tend toward clear rules and often simple and strongly enforced hierarchies, networks tend toward ubiquitous connections that undermine pyramidal hierarchies. In this sense, protocols and hierarchies often contradict while remaining essential to each other. For example, access to a Facebook social network automatically means acceptance of surveillance and advertising; or consider the way in which decentralised packet switching goes with a hierarchical domain name system. Exploitation here resides in the almost absolute, black and white, demand of the protocol that states that you may play on this network but only if you connect in a specific way and continue to connect in that way. The failure to obey a protocol leads to disconnection from the network.

Recursions, devices and protocols define a number of ways in which the production of differences within informational environments may be extracted from some, embedded within environments and based on a demand to connect in a particular way. These three together provide a framework for a theory of information as a political antagonism in the twenty-first century. It is from the inter-workings of these three that we may start to assert an analysis of the particular politics of informational platforms as a politics of its own.

In part, this follows Gillespie's identification of the discursive work that goes on in establishing such a term as platform. He argues, 'A term like "platform" does not drop from the sky, or emerge in some organic, unfettered way from the public discussion. It is drawn from the available cultural vocabulary by stakeholders with specific aims, and carefully massaged so as to have particular resonance for particular audiences inside particular discourses' (Gillespie, 2010: 359). I am suggesting that in order to frame a radical political understanding of the exploitations platforms may be part of and engage with them critically, we need to understand information politics as a political antagonism with its own dynamics of

exploitation. It is from this basis that we can frame the nature of platform politics.

Such a framing is likely to be at least a two-stage process, moving from general observations about information platforms to understandings of specific platforms. A way forward would be to see platforms as specific architectures or assemblages of the three forces of recursion, devices and networks and protocols. Platforms in the abstract then reflect the creation of particular repeated forms of these forces. Such abstract architectures are then actualised in specific examples of different types of platforms; for example, Googledocs being an example of a cloud-platform, or Facebook an example of a social network site understood as a platform. Exploitation may then be traced in the way the production of differences in something like Facebook is an expression of the general architecture of social network site platforms in which the owner of the architecture of an individual platform is able to claim ownership over all the differences in identity and sociality produced within that site. This is close to Pasquinelli's more Marxist framing of social networks but it can be expressed here in terms of information politics and so begin to understand connections between sociality and profit without needing framing in terms of theories of surplus value (Pasquinelli, 2008: 92-6). In this way, an understanding of information politics, that may itself include feminist or Marxist concepts, can be applied both to platforms as a general category and to specific examples of platforms. This also does not prevent or invalidate the analysis of platforms from within other political antagonisms, nor does it mean it is impossible to make links across antagonisms. The aim is to ensure that such crucial entities as platforms and their various manifestations can be examined for their specific information politics.

I have argued that it has become necessary for analyses of digital cultures and capitalism to react to the re-rise of Marxist theory and that a theory of informational capitalism need not necessarily lead to critical, radical analysis being integrated into a Marxist framework or having to reject Marxist analysis. It is possible to theorise a multi-polar radical politics and then to see that one pole is that of information understood as a political antagonism in-itself. I then provided the outline of a framework for developing a theory of information as a political antagonism. The distinctions I have tried to draw to construct this argument are important to the exploration of the specifics of information exploitation understood within in its own terms and as its own problematic. It will also be important to

identify where and in what contexts the politics of information connects to other political antagonisms. Both these directions will be important in continuing to build a radical response to exploitation in the twenty-first century.

It is also important to be clear that these need to be comradely discussions and that some of the distinctions I have drawn are fine. Take, for example, a key theorist I have not mentioned so far: Nick Dyer-Witheford. On the issue of Marxism's potential reduction of other struggles to its problematic he points out the difficulties for both sides of over-exaggeration in either equating Marxism with a totalising repression of the rest of the left or refusing to recognise any politics as a legitimate liberatory struggle unless it is Marxist (Dyer-Witheford, 1999: 166-75). Dyer-Witheford does assert Marxism's ultimate governance of the overall conceptual framework of resistance and exploitation but combines that with a strong recognition of other struggles and their legitimacy, leaving any assertion of a reduction 'in the final instance' at some distance. This makes Dyer-Witheford's claim, like that of another important and similar theorist in this area, Joss Hands (2011), both different to my assertion of multi-pole politics, because they see Marxism ultimately as the framework for radicalism; but also substantively similar, because we all agree on the importance of Marxism to radicalism.

It is, however, important that the re-rise of Marxism does not obscure a radical analysis of the inequalities and exploitations that are characteristic of informational environments. As I hope is clear from my use of Dean, Pasquinelli, Hardt and Negri and others, I believe such Marxist and communist inspired work produces insights and analysis, feed essential passions, and assert angrily the demand for an end to exploitation. Yet, even while seeing their work as an analysis of class in the twenty-first century and using them within analysis of an informational problematic, I argue for the importance of a differentiated and multi-polar analysis of many kinds of exploitation, informational and other. The only way we will come to understand the politics of platforms is by understanding better the political antagonism of information and the exploitations produced by this antagonism.

Endnotes

¹ Fully theorising information politics as a political antagonism is a larger project due for publication in 2014.

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DEATH PROOF: ON THE BIOPOLITICS AND NOOPOLITICS OF MEMORIALIZING DEAD FACEBOOK USERS

Tero Karppi

Rough statistical estimates based on annual mortality rates across the planet suggest that 19,000 Facebook users die each day (Death Reference Desk, 2012). While the actual number of deaths is evidently lower due to the age range of the Facebook user population, the number of dead Facebook users is significant at any rate. Now, for the sake of this article, consider you are one of them. A few hours after the rumors about your death have become public knowledge people seek to confirm the information from your social media profile. The more famous you are the faster the rumor spreads. You cannot update your status, evidently, since you are dead. Without the chance to intervene, your Facebook site begins to fill up with condolences from your friends and acquaintances. If you have been a perspicacious user you have prepared for the situation by installing the *If I Die* Facebook application.¹ It is a small application that helps the user to perform the task of dying publicly. It can be programmed to publish messages on behalf of the user after their death has been confirmed. In a most banal sense, the user does not need to do anything except log in to a site, provide content, and then die. The software will take it from there.

While losing control of your own Facebook profile might not be the worst thing about your death, it nevertheless introduces an interesting dilemma of life entangled within network culture which is about to become more topical at the very least due to the aging of social media users. The subject of media life, hence, will be approached in this article from what challenges and contradicts it: death and dying. By investigating Facebook's policies on the dead and its different practices surrounding the memorialisation of dead Facebook users I aim to outline an understanding how life and death are embedded within social media platforms. This approach draws

attention to the medium itself. With this shift I do not want to downplay the meaningfulness of Facebook for griever, but rather to show in a more abstract manner how death and the dead find their place within media technologies that have become ubiquitous and permeate all aspects of our lives. As I will show in the following, life, as well as death, is built-in to these platforms in a very concrete sense.

Another premise for this article is that when life and death become entangled with media technology they also become subjects and objects of certain particular forms of politics. In this context I will outline two specific models of politics that operate behind the Facebook platform: biopolitics and noopolitics. These are politics that address the economic, biological and spiritual life of a population and politics that address ways of living, feeling, thinking and acting through mediated technologies (Terranova, 2007: 126). Moreover to specify these politics I follow Bruno Latour and Vincent Lépinay's argument that '*economics and politics deal with the same object*, follow the same fabric, feel their way around the same networks, depend on the same influences and the same contaminations' (2009: 8). Accordingly the policies and politics of the dead and death in Facebook are also connected to economics. They can be interpreted in the context of the business models of Web 2.0 and as new means to re-negotiate social media user participation.

Ground

The questions of life ending and the consecutive processes of grieving and mourning will 'increasingly become important aspects of our social experiences online' (Brubaker et al., 2011: 8). Indeed, as Nancy Baym argues, '[s]ince 2008, SNS [social network sites] have become mainstream sites of relational maintenance for those who already know one another' (2010: 134). The relations we have with other users, our Facebook Friends for example, are personally felt and experienced. Social media empowers users to build personal connections, generate content and participate in various social activities together. Similarly when one of your friends breathes their last breath, Facebook is the obvious place where these intimate and private relations are also shared and commemorated.

These novel experiences of death and dying are also increasingly being studied. Many studies focus on the particular rituals and

processes of online grieving. Jed Brubaker and Gillian Hayes have explained how personal and cultural practices of experiencing death are entwined with communicational practices of social media platforms (Brubaker & Hayes, 2011). Rebecca Kern, Abbe Forman and Gisela Gil-Equi have argued that Facebook enables new, public ways to process grieving (Kern et al., 2013: 3). Alice Marwick and Nicole B. Ellison have focussed on performative displays of grieving and argue that bereavement in Facebook can be discussed as the impression management of the deceased (Marwick & Ellison, 2012).

While death is an individual event, the processes of mourning online are collective and social. There are different audiences for the dead, different ways to engage with the dead and different relations that need not be personal. Marwick and Ellison, for example, note that

the quasi-public nature of social media means that information about the death will also be shared with a larger public These audiences may include strangers who wish to take part in expressions of public mourning (sometimes dismissively called “grief tourists”) or “trolls” (people who post deliberately inflammatory messages with a disruptive intent, usually under a pseudonym). (Marwick & Ellison, 2012: 379)

The dead online touch upon different users and become the basis for different modes of participation. In short, studies focusing on online grieving share a user-centric approach. The role of the deceased is, however, subordinate to the different modes of user participation and cultural expressions performed by bereaved, grief tourists and other agents instead.

The user-centric approach focusing on events and expressions taking place among the bereaved corresponds to the discourses of Web 2.0 and the emphasized role of the user as cultural producer. The emphasized role of the social media user, as we now know it, began in the midst of 2000 when Tim O’Reilly shifted the focus from the wide open Web to the semi-closed platforms of Web 2.0 (O’Reilly, 2005). O’Reilly analyzed big web businesses that had survived the dot-com crash and found that common to the survivors was not only a large user base but also effective harnessing of these users into productive processes.

To put it bluntly, there are two different ways users contribute to these productive processes: the first way is intentional and explicit and the second is unintentional and implicit. To begin with, the former user participation is commonly paralleled with the concept of user-generated content. According to Andreas Kaplan and Michael Haenlein user-generated content describes ‘various forms of media content that is publicly available and created by end-users’ (Kaplan & Haenlein, 2010: 61). Defining the concept further, they argue, that user-generated content needs to be publicly available, show an amount of creative effort and be made by amateurs. Mirko Tobias Schäfer describes this mode of user participation as explicit (2011: 51). It is based on users’ own processes of creating, sharing and participation in various activities on the site. The latter describes participation in Web 2.0 platforms in another manner. It is a form of participation where users produce information for the site through their activities implicitly, and often without knowing (Schäfer, 2011: 51). As Mark Andrejevic maintains, the ideal of user-generated content as participatory amateur media production is contrasted and conjoined with user-generated content that ‘includes the tremendous amounts of data that consumers generate about themselves when they interact with a new generation of networked digital devices’ (Andrejevic, 2009). Social media companies profit from these implicit actions by transforming user data into clusters of information sold to the highest bidder or used by the company itself. Hence user participation, understood as activities producing user-generated content is double-sided; it consists of the content generated by the users themselves and the content generated from users by the platform.

The dead user, I argue, pushes us to reconsider the ideas of user participation and user-generated content as core features of social media from another angle; the dead are not active content producers or data generators by themselves. They neither produce content nor provide activities, consumption habits or other information for the platform to track and monitor. For the participatory Web and the corresponding Web 2.0 business models, the dead are nothing more than waste. They do not actively participate or couple with media technologies. They do not interact or give feedback. The dead cease to be with us as physical and corporeal beings but also as interactive actors in network environments. It would seem that they are futile for social media platforms. Consequently it seems legitimate to subordinate dead users to processes of online grieving and explain this as a social event and a particular mode of user participation evolving around the deceased.

Yet, I want to highlight the role of the dead for the platform. Arguably the dead are indeed futile, but only until the very moment they are incorporated by Facebook through different policies and technical implementations, such as memorial pages and memorial profiles. When the dead are materialized to the site through memorialization they are also utilized and given a specific role.

To better understand the role of the dead user for Facebook as well as processes of online grieving, one must take a step backwards from the user-centric approach. The role of the Facebook platform and its policies on the dead can be approached directly, instead of trying to find the answers from personal processes of online grieving. Consequently my focus in the remainder of this article is not on the communicational processes the griever takes part in, but on looking at what happens to the dead themselves and how they become a part of the platform. In a sense I am following Ganaele Langlois, who accentuates the role of the platform and maintains that

The platform acts as a manager that enables, directs, and channels specific flows of communication as well as specific logics of transformation of data into culturally recognizable and valuable signs and symbols. Thus, it is useful to think about participatory media platforms as conduits for governance, that is, as the conduits that actualize technocultural assemblages, and therefore manage a field of communicational processes, practices, and expectations through specific articulations between hardware, software, and users. (Langlois, 2012: 100)

Also to be noted is that the user-centric approach, while focusing on users' reactions and experiences, touches upon the role of the platform in dealing with the online dead. For Marwick and Ellison the platform is a technological and social platform which guides user's behaviors and outlines the 'technical and social affordances' (2012: 380). Similarly Brubaker and Hayes analyze how technologically mediated communication practices guide the ways we interact with the dead and each other (2011). Indeed, these discussions also point out that there are platform specific ways to deal with death; they indicate that there are Facebook specific ways of processing and managing the dead online.

Biopolitics or Hiding the Dead Bodies

'Each death is unique, of course, and therefore unusual, but what can one say about the unusual when ... it multiplies ... as in series', Jacques Derrida asks (2001: 193). In recent years social media has been faced with this question (C.f. Munster, 2011: 69). The answers have been outlined in various forms from blog posts, to official policies and guidelines. Here I will focus on material that explains the inauguration of Facebook's policies regarding dead users (Kelly, 2009; Facebook G), and Facebook guidelines for what users can do to dead user profiles (Facebook A; Facebook B; Facebook C; Facebook D; Facebook F).

In the Facebook blog Facebook's Chief Security Officer Max Kelly describes the personal event, the death of a co-worker, which led to the inauguration of Facebook's current policies regarding the dead:

About six weeks after we both started [working for Facebook], my best friend was killed in a tragic bicycling accident. It was a big blow to me personally, but it also was difficult for everyone at Facebook. We were a small, tight-knit community, and any single tragedy had a great effect on all of us. I can recall a company-wide meeting a few days after his death, where I spoke about what my friend meant to me and what we had hoped to do together. As a company, we shared our grief, and for many people it was their first interaction with death. ... The question soon came up: What do we do about his Facebook profile? We had never really thought about this before in such a personal way. Obviously, we wanted to be able to model people's relationships on Facebook, but how do you deal with an interaction with someone who is no longer able to log on? When someone leaves us, they don't leave our memories or our social network. (Kelly, 2009)

On the one hand the motivations for inauguration of Facebook's policies regarding dead users are personal and originate with a tragic emotional experience. On the other hand they are platform political responses to the growing number of dead users, and driven by a

motivation to implement life with its entirety within Facebook platform.

Indeed, for me, the discussions of death and the dead in social media are connected to the discussions that try to understand how life takes place and finds new forms in our current media landscape. In his aptly named book *Media Life*, Mark Deuze argues that media has become so inseparable from us that we do not live with media, but in media (Deuze, 2012). In an extended analysis he points out how media conditions the possibilities for our creativity and sociability without us even actively being aware of its intrusion. Media forms an environment for life in its many manifestations to take place.

Deuze's notion of life lived within media environments is not new as such. Friedrich Kittler argued a long time ago that our situation is determined by media (1999: xxxix). Media rewires our senses and it is through media technologies that we think, act and feel. Our daily lives are so connected to media technologies that it is difficult to distinguish between the human and the technological. Kittler challenges the idea of the human actor and the centrality of human life as lived experience in media environments as such. As Geoffrey Winthrop-Young puts it, for Kittler '[h]umans are at best along for the ride; more precisely, they are the nodes and operators necessary to keep the process going until the time arrives at which media are able to interact and evolve without any human go-between' (Winthrop-Young, 2011: 65). While Kittler's view may be extreme, the idea of media technologies being a part of the mundane activities of a user's daily life has recently become commonplace. This is broadly evident in the discourses of computers becoming ubiquitous, life shared and lived in social media, but also in ideals such as peer production. Life and media permeate each other in many ways.

The problematic role of 'media life'; of humans existing with or in media, is indicative of how the issue is also political. Michel Foucault's lectures of the 1970s long since inaugurated a revitalized discussion about the relationship between life and politics (Foucault, 2004). Biopolitics for Foucault, in essence, is a system of power where life becomes regulated and controlled through governmental actions. The right to take life is bound up with the power to make live and let die. The life of the individual is contrasted with a more general understanding of life of a population. Fertility and morbidity enter into the biopolitical after birth control and self-care are introduced. And I here wish to draw attention to

how these governmental actions are coupled with ‘technologies of the social’ (Lazzaratto, 2009: 112) that ‘do not aim to suspend the ‘interplay of reality’ that supposedly belongs to the domain of nature, but are determined to act within it’ (Terranova, 2009: 240). In effect, when life becomes politicized it also becomes embedded within a battery of different technologies. As conjoined with ubiquitous technologies biopolitics does not mean enslaving new media users nor does it introduce a conspiracy theory of an outside control. Instead it introduces a model of soft control in the lives of users. New media technologies for example provide a set of possible identities and offer a set of possible actions users can do (Cheney-Lippold, 2011).

Now if life is the focus of these new technologies, what should we think about death? The relation of biopolitics and death has always been a problematic one. With an emphasis on making life live, biopolitics pushes death into the shadows. According to Foucault, death and dying lose their roles as rituals and spectacles and become a problem for society since they decrease growth and work efficiency. When the life of a population becomes the focus, death as an individual event essentially becomes private and hidden away (Foucault, 2004: 247-248).

To understand why the dead are problematic for Facebook and why they are a matter of biopolitics, one must begin from the fact that dying does not erase the user’s account automatically. Quite the contrary: the user’s account remains on the site. The user accounts of the dead are a constant reminder of the deceased and the fragility of life lived outside social media, but they are also a technical problem. To substantiate this point let me refer to Kelly’s blog post regarding the inauguration of Facebook’s policies of the dead (2009). Interestingly Kelly points out that Facebook’s policies of the dead appeared only a week after a new feature was introduced that suggested users reconnect with friends they had not been in contact with lately. These suggestions were presumably controlled with algorithms that could not tell the difference between the dead and the living user. As Whitney Phillips notes, this feature was quickly proven problematic because, ‘the dead person’s profile would occasionally show up in friends’ suggestion boxes (“Reconnect with Bill by posting something on his wall!”), prompting a number of users to complain’ (Phillips, 2011). While this new feature was a constant reminder of the deceased and caused resentment, it also revealed that Facebook was developing new ways to manage its users.

As a response to this problem Facebook created two possible solutions: *removing the account* and *memorializing the account*. To begin with the former, when the user is no longer able to log on due to their death, the power to control the user account is given to friends and the family:

Verified immediate family members may request the removal of a loved one's account from the site. We will process certain special requests for verified immediate family members, including requests to remove a loved one's account. This will completely remove the profile (timeline) and all associated content from Facebook, so no one can view it. (Facebook B)

After removal of the account the user disappears from Facebook. Their profile page cannot be found or accessed. Removing the deceased user account seems to corroborate the biopolitical understanding of social media. When life lived on Facebook is semi-public at the very least, since your friends see what you do and how you participate, death will be pushed into the shadows and made a private event. The deceased becomes hidden from the platform. Now, removing the Facebook user account of a deceased member is possible, but not particularly easy. According to the Facebook Help Desk, friends and family of the deceased can remove the Facebook account of the dead if the requester has relevant certificates of a relationship with the user and proof of their death. Quoting these instructions at length is necessary here to explicate the process: For all special requests, we require verification that you are an immediate family member or executor. Requests will not be processed if we are unable to verify your relationship to the deceased.

Examples of documentation that we will accept include:
The deceased's birth certificate
The deceased's death certificate
Proof of authority under local law that you are the lawful representative of the deceased or his/her estate. (Facebook B)

If the dead are what Facebook hides, why is deleting the account so difficult? Is the demand to provide official documents and certificates merely a question of privacy and an attempt to secure

that no accounts can be removed accidentally or maliciously? The difficulty of deleting Facebook user accounts needs to take into account another consideration. In fact, the difficulty of deleting dead user profiles may well imply that Facebook does not want the dead user accounts to be removed at all. Thus as a second response to the problem of dead users, Facebook suggests a process of memorialization. It is a response that does not only hide the dead but also gives them a new role. Specifically, the dead as well as the processes of mourning become governed through platform applications known as memorialized user accounts.

In fact Facebook wants all user accounts of the deceased on the site to be memorialized instead of being removed (Facebook A). To memorialize a user account one does not have to provide legal documents such as birth and death certificates of the user. To memorialize an account one must only fill a Memorializing Request form where the user needs to explain their relation to the deceased and to present a proof of the death, which can be an obituary or news article for example (Facebook D).

Memorialized accounts are Facebook's unique manifestation of the dead within the platform. According to Kelly, Facebook 'created the idea of "memorialized" profiles as a place where people can save and share their memories of those who've passed' (Kelly, 2009). Phillips calls these memorialized accounts a snapshot of the user's life just before their death (2011). In brief, a memorialized account is the person's own user account converted to a memorial state. As explained by Facebook this memorial state means, for example, that some of the functions associated with normal user accounts are limited:

When someone passes away, Facebook will memorialize their account in order to protect their privacy. Memorialization changes the account's privacy settings so that only confirmed friends can see that person's profile or find them by typing their name into the search bar. A memorialized account will also be removed from the Suggestions section of the Home Page, and no birthday reminders will be sent out on their behalf. To further protect the account, no one is allowed to log in or receive login information about it. One important change Facebook has recently made to this process is that when we

memorialize an account, we now preserve past Wall posts, so that friends and family can look back on memories of the loved one they lost. We also now allow confirmed Facebook friends to continue posting on the memorialized account's Wall. They can record memories, leave condolences, and provide information about funeral services. (Facebook G)

Memorializing a user account hides the dead, quite literally, from the public Facebook search and from people they are not connected to. It does not however erase this person or their memory. The dead remain on the platform. Thus memorialized accounts are a way to organize, classify and define bodies into particular categories. Memorialized accounts do not pop-up in searches or mix the operations of different algorithms. Memorialized accounts are Facebook's way to differentiate the dead and the alive.

If death is, as Foucault maintains, the moment 'when the individual escapes all power, falls back on himself and retreats, so to speak, into his own privacy' (2004: 248), Facebook does not only protect this privacy through memorialized accounts but turns it into new modes of interaction. 'While there is no cure for the pain of grief, Facebook's hope is that by allowing people to mourn together, the grieving process will be alleviated just a little bit' (Facebook G). Memorialized accounts enable new modes of collaboration, participation and production with the dead. After memorializing the user account, the privacy into which the deceased retreats becomes controlled by the platform. The escaping of all power is temporary since after the death this power is not handed to the user or their friends and family, but to the social media platform, which now preserves the account.

Noopolitics or the Memory of the Deceased

While the discussions around online grieving circulate around how people use social media platforms for purposes of processing a personal loss (Brubaker & Hayes, 2011; Brubaker et al., 2011), Facebook's policies on dead users require us to consider how the dead users are themselves used by the platform. To elaborate further on the meaning of memorial accounts I shall follow Maurizio Lazzarato's suggestion that biopolitics needs to be supplemented with noopolitics (Lazzarato, 2006). This means moving from the

technologies governing the body towards technologies that gather publics together and control their actions.

Before moving on to the theme of noopolitics, one should note that Facebook practices two different forms of memorializing deceased users. A memorialized user account, as discussed above, is a user's personal account converted to a memorial state. A memorial page, on the other hand, is a page established by other people, loved ones or friends for example (Kern et al., 2013: 3). From a biopolitical perspective memorialized accounts differ from memorial pages because they are Facebook's way of distinguishing between the user accounts of the dead and those of the living. However, both of these page types evolve around the deceased; gathering users and working as platform for grieving. This practice of convening a group of people to share memories and thoughts connects memorial pages and memorialized user accounts to noopolitics. In noopolitics the question is no longer so much about regulating individuals and manipulating individual bodies, but rather controlling mass behaviour and building collective intelligence.² Noopolitics denotes ways of steering heterogeneous groups and publics from a distance through, for example, media technologies that affect mind, memory and attention (Lazzarato, 2006; see also Gehl, 2013). Commenting on noopolitics, Tiziana Terranova notes that

A public ... is always the result of a certain kind of affective capture (a public can be generated by a film, a TV serial, a book, a speaker, a news event, an artwork, a cultural initiative, a blog), which can be one-directional but also reciprocal (it is not just that publics are the provisional result of a capture, but they can also capture and take control of novels, TV serials, radio programmes, blogs, speakers, etc.). (Terranova, 2007: 140)

Noopolitics does not describe novel mechanisms of power nor does it propose that users or media audiences are brainwashed as such. Instead it tries to explicate how these publics are formed and how they operate under the noopolitical regime.

Memorialized accounts are a perfect example of the affective capture Terranova describes. By memorializing dead users accounts Facebook aims to offer a platform where 'people who use [our] service [have] a chance to mourn together and remember someone who passed away, people can find comfort in sharing happy and

heartwarming stories about their departed friend or family member' (Facebook G). The deceased is the uniting cause that brings the public together. The memorialized account or the memorial page is the place where 'the 'friends' collectively remember the deceased, engaging in ritualistic behaviors akin to behaviors performed at wakes, burials, and cemetery visits' (Kern et al., 2013: 3). They are built through '*sharing memories* of the deceased, *posting updates* from their own lives, and leaving comments that evidence a desire for *maintaining connections* with the deceased' (Brubaker & Hayes, 2011: 129).

However we should not take memorial accounts or memorial pages as merely places for users to gather and mourn together. Instead I propose that they should be interpreted as agencies that have the capability to affect on how users act, think and behave. Online grieving is not only a social and personal experience but also an experience guided and controlled by platform specific functions. This kind of approach to memorial sites corresponds to Robert W. Gehl's (2013) recent argument that, when interpreted through noopolitics, Facebook's core functions such as the like-button and recommendation features can be seen structuring the way we think in and with social media.³ For the remainder of this article I shall turn to how memorial pages and memorialized accounts gather people together and in doing so structure the way the deceased is perceived, understood and remembered.

To begin with, consider a Facebook remembrance project organized by the Belgian National Institute for Veterans and Victims of War, called 'Live and Remember'.⁴ The idea for the 'Live and Remember' project is simple; people are asked to choose to tell a story of an allied soldier of the Second World War with a memorial page on Facebook. First the user is asked to pick a soldier from the 25,360 allied soldiers buried in Belgium. Then the user starts mining relevant data regarding the selected soldier. The story of the soldier is elaborated on the memorial page through pictures, maps and videos; by the means common to Facebook activity. Through the data on this individual soldier, a memory is activated and their life story is brought to attention.

What is important for the argument I am developing here, is that the Facebook memorial account, the dead user profile need not be interpreted according to the similarities between the offline and online user or the life they lived. The user profile, the Timeline and its memories, as well as different relations among users can be also

fabricated. This concerns both the memorialized user account and the memorial page. As Marwick and Ellison point out, these page types do not solely represent the life of the user (2012). They are not only storages of the life lived (past events, meaningful moments) but also places where new impressions of the deceased are created and shared. Since the deceased is not present to censor or monitor what is said about him or her, impression management is in the hands of other users (Marwick & Ellison, 2012: 395). Thus, what is essential for these pages is the capability not to guide the viewer of them in remembering the deceased, but, rather, a more abstract modulation of memory that is built through what is clicked and which recommendations are followed.

This modulation of memory and the harnessing of it into creation of new things is one of the most important functions of noopolitics (Lazzarato, 2006: 186).⁵ Lazzarato, referring to Henri Bergson's reversed cone in *Matter and Memory*, explains how remembering is not a reproduction of the past but its creation and individuation (2006: 184-185). In order for something new to emerge there always needs to be a memory. Paraphrasing Lazzarato, if there were no memory, no force of duration that preserves the past in the present, the world would start endlessly. 'Any sensation developing itself over time, requires a force which conserves that which is no more within that which is; a duration which conserves the dead in the alive' (2006: 184). Memorial pages and memorialized accounts conserve the dead in the living in a very literal sense. A posted picture of the deceased, a comment on the wall, and other acts of mourning, create new connections, new ideas, in other words they actualize the virtual.

This view helps us to understand the political implications behind Facebook's policy of memorializing all user accounts instead of deleting them. When converted to memorial accounts and memorial pages, the dead are given a certain agency. They become points where memories are activated and in some cases fabricated. As platforms for online grieving the dead become nodes that open up towards other nodes and other agencies. Memorial pages and memorialized user accounts specifically corroborate a notion of Latour et al. that since the introduction of user profiles, individuals have become temporary passing points defined not by themselves but by networks of connections they are associated with (2012: 2). Such profiles can be called monads. A 'monad is not a part of a whole, but a point of view on all the other entities taken severally and not as a totality' (Latour et al., 2012: 7). Latour's practical

example of a monad is a person searched from a web. At first the person is nothing but a name or a clickable entity. Then through search results we slowly begin to fill in more and more items to its profile. The list of elements the person is associated with will eventually specify him or her. According to Latour, the ‘point of this navigation is that it does not start with substitutable individuals [–] but individualizes an entity by deploying its attributes’ (2012: 7).

Thus the politics of memorial pages and memorialized user accounts are not merely the politics of representing individuals. On the contrary, an individual is only a small part of this assemblage of data and activation of memory through which Facebook and social media platforms remain operational. Consider again the ‘Live and Remember’ project. While the soldier, whose memorial page is created, becomes individualized through the network of relations, the event of World War II is simultaneously folded within that same network. World War II is seen through this individual. The individual is a navigational spot with a potentiality to open a perspective on the world from a certain political perspective. In the case of ‘Live and Remember’ this is the Allied perspective and a Western perspective. But it is also a Facebook specific perspective operating through the functions enabled and allowed by the platform. ‘It begins as a dot, a spot, and it ends (provisionally) as a monad with an interior encapsulated into an envelope. Were the inquiry to continue, the ‘whole world’, as Leibniz said, would be “grasped” or “reflected” through this idiosyncratic point of view’ (Latour et al., 2012). Consequently memorial pages and online grieving are never only personal experiences or related to the deceased. Quite the contrary, they are enfolded within the surrounding world.

If we follow Latour and Lepinay’s suggestion that politics and economics weave the same networks (Latour & Lepinay, 2009, 8), it is possible to show that memorialized user accounts and memorial pages are Facebook’s way of utilizing the dead and of granting them agency. This conversion of dead user profiles into memorial accounts ‘thingifies’ them; and when user profiles become things they do not only have personal or cultural value but also use-value and exchange-value (Cf. Lash & Lury, 2007: 8). The dead become a new ground for user participation. Memorialized accounts and memorial pages are able to generate affective relationships from beyond the grave by grouping people together, giving things to be shared and thought of together. While the dead themselves do not participate in actions, share things or contribute in the accumulation

of user information directly, they yet become navigational points for other users' participation. When user accounts become memorialized, paraphrasing Scott Lash and Celia Lury, 'we enter a world of operationality a world not of interpretation but of navigation' (2007: 8). Then the interest, for the platform, is no longer how we remember the deceased but what we do to them or do with them online; what kind of data can be accumulated through these actions and what kind of preferences they reveal. Memorializing a Facebook user is not an action that is done for the sake of an individual but also for the sake of the networks and connections they potentially hold.

Endnotes

¹ *If I die* is a Facebook application that allows users to create a message that will be published after the user dies. For more information about the application see their website <http://ifidie.net>.

² Noopolitics is connected to the branch of sociology developed by Gabriel Tarde in circa 1900. Tarde aimed at modeling social behavior as a group phenomenon that spreads in publics through processes of imitation and innovation. Recently Tarde's ideas have been adapted to new media theory by for example Tony Sampson (2012).

³ With this assertion Gehl wants to address that social media sites like Facebook want to control what is on our mind and the capability to do this is based on technologies that effectively mediate the message and are capable of spreading it.

⁴ For more information about the project see <http://www.warveterans.be/generalites/about-us/id-menu-443>

⁵ Lazzarato is referring to a very particular understanding of memory emerging in the thought of Friedrich Nietzsche, Henri Bergson and Gabriel Tarde. He argues that memory needs to be considered as active operation where the virtual is actualized (Lazzarato, 2006: 184-185).

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CRITICALLY ENGINEERED WIRELESS POLITICS

Jussi Parikka

‘Under the sea, under the sea
no little signals are coming to me.
Under the sea, under the sea.
Something has surely gone wrong.
And it’s broke, broke, broke;
What is the cause of it does not transpire
But something has broken the telegraph wire
With a stroke, stroke, stroke,
Or else they’ve been pulling it too strong.’
(James Clerk Maxwell, ‘The Song of the Atlantic Telegraph
Company’, second verse, quoted in Mahon, 2003: 6)

James Clerk Maxwell was probably better off following a career as a scientist than as a poet. One of his poems, cited above, mocks the response one of his friends encountered when consulting the Atlantic Telegraph Company and asking about the laying of the original Atlantic cable. Maxwell was not of course the only one laughing at cable-laying efforts that seemed to run into endless difficulties. Besides such sarcastic critics, there were however lots of others who had a more optimistic view of the state of new communications technology: new worlds of communication and connection were just round the corner. On a material level, it lay on the sea bottom: the little coded signals, hidden inside cables, covered in gutta-percha, hidden inside the waves. The new aspirations of global communication also spilled out as enthusiasm for cabling as a form of Transatlantic supranational publicness. In a similar manner, the Crimean cable in 1855 had made ‘the ocean a highway a thought’ (‘European Sub-Marine Telegraph’). Such a fantasy of a wired public(ness) was enabled by a range of materials and technologies, of cabling and insulating, of grey procedures of engineering. This can be referred to as the grey constitution of the public, an engineering of certain communication politics – that the

political is infused with matters technological. Greyness is here an allusion to Michel Foucault's thoughts on genealogy,¹ as well as to the greyness of technological components and structures.

Despite this opening, this article does not focus on past engineers or sea cables, but on the politics of transmission in the age of *wireless* communication. The perspective it takes on communication does not however assume successful frictionless transmission between sender and receiver as the normal state of things. Instead, the article looks at interruption, hijacking and the engineered parasitical event as replacing the idealistic discourse of media as communication. We are dealing with evil media: 'a manner of working with a set of informal practices and bodies of knowledge, characterized as stratagems, which pervade contemporary networked media and which straddle the distinction between the work of theory and of practice' (Fuller & Goffey 2009: 141).

Evil Media outlines a shift in the interest of analysis and practice, from assumptions of 'autonomous rationality and the ideal of knowledge' – for instance uncovering secrets in the name of democratic transparency – to 'trickery, deception and manipulation'. These are modes of production of reality, and evil media is about a technologically focused perspective on such knowledge practices that are interested in the manipulation of what is perceived. *Evil Media* flags a non-representational take on politics that picks up on evil as an ontological force. It insists on an ontology irreducible to humans and meanings to focus on 'the non-sense of something that cannot be exchanged for meaning' (141), which in the case of critical engineering works through technological infrastructures such as platforms.

Matters of engineering – and especially critical, evil engineering – of networks and platforms are investigated here through the artistic work of the studio group, Weise 7, and especially their February 2011 Transmediale Exhibition. Various pieces in the exhibition reveal a consistently speculative but yet engineered take on wireless network culture. Curated by Kristoffer Gansing, the exhibition, featuring technology based installations in various formats that are related to computers, transmission and data secrecy, investigates the politics of transmission and through the engineered level of 'what bodies can do' in network environments. This investigation is not limited to human bodies, but invokes a politics that extends to bodies of data, such as packets and their role in the constitution of publicness in the age of wireless networks. To quote a tweet by

Julian Oliver (Weise 7 and one of the writers of the Critical Engineering manifesto): ‘If the air is considered public, why not that which passes through it?’ (@julianoliver Tweet on June 28, 2012). Indeed, the projects often attach to principles of openness in code and networks as essential to artistic activity (see Bucher, 2011). This focus on wireless brings forth an important point about platforms: platforms can be considered as specific structurations (social and technological) that sustain different modes of interaction, but they are not necessarily locatable to a singular place and time. This is how we need to articulate wireless politics too: it is more of a vector than a stable place (Cf. Wark 2004).



Figure 1. Weise 7 Exhibition in Berlin, at Transmediale 2012

Such approaches are labelled and articulated as ‘critical engineering’: practices that are close to hacktivism, but for tactical reasons the allusion to engineering as the language of modernity has here been lifted to the forefront. Indeed, such ‘art’ projects are ‘not just art’ in the manner Matthew Fuller (2006: 91) pitches the term to refer to art practices’ functions at ‘social, political, technical, and many other scales.’ We can speculate that such ideas and practices as Weise7-group’s are an indirect response to what Geert Lovink (2012: 22) has called the need for ‘materialist (read: hardware- and software-focused) and affect-related theory.’ In this case, theory is not executed only in the normal written format but as engineered situations: the other material infrastructures and modes of expression in which power operates, from code to networks.

However, in this case ‘affect’ is less the work of emotions than about relations and affordances (see also Parikka, 2010; McQuillan, 2012a) which aim to both address a familiar political discourse concerning democracy, privacy and publicness and to suggest slightly unconventional, experimental insights into an agenda of platform politics – where the platform might be carefully opened, re-engineered, and reveal a different reality that touches on topics of hacktivism and even rethinking policy through new peer-oriented design practices (McQuillan, 2012a and 2012b).

Network and platform politics are in this article understood through such a notion of misplaced, hijacked and distorted communications. In order to twist a media ecological idea that a platform is an affordance for actions, perceptions, social behaviour and in general; that is as a way to understand Deleuzian control societies more concretely tuned to specific hardware and software configurations, we approach platforms through hackability and distortion. Understanding platforms as affordances for communication and the social – as algorithmic guidances to various modes of sociability (see Gillespie, forthcoming) – allows for a broad understanding of how they are double binds between a production of the social and its captivation through monetarisation, as well as for security. Hence, the politics of the various critical engineering projects that this article discusses are sorts of platform hacking that take the mode of the exploit. The exploit starts not from the assumed normal uses, but from the breaking-points, latent possibilities for exploiting the normalised uses, finding cracks, openings and new possibilities hidden but completely existant within the engineered reality. (See Oliver, Savičić, Vasiliev, 2011. Cf. Galloway & Thacker, 2007)

Platforms consist of topologies of relations that stretch across the technological and the social. The engineered is not removed from, but rather constitutes the social, and the social is embedded and afforded by a range of technological problems and solutions. This means acknowledging the centrality of practices of surveillance and engineering of network traffic. It includes questions about speed as well, and in general how traffic is governed by authorities and service providers; an argument that is picked up by Danja Vasiliev in his Netless-project (discussed below at greater length). Before going more into Critical Engineering, let’s start with discussions of the public and the wireless.

Wireless

The modern political public is a technological phenomenon. It involves a lot of administrative measures that are sustained by technological infrastructures. In terms of academic literature, there has been an interest in administrative and management perspectives on power in the recent years of historically inclined research concerning cultural techniques of information and administration (see Gardey 2008, Beniger 1989, Krajewski 2010, Krajewski and Vismann 2007, Ernst 2013, Ebeling and Günzel 2007, Vismann 2008). In addition we have seen a special interest in the relations of management and technology. This resonates with the remark that Kittler, and the whole generation of German media theory that followed, made about Foucault's work needing to be updated to the technological age (Kittler 1990: 369). In addition, relating to a genealogy of texts debating 'network politics', curious interventions from early phases of real time network development such as H. Sackman's 'Public Philosophy for Real Time Information Systems' tried to argue for new ways of understanding politics in network culture. Long before the time of consolidated discourse concerning network politics, Sackman's perspective articulated, in the wake of John Dewey and the pragmatist tradition, the need for a democracy of real time.

Writing in the late 1960s meant engaging in discourses of computing in an age when the public 'rarely had direct interactions with computers' (Sackman, 1968: 1491. See also Suominen and Parikka 2010). Sackman was one of the voices in computing that articulated the gradual change in 'the public from spectator to participant' (Sackman, 1968: 1491), Indeed, in a manner that ties politics in with technological frameworks, for instance democracy as an administrative procedure (see Latour & Weibel 2005), such a change in perception of the public constituted the core for Sackman's argument. Sackman argues for a central role for computers as part of the 'regulation and control of social affairs' (Sackman, 1968: 1491). Computing and real time networks are about the regulation of the social. Embedded in the cybernetic vocabulary of governance and control of social situations, Sackman hones in on the otherwise often (still) too vague talk of information power in real time systems. Sackman pitches these as a 'social institution': 'The real time information system is a new class of social institution, a more radically powerful and rapidly responsive social form to recognize, meet and deal with specified problems at the time they occur and in time to modify their outcome' (Sackman, 1968:

1492). According to Sackman, in a true pragmatist manner, such systems connect knowledge to action. The real time system's possibility to act on its environment in 'real time' is what leads to specific regimes of knowledge about the system itself as well as its milieu. The ideas he presents suggest an undertone that premeditates the later information society discourse:

In real time computing systems, however, the collection, organization and storage of information leads directly to action, to integrated surveillance and control over the object environment. This dynamic marriage of information and control in real time systems is a fusion of knowledge and action, and, through directed action in real time, information is expressed as power. (Sackman, 1968: 1492)

Information management can be seen as essential to the wider management of the public and politics, bringing practices of engineering into proximity with issues of democracy. The engineering and administrative procedures which contribute to Sackman's plea for a public philosophy of real time systems are something that take into account network infrastructures and design. Such a political perspective can be seen as stemming from the entanglement of experience with the multiscalar world of what Adrian Mackenzie (2010) calls 'wirelessness', transporting William James' radical empiricism into wireless network culture. Mackenzie is able to outline this techno-social entanglement as a constitution of experience. Besides technical elements ('things') as essential for a sense of the social and reality, it shows the necessary 'conjunctive relations' (21) as important bindings across scales, from things to organizations, perceptions to processes. For instance, a lack of interest in algorithms by users/consumers does still not mean that technological systems would have a similar lack of interest in catering for worlds of experience for us as users:

For instance, many people might say that they have no interest in, let alone experience of, the algorithmic signal-processing techniques implemented in wireless networks such as Bluetooth, Wi-Fi, or 3G cell phones. Despite that, their sensations of connection, their awareness of service availability, and their sometimes conscious preoccupation with connecting their wireless devices via service agreements or other devices all derive from the handling of

conjunctive relations in data streams implemented in wireless signal-processing chips. (McKenzie, 2010: 21)

Understanding the constituting nature of the wireless for subjectivity acts as a relay to the work of critical engineers at the Weise7-studio. The studio is located in Berlin, and consists of a collective of several media artist-hacktivist-critical engineers. This is emblematic of one sort of critical inquiry that extends between fields of media theory and hacktivism and was exemplified in their recent exhibition at Transmediale 2012 in Berlin. With various works that one could place under the umbrella term of hacktivist installations/devices, Weise7 participants, or at least several of the projects, are engaging in engineered excavations of the political in technological environments.

The works play with archaeologies and current practices in data sniffing, capture and exposure, which constitute the fundamental leaky elements of networks. This is the other side of publicness that does not easily fit in with the discourses of the public accountability or commons, but is the side exposed in surveillance, sniffing and in counter practices such as hacktivism. These works play with the idea of the unconscious of a platform that is tracked down as a concrete network technology problem. However, the notion of problem here might slightly mislead us, as we need to understand how these techniques are, even historically, part of the very constitution of the affordances of networks and wireless technologies. They are not just anomalies. For instance Bengt Sjölen's 'TEMPEST' project draws on the 1972 National Security Agency paper 'TEMPEST: A Signal Problem' (Friedman 1972/2007), declassified only a few years ago, to investigate the in-betweens of transmission. As such, it taps into the longer archaeologies of transmission and carrier waves and also into the idea of capture and exposure as unavoidable elements of technical communication. As a matter of engineering, it takes as its design a typical old radio receiver, but one modified so as to focus only on the 'unintentionally transmitted'. More specifically:

A conventional radio transmitter and receiver uses a carrier wave of a specific frequency, and limits the transmitted and received energies to this frequency, but in fact any transition of an electric signal between on and off, between current and no current, will also transmit a burst of electromagnetic energy. These signals will not be limited to one carrier wave frequency but

instead each such sharp transition will be constituted of all the odd harmonics that combined makes a square wave. Tempest radio listens to correlations between the harmonics at these odd multiples of the tuned frequency. (Weise 7, 2012)

The original Tempest document from 1972, an NSA project, expressed a concern for data capture as a danger for classified intelligence transmission. As part of histories of cryptography, information processing and transmission, the document addresses the problem of space radiation in terms of unintentional emissions of radio frequencies or acoustic energy released from ‘the various switches, contacts, relays and other components’ (Friedman, 1972/2007: 26). Hence, even in terms of seemingly isolated technologies, whether the cryptographic machine or the transmitted signal, radiation of the signals *in space* becomes a problem that articulates more widely the material, spatial context of such information machines. Problems of war, and problems of diplomacy, are here voiced in terms of their engineered contexts, as well as solutions that reveal this problematic publicness. The Public is not the idealised arena of democratic deliberation, but something that leaks out, and is constituted as the problem of desired secret communications.

As forms of data capture, such artistic projects express the problematics of urban space and time. They also indicate how publics and privacies are engineered. Something of the same spirit comes out in Julian Oliver’s *Föhnseher* (2012) piece, that mobilizes a similar installation idea: an old broadcast age technology as the design face of a data capture system that sniffs the local wireless networks. The old technology becomes both an access point to the seemingly private worlds of urban wireless networks, and a television, or a public broadcasting device of a different sort. Indeed, this articulation of the possibility of publicness – whether through unintentional wiretapping or signal capture, or through sniffing image content from neighbour networks – is what is able to give insights that connect such projects to the earlier engineering of public data networks: the 20th century role of television as an integration of a sense of nationhood, imagined publics, as well as the emerging commercial advertising sphere. Television as the one-way broadcasting medium that created its sense of wireless publics and, for instance in the European context, a further integration of the idea

of nationhood as a broadcast based imagined community (see also Anderson, 2006) is re-engineered with the other, technical public of data packets and traffic.

Wendy Chun (2006: 4) picks up on these *other publics* in her elaboration of what actually happens when one is plugged in to the local network. With basic packet sniffing software one starts to understand the amount of things taking 'place' even without the human use of the computer. In its normal state, an Ethernet card rarely has a silent moment. Besides the individual, machine-to-machine communication that we as end users do not have a clue about, in the 'promiscuous' mode of packet sniffing one is able to access all of the network traffic and see how the private is filtered from the public only at a very late stage:

Ethernet cards routinely read all in all packets and then discard those not addressed to it; promiscuous mode does not alter an Ethernet card's normal reading habits. The client-server model of the World Wide Web, in which your computer (the client) only receives data from machines designated as servers, is a software and cultural construction. Every computer with an Ethernet card serves information. (Chun, 2006:4)

Indeed, the idea of what articulates our senses of publicness, and even shared space, is expressed in such works as *Packetbrücke* (2012) - Packet Bridges. Tapping into the constituents of network packets, this beautiful installation retunnels data packets from the location of Weisstrasse 7 in the Neukölln district of Berlin to the exhibition venue, causing a sort of a technological dislocation of space and time. The 'hijacking' of data packets and the simultaneous distraction of mobile phones in the exhibition space causes a slightly schizophrenic situation of confusion for the sense of space of one's technologically enhanced being. Google maps one's iPhone produce an illusion of being situated in Neukölln (located several kilometres away), and by way of this confusion, the piece suggests that there is a whole layer of packets and electromagnetic architectures underlying the normalised (even if technologically augmented) sense of space. The sharedness of such situations is then not only something that happens on the human phenomenological level, but as a network and wireless situation: what is the location, how can it be displaced, how is it being

temporally tunnelled and routed, and what are the constituent architectures in which such data packet bodies are being channelled? This creates an imagined place through technology: an engineering of reality that is reliant on data based location as one effective spatializing cultural technique.

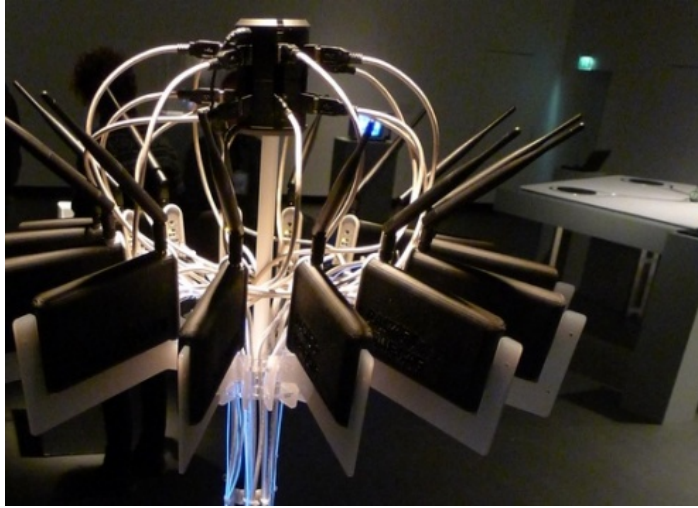


Figure 2. Packetbrücke. Used with permission.

Of course, such space or place does not just simply (pre)exist for the network, which creates its own link based on the transmission, routing, tunnelling and reception of signals. Indeed, this misperception is creative material aspect of a platform that can be sidetracked, wormholed. One way to conceptualise this is to say that it is about making infrastructures critical (cf. Renzi & Elmer 2012) so that they can be used in alternative ways relating to, say, (or indeed experimental questioning - on affordance in relation to critical hacktivism, see McQuillan 2012a). For Renzi and Elmer, critical infrastructures are significant in relation to the analysis of the new financial and security regimes of urban space as these unfolded around the G8 and G20 meetings in Toronto in 2010. The assumed danger to key national transportation, energy, and economic infrastructures was at the policy core of some of the preventive security measures launched against the demonstrators and activists.

What is highlighted as a question of network relations by Sackman, and then regarded as a central theme of network engineering, is the place of publicness, commonalities and transparency – or, indeed, the lack of it. The Weise7 projects play with precisely this narrative of contrasts between data secrecy, and network publicity. The introductory statement to the exhibition says: ‘Opaque devices,

spyware, search engines and phones that talk about us behind our back: the deep reach of technology in our lives shapes both how we read the world and what we do in it' (Weise7, 2012). However, as becomes evident across the range of projects by Oliver, Sjölen, Vassiliev, and other Weise7-group members (although not all of the projects focus on the theme of wireless politics so directly), the idea of network publics is much more than one of public accountability, shared commons, and referencing democratic politics. Instead, network publics become a matter of *hidden data publics* that one is able to access through critical engineering techniques. This notion of devices talking behind our back is mobilized into a description that resonates with Chun's earlier note concerning sniffing – a machinic register of 'public' that demands a different political vocabulary for its 'public discourse' on the machinic level.

These sort of code publics do not refer to the more widely discussed agenda of 'politics of commons' as a way to think the relation between software and the public. In accounts such as David Berry's (2008), the connection between free software, intellectual property issues and the public domain, or the code based public sphere, becomes articulated well (see also Cox 2013: 79), but what the critical engineering projects argue or enact is a dirtier take on publics. Of course, these two positions are related – for instance they are both concerned with rethinking through peer-practices and how to bypass hierarchies of design and prototyping, and with 'critical hacktivism' (McQuillan 2012a). Both discourses do relate to issues of democracy, but they adopt different methodologies. This is why it makes sense to refer to Weise 7 projects as more 'evil' in the sense of engineering an ontological level of reality creation – ontogenesis.

Critical Engineering as Evil Media

The introductory lines for the Transmediale 2012 Weise7-exhibition express a narrativisation of the installations in relation to themes of secrecy and private systems, as well as the increasingly proprietary nature of technological networks. The danger of too readily succumbing to narratives of transparency and openness as the goals of activist intervention are clearly there – for instance in Julian Oliver's *Transparency Grenade* (2012), which pitches itself in a manner of anti-Corporate hacktivism, familiar with the discourse of past years of critique of corporate capitalism: 'The lack of Corporate and Governmental transparency has been a topic of great controversy in recent years, yet our only tool for encouraging greater

openness is the slow, tedious process of policy reform.’ While clearly democratic accountability – and the lack of it – is a matter of importance, it is important to look at what we mean by ‘transparency’.

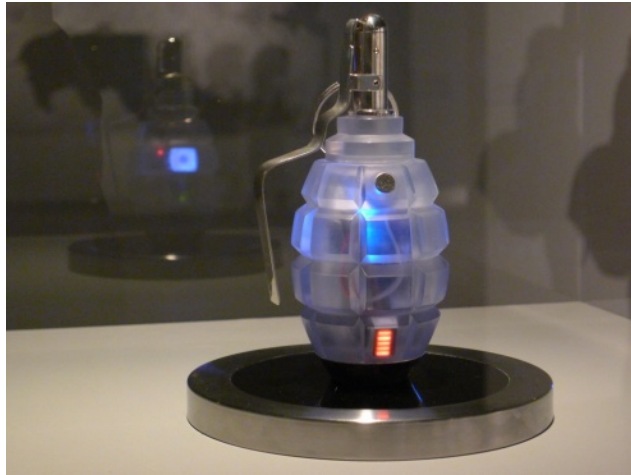


Figure 3. Julian Oliver's Transparency Grenade. Used with permission.

Indeed, besides cheering for democratic values of transparency one can take such projects as critical engineering experiments in a more evil direction. To return to the words of Fuller and Goffey, the articulation of the object-perspective through secrecy is important in the context of the Weise7-projects:

To put it another way, evil is a good name for the strategies of the *object*, for what things do *in themselves* without bothering to pass through the subjective demand for meaning. If secrecy is inherent to this agonism, this is perhaps because it is a process without subject, a machination, a process that depends on its imperceptibility and which must for that very reason surprise us, fox us or outwit us. (Fuller & Goffey, 2009: 143-144)

As a regime of non-meaning, *evil* bears more than a passing connection to media theory of signals and engineering. For some, a reference point is often Shannon and Weaver's mathematical theory of, but one could elaborate a wider signal-based range of communication theories of 20th century, (Genosko, 2012). This imperceptibility that comes out in the evil media manifesto characterises the politics of Weise7-projects; an imperceptibility that

connects to the ontological regime of wireless communication, part of the discourse of wirelessness since the 19th century. Imperceptibility relates to the sphere of secrecy and paranoia. These are further contexts for the birth of modern technical media in the manner of Thomas Pynchon's novels in their own way articulated, and is mobilized again with the recent years of network politics agenda (from Wikileaks to the material underwater cables, but nowadays time leaking in a different manner than what Maxwell pitched in his poem some 150 years earlier).

The Evil Media manifesto bears a relation to the idea of engineering, as introduced in another manifesto – the one on Critical Engineering by Julian Oliver, Gordan Savičić and Danja Vasiliev. Originating from October 2011, the manifesto is closely attached to the practice-based methodology of the Weise 7-studio. It picks up on language not too distant from evil media. Indeed, removed from ideas of transparency as the automatically valorized goal, it seems more closely to evince a love of engineered trickery and investigations of manipulation. Indeed, criticality becomes here a matter of excavation in the Foucault-cum-engineer sense, to look 'beyond the 'awe of implementation' to determine methods of influence and their specific effects.' (Oliver, Savičić, Vasiliev, 2011). In other words, and since Kittler, engineering is not only about machines in the restricted sense of the term, but of relations between 'devices, bodies, agents, forces and networks' (Oliver, Savičić, Vasiliev, 2011). Indeed, in one way one could see this as an exercise in the psychogeography of code: it is to do with mapping the architectures in which mind and body control work. It is an updated version of psychotechnics in the age of not only urban architecture but chip and wireless architectures where 'written code expands into social and psychological realms, regulating behaviour between people and the machines they interact with.' (Ibid.)² Such a position has its own implicit relation to media ecology (Fuller 2005) and is inherent to the hacktivist politics of critical engineering. However, even the references to hacktivism are misleading, as the notion of the critical engineer is meant to complement the idea of agency in art discourse.

So could we work this into a revised plea for a philosophy of engineered systems and public real time data networks – but one that starts from this other dimension of (mis)use and activism? Taking engineering as the starting point might invite some criticism concerning a slightly too technologically focused understanding of politics and practice, but it does however provide an extended

philosophy of excavating deeper than the polished, sanitized surface. It is not afraid to get its hands dirty, which besides a nice metaphorical relation to 'dirty' hacking practices, can be related to longer genealogies of purification of public space from excrement, and the current digital culture defined by such a polished surface. (Cox 2013: 75).

The beneath-the-surface regimes of technology, explored by the Critical Engineering manifesto and Weise7-projects does not denounce the social at all, but attempts to 'reconstruct user-constraints and social action through means of digital excavation' (Oliver, Savičić, Vasiliev, 2011). Excavation becomes a related figure or concept for such action, and one that transports media archaeology into a current political methodology. It also expands media archaeology's often non-political nature to take into account the engineered political economy of contemporary network structures and devices.

The project 'Newstweek', unfolding behind a spitting image of corporate-styled imagery and brand names, assigns itself into such 'network fixing', combining the discourse of mind control with network control. The discourse of media technological power that is familiar from the aforementioned Kittler-Pynchon trajectory of thought, often fixating on military contexts, is here extended to the corporate news world. The discourse of fact and mind control is located concretely in the technologies of wireless(ness), pinning down the ephemeral milieu into hotspots as the hub of potentials for exploits. Winner of the Golden Nica in Interact Arts at Ars Electronica 2011, Newstweek inserts itself into the politics of democratic discourse but through an observation and tweeking of network structures. The hierarchical structure of news organisations and reality creation, which in itself is not 'news' to any media studies scholar, is analysed through the simple news production-router-end user/computer situation in places of wirelessness: cafes, universities, hotels, libraries and so forth (see Mackenzie 2010). By placing itself between the router and the user's computer, hiding itself as inconspicuous wall plug, the device continues the lineage of 'data hijacking' discussed in Critical Engineering discourse. The Newstweek device reroutes and intervenes in the news passed on to the net browsers of users, and inserts manipulated news content. According to the engineers Oliver and Vassiliev, it provides 'opportunity for citizens to have their turn to manipulate the press; generating propaganda or simply 'fixing facts' as they pass across a wireless network. As such, Newstweek can be seen as a tactical

device for altering reality on a per-network basis' (Newstweek, 2011). Network politics starts from routes and routing. If platforms' functionality in the neoliberal capitalist context is based on trust – trusted interactions between users, economic exchange, information – then one can begin to understand the tactical function of playing with the easily producible cracks in trusted platform sociability.

As such, the device located in the infrastructures sustaining wireless traffic in cafes and other public places is what for this project, and some aspects of Critical Engineering, is pivotal in challenges to the control of space and critical infrastructure. It exposes how infrastructure is in most cases less stable than it seems. It also leaks data on many fronts, intervening in negotiations of public and private, also more broadly in wireless infrastructures across cities. (See Bucher 2011 for Oliver on modern cities and rationalisation of space).

At the network level, such concerns about infrastructure relate to discussing and engineering proprietary transmissions and routing, and are more specifically examined in the manifesto's point seven with regards to how the 'The Critical Engineer observes the space between the production and consumption of technology. Acting rapidly to changes in this space, the Critical Engineer serves to expose moments of imbalance and deception' (Oliver, Savičić, Vasiliev, 2011). The space of the wireless *in-between* functions as a possibility for intervention – for an evil trickster – or at least for a more gentle data hijacker. It also shows the possibility of extending media artistic/hacktivist methodologies into direct contact with discourse of network politics. In addition, it illuminates interesting possibilities in addressing the ontology of networks themselves through the already briefly mentioned themes of psychology, user experience, and what below are approached through dreams, zombies and other forms of involuntary agency that increasingly characterise network culture.

The Urban Wireless Nonconscious

The full passage of the above quoted reference to excavation underlines this relation between heterogeneous realms – a media ecology of sorts that binds the social, the psychological and the machinic:

The Critical Engineer notes that written code expands into social and psychological realms, regulating behaviour between people and the machines they interact with. By understanding this, the Critical Engineer seeks to reconstruct user-constraints and social action through means of digital excavation. (Oliver, Savičić, Vasiliev, 2011)

A lot of the discourse and the ideas put forward by both the Critical Engineering manifesto and the Weise 7 exhibition, points towards a specific understanding of networks. Elaborated in relation to the city architectures and informationalisation (Savičić, 'CPU City') and, for instance, to alternative public data transportation systems (Netless, Vasiliev), these various investigations of network topology refrain from a simple discourse of nodes and edges, and of rational, even if distributed, agencies (hive intelligence, etc.). Nonetheless, what is closer to the ideas elaborated in these works as well as earlier mentioned ones concerning data hijacking and Tempest, is the idea of much lower-level background transmission event characterising (wireless) networks. The networked environments become characteristic of non-user controlled 'zombie' processes, whereby involuntary and unconscious events and the language of psychology ('code expands into social and psychological realms') are entangled with networks to produce reality. This idea, in Newstweek as well, is what binds to notions such as the technological unconscious. This is approached here, however, through imagining a *technological* unconscious for the political. Indeed, the technological wireless infrastructure is implicitly taken as the backbone for reality creation, and as the backbone for politics. What Jacques Rancière (2004: 12) calls the distribution of the sensible, we can extend to a more engineered notion: 'The apportionment of parts and positions is based on a distribution of spaces, times, and forms of activity that determines the very manner in which something in common lends itself to participation and in what way various individuals have a part in this distribution' (Cf. Massumi 2011, 170-171). Take that description however as a technological one, and imagine the levels of wireless and more widely network technology that contribute to such a distribution, and you have another way to approach Critical Engineering and Weise 7-projects.

The concept of the technological unconscious (or non-conscious) has recently been mobilized by Nigel Thrift and picked up by N. Katherine Hayles to illuminate the work of technology as part of

human cognition. In her words, the notion registers the intimate effects of informational machines on human behaviour, especially in the age of increasingly environmental notions of computation.

As computation moves out of the desktop into the environment with embedded sensors, smart coatings on walls, fabrics, and appliances, and radio frequency ID (RFID) tags, the cognitive systems entraining human behaviour become even more pervasive, flexible and powerful in their effects on human conscious and non-conscious cognition. (Hayles 2008: 28)

This is where techniques of data sniffing and data hijacking fit in perfectly as illustrations of the wider milieus of electromagnetic, wireless media as such 'spheres' of technological non-conscious; background processes which however continuously produce reality in the sense that Deleuze and Guattari think of the unconscious: it does not act as a representational theatre, but is to be conceived as the arena for the *production* of reality. (See also Fuller & Goffey 2009, 143 on sorcery and reality production).³ What Newstweek does is a critical engineered version of this, which also resonates with the evil media ideas of Fuller and Goffey. They use the idea of 'sorcery' to refer to function of power. By mobilizing archaic practices, they elaborate this in terms of how it suggests a notion of reality which can be adapted to media studies investigations too.

Besides such a glitch approach, projects like Vasiliev's 'Netless' illuminates the other connection to 'zombie processes' as network(ing) techniques. Netless is a different way of understanding the politics of wireless infrastructures that takes as its critical point of departure the monitorability of proprietary networks. Netless *imagines through engineering* an alternative city scape-cum-wireless communication (sneaker)network that bypasses existing internet and wireless infrastructure, but which still affords that 'data exchange between the participants can be easily tracked down... many internet service providers consider deep-packet inspection (DPI) and traffic shaping a necessary part of their business, undermining the neutrality of the network' (Vasiliev 2012).

As he outlines in the project introduction (Vasiliev 2012), even if darknets and Tor are able to offer alternative message spaces, access to the Internet is still heavily regulated as a customer relation. Hence, as an engineered piece of creative speculation, Netless taps

into the city infrastructure as an affordance for communication. Vasiliev refers to the idea of sneakernets (networks based on physical carriers, such as USB sticks transported person to person as a form of data transfer) where communication relay points are connected to the moving nodes of the city, such as buses and trams so that 'whenever those vehicles pass by one another a short-range wireless communication session is established among the approaching nodes and the data they contain is synchronized.' (Vassiliev, 2012). These data packets can then be 'received and sent to using any wifi enabled device – a laptop, pda or mobile phone' (Ibid.). With a familiar reference to viral patterns of information spread across the city transport networks (illuminating a further way to understand transport as media), the political nature of such a wireless system becomes evident through its untraceability – 'there are no addresses or routes in the netless network – any participant can potentially receive all data circulating in the network – all data is broadcast' (Ibid.).

The 19th and early 20th century sociological theme of the anonymous city experience and urban crowds becomes related to data 'crowds' as well. This is articulated in relation to how one can bypass the data sniffing and packet inspection techniques through reimagining – and re-engineering – network infrastructures. In this sense, infrastructure becomes critical, as it is imagined through this automated zombie network of vehicles, innocently becoming infected, message carriers themselves. Such a reference to zombies, parasites, botnets, viruses, sneaking and somnambulism is made to employ the idea of cultural techniques of the unconscious and barely-alive to make sense of the processes of contagion as well as non-semantic communication (see Sampson 2011; 2012).

This adds a further dimension to the psychographical task of mapping the zones of experience of urban space. This makes sense when reflecting the work of the critical engineer as someone who maps the connections across such dimensions of technology, the social and the psychological in a media ecological manner. But it is also a media ecology that is cartographic, and maps these forces that constitute urban experience. And yet, it maps not only urban space, but by actively engineering it into a data transmission space, adds its own further media ecological layer of information to it. This too is about mapping the city but through actively tapping into its existing patterns of movement that form a crucial part of its modern legacy: trams and buses, for instance, as an expression of the logistics of city life, which itself is related to media technologies (Kittler 1996) and

which now are further layered by such 'transport vectors'. While 'proximity' might have been a theme for the earlier sociology of crowds and affect, the reliance on closeness (within wireless reach distance) now becomes a different sort of affordance for a communication theory of affective transmission (Sampson 2011): data having its own relations, affects, as part of the architecture and transport routes.

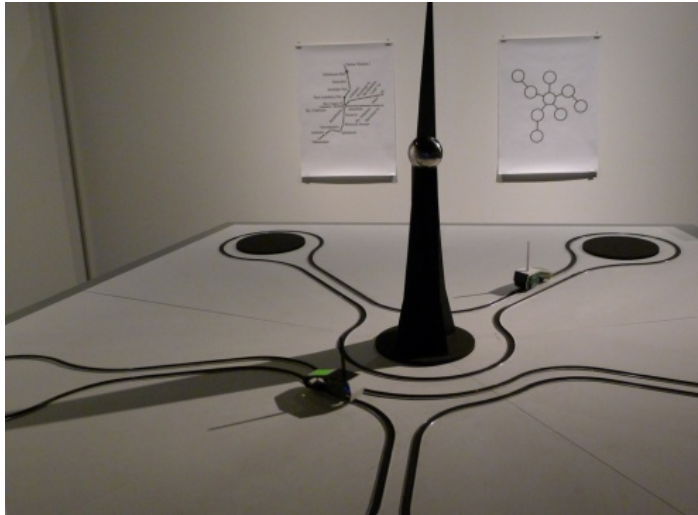


Figure 4. Vasiliev's Netless wireless communication system.

Information and especially wireless traffic in the city is part of what Mackenzie calls a proliferation of 'conjunctive relations' (2010: 64). They are instrumental in catalyzing, processing, enabling and disabling relations and experiences, and as such, part of the movement of not only information itself, but also people. Indeed, Mackenzie's point concerning wireless technologies actually rewiring the city takes into account the multiscale ways in which cities are being re-engineered. As well as viewing city transport routes as information nodes and physical carriers on the move, chipsets are regarded as cities themselves, including the totality of wires and conductors as part of their own microscopic scale (Mackenzie, 2010: 65). The internationalization of the urban infrastructure as part of such chip worlds is significant for this particular scale of 'globalisation', and offers a powerful media ecological observation on how the catalysation of experiences and relations works across scales. The architectures of wirelessness crystallised in chip worlds are not removed from the city and its inhabitants, but create a further informational 'city', connected, one could say, to the otherwise 'critical infrastructures' such as 'roads,

pipes, cables, control centers, and ducts' (Mackenzie, 2010: 65). The control and governance of infrastructures as key elements of governance of *people* extends to the way in which the wireless functions. It is such a crucial resource for transactions of commercial and other interests; governance of access, use, as well as spectrum allocation (Mackenzie, 2010: 66), which further highlights the insights of such projects as Netless.

Conclusion

To briefly summarize the argument of this article, I want to refer back to the earlier part concerning the public and publicness. The text has presented a specific media practice that presents issues of the public, the city and especially wirelessness as inherent to the politics of platforms. The practice-based intervention pitched as 'Critical Engineering' by Julian Oliver, Gordan Savičić and Danja Vasiliev is one way to engage with platform politics. It is about 'opening up' wireless networks in order to illuminate some software and hardware related restrictions and affordances. It shows how to approach network and platform politics through art projects that are 'not just art' (Fuller, 2006), but gather momentum in the social contexts of where they function. Platforms can be conceived as software and hardware configurations that enable patterns of sociability to emerge. In this article, critical engineering has been discussed as a way to deceive and tactically poke such configurations so as to cause imbalances that are more than symbolic and act on the level of *engineered* sociability.

In terms of critical engineering as a form of an art practice, if Bruno Latour's (1996) work with engineering has been an inspiring insight into the work of non-human elements as part of wider planning and implementation of issues relevant to the social, then the Weise7-projects take such insights further into interrogations of information infrastructures. More specifically, several of these address wireless communication, and the experimental projects are able to specify issues relating to art methodologies as living, vibrant reality modification tools. They take the approach that engineering is about creations of perceptions, forms of trickstery that could be pitched as a sort of evil media practice (Fuller & Goffey, 2009; 2012). This trickstery resonates with an earlier insight in relation to design, articulated by Vilém Flusser (1999: 20): design and culture start with deception. Another way to underline this point is to argue that through engineering and design, we create modes of sensation,

perception and experience (see also Mackenzie, 2011; Rancière, 2004).

With Weise⁷, part of this takes place as pedagogic activity too. The Workshop-workshops by Oliver and Vasiliev embody various similar principles of extending network politics into a hands-on approach to basics of network communication. Indeed, as they introduce the project:

Ask anyone how the postal system works and they would give a vaguely correct description. Few however would come close to describing how email, let alone a computer network itself, actually functions. With this lack of knowledge comes a risk; we lack the practical understanding to effectively read the infrastructural and political implications of our increased dependency on this technology. (Workshop, 2012)

The workshop engages with such methodologies of platform politics by demonstrating through the creation of network situations (a small scale model of the internet that interacts with local area network) how network topologies act ‘as political control structures’ (Workshop, 2012), Power works in packets and through their routings: ‘Students will learn to study these power structures by tracing the flow of packets as they pass over land and sea. Macro-economic and geostrategic speculations will be made’ (Workshop, 2012). The important thing here is to note the articulation of their practice in relation to the triangulation of theory-practice-pedagogy. Indeed, in relation to such ideas as ‘critical hacktivism’, this practice of pedagogy becomes clearer: as Dan McQuillan (2012a and 2012b) has argued, critical pedagogical practices in design and technology enable such peer-practices and communities (for instance, Social Innovation Camps, <http://sicamp.org/>) that demonstrate how experimental practices allow even rethinking processes of policy.

In this context of activity and a critical agenda, the ‘broke, broke, broke’ little wireless network – leaking, vulnerable to data sniffing, capture and distortion, to slightly modify Maxwell’s poetic urge – is a great starting point for the investigation of how such grounding political notions related to publicness, democracy and participation leak on very fundamental, technologically engineered levels. We can address such leaks not only through social science methods, but also

with experimental artistic methodologies. Indeed, in this sense to investigate a platform through breaking, exploiting and imbalancing it sets a good example: critical engineering as platform politics.

Endnotes

¹ Foucault (1998: 369): 'Genealogy is gray, meticulous, and patiently documentary. It operates on a field of entangled and confused parchments, on documents that have been scratched over and recopied many times'.

² The relation of information and city, on the other hand, is investigated in Savičić's 'CPU City' contribution to the Weise 7-exhibition at Transmediale12: 'This CPU City Model is an undertaking to express a cartography of the usually unseen - a formal printed circuit board layout that blends the logical order with a new world mapping' (Weise 7, 2012).

³ To quote the passage from Fuller and Goffey (2009, 143):

Unlike the outmoded model of media spectacle, which simply proffered an image of a 'hidden' or occulted reality, hypnotic suggestion – a fact long known to the inventors of public relations is one of a number of means that are directly productive of a reality. Taking advantage of such mechanisms calls for the delicate negotiation of a different position to that commonly adopted in media studies. For those professionally or even incidentally embedded in media, to say that we are manipulated, that trickery and deception are effectively exercised on a regular basis, is not to deny that people cannot or do not think, but it would be to further deceive and manipulate ourselves to think that rational subjects are not outstripped by events.

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GIVING WHAT YOU DON'T HAVE: INTERVIEWS WITH SEAN DOCKRAY AND DMYTRI KLEINER

Cornelia Sollfrank

Sean Dockray is an artist whose work expands the notion of artistic production from discrete artifacts towards the creation of open structures and unstable situations. Originally from the US, he has travelled and lived in different continents in the last few years, always continuing to work on his online projects. On the basis of his professional background in architecture – and a broad understanding of what architecture involves – Sean explores how form and content mutually influence each other. In the projects he initiates he provides a framework and basic rules that only come to life through the contributions of large numbers of people, and which often yield unpredictable social relationships and dynamics. Although the focus within *Giving What You Don't Have* is on the project aaaaarg.org, an open source platform for freely sharing books and texts, Sean's primary interest lies in the appropriation of systems and structures – such as gallery, library, or school – rather than simply content.

In this interview, Sean explains how aaaaarg.org naturally evolved as a part of the self-organized educational project known as 'The Public School'. Aaaaaarg.org, while being a central tool for the creation and sharing of knowledge within Public School, also produces project-related communities around specific texts and books. Sean points out how centralized business interests in general have changed the whole life cycle of a book, including production, distribution and consumption, which all is now happening through Internet based platforms, and where aaaaarg.org sits in relation to that development.

The interview is of great interest in the exploration of platform politics; offering insights into the development, operation and philosophy behind one of the most compelling examples of non-commercial and commons oriented platforms. The interview took

place in Berlin in January 2013 and Sean's commitment and his enthusiasm for his work and the values it embodies, comes through very clearly.



Cornelia Sollfrank in conversation with Sean Dockray, 2013

Click here to watch video: <https://vimeo.com/60889535>

Dmytri Kleiner is a Russian-Canadian artist and software developer working with the art collective Telekommunisten, based in Berlin. The largely conceptual works of the collective – such as deadSwap (2009), Thimbl (2010) and R15N (2012) and other ‘miscommunication technologies’ – investigate the political economy of the internet as well as the social relations embedded in communication technologies.

In this interview, Dmytri explains these art works and the theory behind the collective, as it is also elaborated in the *Telekommunist Manifesto* (2010). He derives his critique of intellectual property – and related to that of Free Culture and Creative Commons – from Marxist theory. It is based on a critique of the commodification of labour in general. Radical forms of anti-copyright have to be seen in this context. Based on Marx’ distinction between producers’ goods and consumer goods, Dmytri also expounds why the concept of copyleft, which has become a wide-spread and powerful licensing model for software, cannot work for cultural products; from there, he develops his critique of Creative Commons as a system that, based on what he calls ‘liberal criticism,’ first of all, serves capitalist interests instead of allowing to practice culture as a truly dialogical process. Consequently, Dmytri introduces an alternative license, which he calls ‘copy far-left’.

Dmytri's radical take offers a challenging theoretical framework from which to think through, and beyond, the enclosure of the digital commons by commercialised and proprietary networks, towards a more radical politics of platforms. Such a politics conceives labour not as a source of exploitation for capital, either directly or through the creative commons, but as directed towards what he calls 'venture communism'.



Cornelia Sollfrank in conversation with Dmytri Kleiner, 2013

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