Article | **Predicting What You'll Do Tomorrow:** Panspectric Surveillance and the Contemporary Corporation

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Abstract

In an economy of rapidly mutating consumer preferences, business institutions are adopting new practices of surveillance. Increasingly, so-called 'panspectric' techniques of predicting consumption choices, and tracking shifting customer desires, are proving increasingly crucial for the control of markets. Using the Deleuzian concept of 'assemblage' and Manuel DeLanda's notion of 'the panspectron' as a point of departure, this paper explores how a new societal diagram is currently actualised through the marketing practices of contemporary corporations. This diagram, it is argued, emerges not only as the result of the rise of new technological architectures (increased digital logging of everyday behaviours and data mining); it also dovetails with new perspectives on the human constitution currently discussed within contemporary social theory.

1. Introduction

In the 1990s, 'post-fordism' emerged as a central point of reference within the social sciences (cf. Amin 1995). Under this heading, a number of scholars grappled with one central question: how to describe the current phase of Western socio-economic development, given that the stable "mode of regulation" (Aglietta 1979) that signified the post-war era had broken down. This uncertainty also involved the future of the modern corporation. During the thirty golden years of capitalism, up until the oil crises of the mid 1970s, large corporations thrived on economies of scale, supplying ever-greater volumes of standardised commodities to an equally standardised consumer. Here, the question was: how will corporate hierarchies respond to the increasingly divergent tastes and lifestyles of the post-fordist consumer? Will they be outperformed by smaller firms, more attuned to the 'flexible specialisation' that awaits us on the other side of the 'second industrial divide' (Piore and Sabel 1984)?

Today, the large corporation shows few signs of buckling. In accounting for the persistence of the corporation, scholars have generally pointed to the capacity of such organisations to embrace the 'aestheticisation' and 'immaterialisation' of an economy that increasingly produces 'not material objects, but signs' (Lash and Urry 1994, 4). Similarly, corporate culture and branding have been invoked as a factor that explains how corporations maintain consistency and attract customers (cf. Klein 2000). Yet another elaboration on this theme is provided by authors associated with the Italian autonomist movement. They explore how contemporary corporations produce subjectivities and mobilises consumer affects, arguing that corporations create the consumer before they create the product (Lazzarato 2004; Berardi

2009; Hardt and Negri 2009). 'Capitalism is not a mode [*mode*] of production, but a production of worlds [*mondes*]' (Lazzarato 2004, 96).

As Zwick and Denegri Knott (2009) argue, the deterritorialisation associated with the demise of fordism has been superseded by a reterritorialisation of the consumer. Contemporary corporations control markets through sophisticated techniques that anticipate the propensities of customers to act in certain ways. As we shall see in the second half of this text, the contemporary business world is not only characterised by corporate efforts to 'create worlds' through the production of meaning, but also by inciting the desires and exploiting the inclinations of their consumers. This development is made possible through the deployment of methods that predict behaviour, including analytic tools that mine large data sets. This suggests we are moving towards a new 'political economy of propensity' (Thrift 2009), the outlines of which have yet to be written.

Where does this lead us in our understanding of the contemporary corporation? By construing corporations as 'islands of planned coordination in a sea of markets' (Richardson 1972, 883) – that is, as structures of hierarchical order in a sprawling economy – this text will explore how new modes of surveillance produce such 'planned coordination. Here, the focus will be on the material practices and socio-technical tools of surveillance put to use by corporations when trying to predict and incite consumer behaviours. The adoption of such practices, it is argued, signifies a shift towards a new social diagram: a new set of technologies of generating 'visibilities' is joined by a new set of discourses (or 'sayabilities') regarding human nature (Deleuze 1999).

Following this introduction, the text reviews Deleuze's social ontology of assemblages as a theoretical framework for discussing corporations. The text then explores Deleuze's thesis regarding the 'societies of control', as well as Manuel DeLanda's notion of 'the panspectron', discussing these concepts in relation to what Deleuze terms 'the virtual'. In the next section, the focus shifts from the virtual to the actual, with a survey of how corporations can be understood as actualisations of these social diagrams. This briefly charts the material and expressive components of the modern, 20th century corporation and then explores recent trends by outlining the modes by which corporations such as Google, Wal-Mart, and Harrah's casinos control markets though techniques of predictive surveillance. The text describes 'analytic competition' as an actualisation of a nascent 'panspectric diagram' that generates order and economies of scale and secures the long-term stability of corporations. Like the panoptic diagram, the panspectric diagram comes with a set of knowledges and perspectives on the nature the human subject. Finally, the text concludes by demonstrating how social researchers are participating in the emergence of these discourses; that is, how researchers contribute to the 'knowing' character of contemporary capitalism.

The argument of the paper is constructed on the basis of three interrelated questions: How can we think about contemporary forms of surveillance? How are such techniques of surveillance enacted within corporate activities, specifically in their marketing practices? And in what ways are such techniques connected to new discourses regarding the human subject within contemporary social theory?

2. Assemblages, abstract machines and the role of surveillance

This text uses the Deleuzian concept of assemblage as a theoretical tool to describe the emergence of the 'islands of planned coordination'. While this notion has been discussed previously in relation to surveillance practices (Haggerty and Ericson 2000; Elmer 2004; Bogard 2006), this section outlines some of its key properties, and further emphasises two aspects of the concept, specifically the notions of the expressive and the virtual.

What is an assemblage?

In recent years, an 'assemblage' oriented approach to studying social structures has become increasingly popular (Marcus and Saka, 2006). For instance, in Actor-Network Theory it is used as a loose descriptor of heterogeneous structures, consisting of human as well as nonhuman elements (cf. Callon 2007; Hardie and MacKenzie 2007). While these structures may have a more or less consistent identity, they are at the same time consistently put together in a dynamic manner. 'Assemblage' in this case is a verb as much as a noun, a process of becoming as much as a state of being.

The concept of assemblage developed by Deleuze and his collaborators has further properties. Deleuze and Guattari state that

> an assemblage comprises two segments, one of content, the other of expression. On the one hand it is a machinic assemblage of bodies, of actions and passions, an intermingling of bodies reacting to one another; on the other hand it is a collective assemblage of enunciation, of acts and statements, of incorporeal transformations attributed to bodies. (1988, 88)

In other words, assemblages are entities that consist of both material bodies and objects (referred to as 'content'), as well as statements and acts (referred to as 'expression').

An important aspect of assemblages is that these components (material and expressive) come together through relations of exteriority: the components that go into the formation of the assemblage should not be seen as constituting the essence of that assemblage. Rather, it is the interrelations between various components that create an emergent whole. Thus, a certain component does not necessarily play the same role in all assemblages. Therefore, relations of exteriority

> imply, first of all, that a component part of an assemblage may be detached from it and plugged into a different assemblage in which its interactions are different. (DeLanda, 2006, 10-11)

Assemblages, then, can be seen as structures that emerge through the contingent fusing of a number of material and expressive components, all of which evolve autonomously but nevertheless coalesce into semi-stable wholes. The notion of assemblage is thus

> a sort of antistructural concept that permits the researcher to speak of emergence, heterogeneity, the decentred and the ephemeral in nonetheless ordered social life. (Marcus and Saka, 2006, 101)

From Manuel DeLanda's perspective, the concept fits into a constellation of related concepts that form a central theme of Deleuze's philosophical project: that of how 'to conceive the genesis of form [...] as related exclusively to *immanent* capabilities of the flows of matter-energy information and not to any *transcendent* factor' (DeLanda 1997, 263). He continues:

> To explain this inherent morphogenetic potential without sneaking transcendental essences through the back door, Deleuze and Guattari developed their theory of abstract machines, engineering diagrams defining the structure-generating processes that give rise to more or less permanent forms but are not unique to those forms [...]

For social structures like organisations and corporations, the 'structure-generating process' is closely related to practices of surveillance. When DeLanda discusses the 'morphogenesis' of corporate hierarchies, he points to Deleuze's reading of Foucault (268-271). For Deleuze, the notion of panoptic

surveillance should be understood in abstract terms, as the social actualisation of a process or logic for sorting and arranging materials.

Architectures, discourses and social diagrams

While Foucault's notion of the panopticism has been discussed at length, not least in this journal (see for example Elden 2003; Lianos 2003; Yar 2003; Simon 2005; O'Byrne and Holmes 2009), it is worth returning to it briefly in the context of the Deleuzian concept of assemblages. In his reading of Foucault's *Discipline and Punish*, Deleuze (1999) argues that the emergence of modern 'disciplinary' institutions – the prison, the factory, the hospital, the school – can be described in terms of content and expression. More specifically, panoptic institutions emerged as a contingent result of discourses and architectures:

> Just as penal law as a form of expression defines a field of sayability (the statements of delinquency), so prison as a form of content defines a place of visibility ('panopticism', that is to say a place where at any moment on can see everything without being seen). (41)

Deleuze points out how the disciplinary prison consists of material components ('the visible', i.e. the prison, the prisoners etc.) and expressive components ('the sayable'; penal law, the concept of delinquency etc.). One of Deleuze's key points is that '*Discipline and Punish* marks a new stage' (28) in which Foucault no longer denotes the material as 'non-discursive'. Similarly, DeLanda has recently lamented the fact that this materialist reading of the book has become obfuscated by more discursively focused readings (DeLanda 2010, 30-31). Deleuze thus pays close attention to how the panoptic architecture of the prison (in which a large number of prisoners was under constant surveillance), and the discourses on delinquency, coalesced in a contingent manner, spontaneously forming an emergent whole though relations of exteriority. DeLanda, in turn, argues that the same structure-generating process can be witnessed in the formation of sandstone. Sedimentary rock is generated through the sorting of pebbles, and subsequent 'cementing' that consolidates the structure (DeLanda 1997, 269). These two operations are distinct and autonomous from each other. Nevertheless, both are obligatory: in order for structure to emerge, there must be components that play a material role, and components that play an expressive role (DeLanda 2006, 12) (see section four below).

The abstract character of this logic of assembly is crucial in Deleuze's reading of Foucault. Panoptic architectures and discourses of exclusion emerged within the institutions mentioned by Foucault, as if the same abstract logic or blueprint migrated from one institution to another. Deleuze asks:

> What can we call such a new informal dimension? On one occasion Foucault gives it its most precise name: it is a 'diagram', that is to say a 'functioning, abstracted from any obstacle'. (30)

What does this 'abstracted functioning' mean? As hinted above, DeLanda points to how several different structures can be seen as results of the same 'engineering diagram' or 'abstract machine':

> The hierarchies to which I have referred […] are a special case of a more general class of structures, stratified systems, to which not only humans bureaucracies and biological species belong, but also sedimentary rocks. (DeLanda 1997, 62)

Stratified structures – such as panoptic prisons and sandstones – become systematic wholes as flows of matter-energy is 'worked upon' by 'abstract machines' that exist in the virtual realm (Deleuze and Guattari 1988; DeLanda 1997, 57-70). When this abstract machine is actualised in similar ways in different assemblages – for example through the parallel emergence of panoptic architectures and complementary discourses about delinquency – one can speak of the existence of a social diagram.

This leads us to a crucial point: the Deleuzian 'virtual' is not to be understood in terms of the 'virtual reality' of so-called cyberspace. In other words, it shall not be confused with notions of the '"virtual subject", such as that we find on computer networks' (Bogard 2006, 63), or with a 'decorporealized body, a "data double" of pure virtuality' (Haggerty and Ericson 2000, 611). As DeLanda (2002, 30) explains, the virtual of Deleuze is not 'the virtual reality which digital simulations have made so familiar, but […] a real virtuality forming a vital component of the objective world'. This understanding of the virtual allows us to speak of panoptic institutions in a non-metaphorical manner (DeLanda 1997, 62). As such, the Panopticon is not a 'metaphor' for the school; rather, the prison and the school are assembled along the same diagram – the same 'abstract functioning'. The panoptic diagram, in turn, should be understood as one way of actualising the abstract machine of 'hierarchisation' or 'stratification'. However, there may be several other social arrangements that can achieve this end: new socio-technical architectures can generate new visibilities, which may coincide and connect with new discourses that allow us to say new things about the world.

The societies of control

In his reading of Foucault's *Discipline and Punish*, Deleuze argues that panoptic architectures are not only dependent on optical functions, they are also based on enclosure. Hence,

> the abstract formula of Panopticism is no longer 'to see without being seen', but to impose a particular conduct on a particular human multiplicity. We need only insist that the multiplicity is reduced and confined to a tight space. (Deleuze 1999, 29)

Following on from this supposition, Deleuze subsequently argued that the disciplinary institutions were 'finished', stating that another diagram is usurping panopticism. The disciplinary society is, Deleuze argued, being replaced by the 'societies of control' (cf. O'Byrne and Holmes, 2009). In his 'Postscript on control societies', Deleuze declares that we

> are in a generalized crisis in relation to all the environments of enclosure – prison, hospital, factory, school, family. [...] These are the societies of control, which are in the process of replacing disciplinary societies. (Deleuze 1995)

In other words, while the institutions in the 'disciplinary societies' were assembled along the logics of panopticism, these same institutions are increasingly being assembled along the lines of a new social diagram. Like the panoptic diagram, the 'societies of control' diagram is described as a means of rendering objects visible, thus generating order. Human subjects are subjected to continual logging of behaviours as subjects pass through interlocking networks of monitoring. This means that, unlike in panoptic institutions, surveillance is cumulative among the interlocking networks of monitoring: surveillance does not 'start from zero', as may be the case in the factory or prison, but relies on historical data in order to forge new visibilities.

What, then, are the objects of these visibilities? In the societies of control sketched by Deleuze, human subjects cease to be individuals, in the sense of being a unitary agent in a mass of individuals. Instead, they become 'dividuals', merely 'samples' in a large 'databank' of logged behaviours. Like the panopticism it usurps, the control society diagram grants us freedoms: we are no longer enclosed in the 'mole holes' of panopticism any more, we are free to roam in between disciplinary institutions. In disciplinary societies, our modes of action were rigid as 'molds, direct casings' – in the societies of control, they are more like a 'self-deforming cast that will continuously change from one moment to another' (Deleuze 1995).

The societies of control are based on computer technologies – both materially, and conceptually. As Deleuze writes,

Types of machines are easily matched with each type of society – not that machines are determining, but because they express those social forms capable of generating them and using them. The old societies of sovereignty made use of simple machines – levers, pulleys, clocks; but the recent disciplinary societies equipped themselves with machines involving energy; the societies of control operate with machines of a third type, computers. (1995)

In the prospective control society diagram sketched by Deleuze, the architectures for rendering objects visible are composed of computers. Incidentally, at the time that Deleuze was writing the postscript, actual computerised surveillance systems were being built by security services, operating along the lines of the control societies diagram.

The Panspectron

Writing at the same time as Deleuze, Manuel DeLanda (1991) describes how the National Security Agency was putting together a surveillance system that he calls 'the panspectron'. In contrast to the original panoptic architectures, the panspectron monitors a wider segment of frequencies of the electromagnetic spectrum. In other words, the panspectron not only registers that which is visible to the human eye but also radio, radar, microwaves and so on.

> Instead of positioning some human bodies around a central sensor, a multiplicity of sensors is deployed around all bodies: its antenna farms, spy satellites and cable-traffic intercepts feed into its computers all the information that can be gathered. This is then processed through a series of 'filters' or key-word watch-lists. The Panspectron does not merely select certain bodies and certain (visual) data about them. Rather, it compiles information about all at the same time, using computers to select the segments of data relevant to its surveillance tasks. (DeLanda 1991, 206)

Again, the type of visibility generated is heavily dependent upon computerised analyses of large sets of data. DeLanda's account of a post-panoptic diagram is thus similar to the one that Deleuze sketched in his postscript. Both authors discuss overlapping and decentralised networks of surveillance, the move from individuals to dividuals, the reliance on computer-assisted data mining, and – most importantly – the increased focus on predicting future behaviours (Gandy 2006). Though only implicitly stated in Deleuze's original text, this type of surveillance serves to create pre-emptive modes of control. Here, it may be useful to distinguish this type of prediction and pre-emptive action to that discussed by Elmer and Opel (2008). While these authors discuss contemporary forms of deterrence aimed at stifling dissent, panspectric technologies aim to replicate the work of the sages in Philip K. Dick's novel *Minority Report*, namely spotting 'pre-crime situations' in order to generate opportunities of intervening in future developments – be it a terrorist plot, or a future purchasing decision.

There is one crucial difference between Deleuze's societies of control thesis and DeLanda's discussion on the panspectron: whereas Deleuze approached the diagram from his own, impressionistic view of a society-wide shift taking place within modern institutions, DeLanda focuses on a concrete surveillance apparatus. DeLanda's approach to social ontology explicitly opposes the type of society-as-a-whole 'macro reductionism' analysis that Deleuze's text about the societies of control may incite (see DeLanda 2006, 4). One of the merits of Deleuze's ontology is that it allows us to speak of distinct abstract machines that exist in the virtual realm, and yet be more modest when it comes to the actualisation of such virtual logics. Thus, an actual organisation can never be completely dominated by the abstract machine of hierarchisation – there are always pockets of heterogeneity. Similarly, the panoptic and 'panspectic' diagrams can co-exist in the same social situation.

The societies of control thesis is therefore problematic if read as a description of a shift in how society-as-a-whole hangs together. As Bogard writes, Deleuze does not present the historical development from discipline to control as 'a simple replacement of one form of power by another […] control always operates as a function of relative degrees of territorialization and deterritorialization, coding and decoding' (Bogard 2006, 76). Moreover, as a further point, DeLanda emphasises that we need to approach these phenomena in a bottom-up fashion, observing how an abstract machine or diagram is actualised in different settings, rather than assuming that it somehow structures society as a whole:

> From the perspective of a bottom-up methodology, it is incorrect to characterize contemporary societies as 'disciplinary', or as 'capitalist', or, for that matter, 'patriarchal' (or any other label that reduces a complex mixture of processes to a single factor), unless one can give the details of a structure-generating process that results in a society-wide system. Certain institutional forms may indeed proliferate in a population, but even when this leads to the extinction of prior forms this should not be treated as the achievement of a new unified stage of development. (DeLanda 1997, 271)

What follows begins to describe how the hierarchisation of the economy has taken place, as corporations have deployed panoptic and – more recently – panspectric methods of ordering the world. The text discusses 'the panspectric diagram' as a diagram that enables previously panoptic corporations to maintain their consistency, even though the disciplinary enclosures are losing their efficacy. In other words, it discusses how the material and expressive components that yielded panoptic order in corporate assemblages are replaced by components that yield panspectric organisations.

3. The Modern Corporation and Panoptic Surveillance

Using the assemblage theory, the corporation can be seen as a structure that emerges from the contingent coming-together of components playing either material or expressive roles. As these components are joined through relations of exteriority, there is no essence in this machine that causes it to maintain its identity and structure over time, rather, the coherence and stability of the assemblage can be changed if one or several of the constituent components are removed from the structure, i.e. the assemblage may then be deterritorialised. This also means that the long-term stability of the structure can be preserved, even though the material or expressive components change over time.

It is also possible to construct a historical account (as found in DeLanda 1997) of how the modern corporation has evolved over the past couple of centuries, based on how different material and expressive components have come together to form business hierarchies. This history of the modern corporation can be seen as a series of innovations that have affected the ability of corporate assemblages to bring order into economic activity.

From the factory to the Corporation
As we know from Foucault, panoptic techniques of surveillance and supervision became increasingly useful when the density of matter-energy, i.e. workers and capital, proved sufficient for a new means of ordering production. At this point, the abstract machine of hierarchisation – discussed in the previous section – is actualised in the form of panoptic production facilities. As Foucault describes it, 'the disciplines crossed the "technological" threshold' (224), setting a self-generating process in motion. The new techniques induced in this dense mass of workers and capital generated more wealth, which in turn generated more matter-energy to keep this assemblage going. In terms of economics, this meant that panopticism yielded great economies of scale.

As already hinted, the mass production factories were dependent on new modes of surveillance and supervision. The components playing a material role in the assemblage were panoptic architectures,

manifested in the large-scale factory, which acted as a visual technology and a 'sorting machine' to sustain an internal homogeneity (DeLanda 2006, 13). Another key point here is the impact of the notion of uniformity. The new logic of (mass) production was highly dependent on techniques to produce a raft of products based on uniform, interchangeable parts DeLanda (1991; 1997) stresses this point clearly:

> Indeed, the nineteenth-century military drive to create weapons with perfectly interchangeable parts marked the beginning of the age of the rationalization of labor processes. The command structures developed in the armories during this period were later exported to the civilian sector in the form of 'scientific management' techniques. (1991, 31)

Thus, mass production was not only (as is commonly understood) a matter of the introduction of the moving assembly line. Rather, it was the idea of creating a vast production machine, churning out a mass of goods, put together through quick joining of standardised, interchangeable parts (see also Womack, Jones and Roos 1991).

As in the case of the panoptic prison – the merger of the Panopticon and new ideas about delinquency – the modern factory was also dependent on expressive components. This is evident in all mass production factories, and even more so in the ones created by Henry Ford in the first decades of the 20th century. The Ford factory was not only interesting as a material, architectural endeavour; the organisation also featured a 'sociological department', which effectively spied on the workers, ensuring that they led productive lives and spent their increased salaries on cars rather than alcohol (Hounshell 1984, 259). Subsequently, other means of maintaining efficiency and attempts to make this a science were introduced. Scientific management, motion studies, work rationalisation, industrial engineering, etc. proved to be the 'sayabilities' that dovetailed with the emergence of the modern factory.

Following on from the development of the Fordist factory, the so-called multidivisional, 'M-form' corporate assemblage evolved as new functions were added the economic units that had previously been simply factories. The economic historian Alfred Chandler chronicles the evolution of this type of corporation in his text, *The Visible Hand* (1977). It can be read as a story of how new material components are added to corporate assemblages. Chandler's key point is that the modern corporation emerged when ownership became separated from management, creating a hierarchy of professionals. This implies that the process with which matter-energy is drawn into the corporation is refined. Corporations could then grow larger than ever before as capital could be sourced from ever more capitalists, specifically because these did not have to oversee the day-to-day management of these corporations. Thus, the territorialisation of capital and employees continued, as more capital and professionals were drawn into the growing corporations.

However, this could only work in conjunction with the emergence of elements playing an expressive role. Firstly, there were a number of new linguistic elements of logistical nature (DeLanda 2006, 74) that were plugged into the corporate assemblage. General Motors, the organisation that pioneered the multidivisional corporate form, was organised through

> decentralised divisions managed objectively 'by the numbers' from a small corporate headquarters. That is, [CEO Alfred] Sloan and the other senior executives oversaw each of the company's profit centres […] Sloan and his executive group demanded detailed reports at frequent intervals on sales, market share, inventories, and profit and loss and reviewed capital budgets when the divisions required funds from the central corporate officer. (Womack, Jones and Roos 1991, 40-41)

Without these components – detailed reports on sales, budgets, requests for funds etc. – the territorialising of capital and professionals could not be held in place: owners needed these tools to be able to delegate control to managers.

There were also elements that played an expressive role. For example, the highly contingent emergence of legislation around the limited liability firm (Powers 2005; Bakan 2004, 8-16) played an important role in attracting capital. Moreover, the somewhat vague ideal of 'professionalism' grew stronger during this phase. Owners could only trust managers with their assets if there were ways of proving that these managers were acting in line with objective profit-maximisation (rather than trusting their money in the managers' subjective judgement). This 'myth' has since then come to dominate mainstream perspectives on modern business. (Palmås 2005)

The forging of professionalised, objective management practices based on numbers was enhanced mid-century, as a number of corporate planning methodologies were introduced in business. These methodologies, such as Operations Research or Management Science, were translated directly from the military sector (DeLanda 1991, 111). A case in point was that of the influential 'Whiz Kids' (including Robert McNamara), who went straight from US Air Force service into introducing 'Statistical Control' in Ford Motor Company's operations during the 1950s. In both settings, they used unprecedented number crunching in order to control the logistical flows of bomber raids, thereby taking the notion of management 'by the numbers' one step further:

> The Whiz Kids and the mythology they created led a generation of business professionals
> to put their faith in numbers [...] For decades, the best and the brightest produced by the
> business schools assumed jobs [...] in finance where they were more likely to command
> and control people and organisations. (Byrne 1993, 518)

In the 1980s, this tendency towards financialisation of business (Fligstein 1993) was intensified further, a development that went in tandem with innovations in finance. After the introduction of 'corporate raiding' through junk bonds, leveraged buy-outs and the like, management practices came to focus more explicitly on corporate valuation (Copeland, Koller and Murrin 1994, 30). As a result, the ideal of 'professionalism' was enhanced further, coupled with new tools for monitoring corporate operations through financial management.

In this process, the modern corporation has emerged from the original panoptic factory through the contingent merger of both material components and expressive components. While some of the original components have become less influential, others have become more fundamental for the hierarchisation of economic activity. The tools of panoptic discipline may have changed, but the diagram has remained the same.

However, recent developments within the world of business suggest that panoptic modes of organising economic activity are increasingly supported by panspectric means of conducting business operations. This can be seen as a verification of Deleuze's thesis regarding the declining influence of panoptic methods or organisation: the contemporary corporation does not, to the same extent, rely on physical enclosures. Simply put, globalisation and the advent of information and communication technologies (ICT) have had deterritorialising effects on the corporation (DeLanda 2006, 13). Along with the shift towards information-based production and diverging 'post-fordist' consumer tastes, the panoptic surveillance of workers in a factory-like structure has become less effective. Instead, as suggested above, corporate hierarchies maintain their ability to dominate markets through increased capacities to control meaning, culture, subjectivities and affects.

Before detailing the specifics of this development, it is worth emphasising that this supposed shift is not a sharp break, but rather a slow and gradual process in which the panoptic logic is being usurped by the panspectric logic in setting after setting. This resonates with Deleuze's point that the disciplinary diagram was 'finished' already half a century ago – 'the disciplines underwent a crisis to the benefit of new forces that were gradually instituted and which accelerated after World War II' (Deleuze 1995).

Panspectric Business

Today, two key developments maintain the consistency of contemporary corporate assemblages: first, corporations now have greater abilities to control and police the spread of competitive knowledge (Drahos and Braithwaite 2002; Lessig 2004; Nasheri 2005). Contemporary corporations invariably now play a 'knowledge game' in which new products are dependent upon the production of knowledge that is then protected by legal divisions, patents, trade marks, trade secret law and copyright. At core then, 'the quest for knowledge [is] really the quest for monopoly' (Drahos and Braithwaite 2002, 52). Secondly, the panspectric concatenation of digitalisation of behaviours and data mining are yielding new economies of scale. While the former development is highly influential and requires investigation, this text will focus on the latter development.

Though present-day societies may not seem like those Deleuze described in 1990, corporations are currently taking great strides towards panspectric modes of organisation. Some of the largest and most successful corporations in contemporary business are building their marketing strategies – and indeed whole business models – on the back of logging and data bank-storing of behaviours (Zwick and Denegri Knott 2009). For instance, banks deploy data mining techniques as a strategy to counter credit card fraud (Chan et al. 1999). The most well-known example is Google, whose original mission was to organise the huge amounts of information available on the web, coupled with motto 'Don't be evil'. In 2007, the company stated its future ambitions in the following terms: 'to enable Google users to be able to ask questions such as "What shall I do tomorrow?" and "What job shall I take?"' In order to achieve this end, ever more personal data will have be collated, and even more sophisticated algorithms will be developed in order to foresee our intentions.

In short, 'data mining' has become imperative for several businesses, and a recent business best-seller is titled *Competing on Analytics: The new science of winning* (Davenport and Harris 2007). The authors argue that, by using the kind of self-teaching algorithms that Google has pioneered, companies in a host of diverse industries can make predictions about the future behaviour of users. As discussed above in relation to Deleuze's notion of 'dividuals', the data collected studies subjects not as individuals, but as patterns and propensities of behaviour distilled from very large datasets.

Another example of the efficacy of panspectric business practices, cited by Davenport and Harris, is the world's largest corporation: Wal-Mart. The company's commanding position in retail can partly be explained through the fact that it is a hugely effective logistics machine – 'the mother of all supply chain analytics competitors' (Davenport and Harris 2007, 98). It sells on efficiency and low price, which can only be achieved through accurately estimating the future sales of each particular item. This machine works by sourcing the exact amounts of the right product, sold at just the right price, customised for the average customer, which all relies on constant collating of data about customers' purchasing patterns. These data are then analysed by computers, which in turn generates forecasts about future consumption patterns.

> Wal-Mart now collects more data about consumers than anyone on the private sector. Wal-Mart marketers mine this data to ensure that customers have the products they want, when they want them, and at the right price. For example, they've learned that before a hurricane, consumers stock up on food items that don't require cooking or refrigeration.

> The top seller: Strawberry Pop Tarts. We expect that Wal-Mart asks Kellogg to rush shipments of them to stores just before a hurricane hits. (99-100)

Even weather patterns can be used to predict future behaviours. Wal-Mart can also continually change prices on every product, optimising it so that it is just – but only just – low enough for us to buy it. Using analytics, Wal-Mart can explore the propensies of shoppers to act in certain ways. Another example is the American casino chain Harrah's, as described by Ian Ayres (2008). The company continually tracks each of its visitors' gambling outcomes through the 'total rewards' loyalty card. In addition to this, the company also uses an algorithm that estimates each visitors' personal 'pain point' – the level of gambling losses that will send the visitor home, and possibly make them not come back for a while. The company thus makes sure that this event does not happen. Before the pain point is reached, a so-called 'luck ambassador' approaches the visitor: 'I see you are having a bad day. I know you like our steakhouse so I'd like to take you to dinner on us right now' (Ayres 2007, 173). In this way, the company can micro-manage the feelings of the consumer and make sure that the gambling experience is enjoyable enough to incite future visits at the casino. Again, using panspectric modes of surveillance, a corporation can know the customer better than the customer might know herself or himself.

The panspectric corporate architecture

The rise of panspectric business, can – just like the panspectric social diagram – be explained as a concatenation of intensified logging of behaviours (which yields more data) and enhanced ability to manage and mine large data banks. Indeed, Ayres writes that the era of 'super crunching' is a result of technologies, not techniques – the mathematics used when mining data for patterns is hardly novel. Apart from the development of more powerful processing power (stated by Moore's Law), Ayres deems two technological developments to be crucial to this rise: first, the pervasive digitalisation of everyday life, and second, advances in database compatibility (allowing for data sets to be 'mashed up') and database storage capacity. Moreover, he notes, neither of these developments show any sign of abating. Storage capacity will continue to double every two years, and in a 'not-too-distant future, nanotechnology may spur an age of 'ubiquitous surveillance' in which sensing devises become ever more pervasive on our society' (154).

The current work of Katherine Hayles is also concerned with the panspectric diagram as actualised through RFID technology and relational database technology. While Hayles focuses on somewhat different technological actualisations than those pointed out by Ayres, she has similarly singled out the concatenation of logging of behaviours and database technology as being key to the development of new forms of surveillance and control. In this architecture,

> the relational databases are the brains of the system, RFID tags are the legs. (Gane et al. 2007, 349)

RFID chips are cheap and simple, enabling users to give unique identifiers to an infinite number of objects. They do not have to be particularly 'smart' in order for an intelligent system to emerge. The intelligence of this system emerges at the database/analysis level, where all the data sniffed by 'stupid' RFID tags are scanned for patterns – as in the original panspectron sketched by DeLanda. These architectures are, Hayles notes, a form of Artificial Intelligence (AI), but not in the traditional sense of the word, where researchers were 'trying to build the equivalent of a person; [...] trying to build the whole cognitive system in one artefact' (353). Like Ayres, Hayles points out that the panspectric architecture will continue to expand, not least through the market pull of major procurers: 'Wal-Mart is requiring its major suppliers to tag every product they buy, and so is the US Department of Defence' (354). This implies that suppliers will invariably have to RFID-tag their products as the practices of large-scale procurers have a great influence on the overall development of the market.

Davenport and Harris trace the lineage of 'analytics' back to early decision support systems (DSS) and executive information systems (EIS) in business, as well as the Stat Control methodologies of McNamara (Davenport and Harris 2007, 11-12, 50). McNamara's statistical techniques, discussed above, are indeed similar to those used in panspectric businesses today, and this highlights how panspectrocism emerges as a certain 'technological threshold' is passed – again, at the intersection of logging of behaviours and database technologies.

Panspectrocism allows Wal-Mart to take statistics one step further than the Statistical Control Unit could: whereas Stat Control worked on a reactive basis – it gathered data, analysing it for deviations (for instance in bomber precision), tried to find causes for such deviations, and devised solutions for the cause of problems – Wal-Mart, on the other hand, can act proactively, following predictions supplied by computers that crunch data through self-teaching algorithms. As such, in Davenport and Harris' terminology, Wal-Mart has moved from 'access and reporting' of data, to the predictive modelling of 'analytics' (8).

The panspectric laboratory

Just like panoptic institutions, panspectric corporations function as laboratories. For instance, as already touched upon in the case of Harrah's, corporations are increasingly using these technologies to tap into our consumption patterns and our propensities to act in a certain manner. This allows companies to control markets in new ways: instead of being generous to loyal customers, they can shift their attention to the potentially disloyal customers. Data mining not only enables them to single out customers who are statistically profitable, it helps them calculate the exact minimum level of getting consumers to stay loyal. Panspectric business practices thus involves

> a new science of extraction. Data mining increases firms' ability to charge individualised prices that predict our individualised pain points. If your walk-away price is higher than mine, tera mining will lead firms to take a bigger chunk out of you one way or another. In a Super Crunching world, consumers can't afford to be asleep at the wheel (Ayres 2008, 32).

Subsequently, new power imbalances between consumers and producers are emerging. Consumers only see their own micro-actions; producers have access to the aggregate flows of consumer desires. The business in question knows the customers better than the customers know themselves. This is, then, a sophisticated kind of 'anti-market' activity. Not only can the biggest players (like Wal-Mart) use huge databases to predict future demand of a certain product, companies can fine tune their relation to consumers, reeling them in, keeping them away from the competition, while extracting the maximum profit from them.

And that is only half the story. The examples above are based on regression analysis (and neural network analysis), where companies mine historical data for 'on aggregate' patterns. Companies are also using 'randomised trials' to conduct experiments with the mass of consumers (Ayres 2008, 46-49). One example is that of an online bookseller who can make random changes in the price of a certain book, so as to ascertain the optimum price. Corporate operations are effectively turned into laboratory trials, allowing corporations to continually monitor the quantum flows of customer desire.

Beyond experimenting with customers preferences, desires, and 'pain points' (the point at which a consumer chooses to turn to another product or seller), non-specialist business practices may also change manufacturing (as noted by Hayles), the integration of aftermarket feedback in product development (Davenport and Harris 2007, 70) and so forth.

Panoptic business and panspectric business compared

As hinted above, panspectrocism should – like panopticism – be seen as a new source of scale economies. In panopticism, economies of scale were generated through mass production and the uniformity imperative; in panspectrocism, hierarchies can be maintained through economies of scale generated as new objects of knowledge are made 'visible' to the company. As shown in the case of Wal-Mart, it will probably be incumbent hierarchies that benefit from panspectrocism: analytics tools are still the providence of large-scale corporations. While this may change as 'predictive analytics' become a standard feature in software packages such as SPSS (Uprichard, Burrows and Byrne 2008), there are still scale economies to be exploited in the process of collating data. Most importantly, large-scale operations are more likely to produce useful information by virtue of their larger data sets.

Just as in the case of panopticism, the innovations leading up to panspectrocism have a military origin. Moreover, these innovations resonate with crises in military order and national security – DeLanda's original discussion on the panspectron was situated in the context of intelligence services. As such, there is a link between the practices of tapping into the dividual flows of consumer preferences and desires on the one hand, and the scanning for asymmetrical threats towards nations on the other. As we see this panspectric diagram evolving, it is often the civil sector that facilitates the data gathering: the data sets are generated by Google– or Facebook-browsing, or by Wal-Mart shopping. Moreover, as Sandra Braman has noted, even the 'nicer' aspects of digital culture – including the ideals of open and democratic sharing of information – feed into this diagram:

> With the transition from a panopticon to a panspectron environment, the production of open information not only provides support for communities but also contributes to surveillance. (Braman 2006)

So, just as in the case of the panopticism studied by Foucault, a new diagram that emerges in response to acute crises may well become normalised over time. Nevertheless, even though the everyday and civil business world has, as it were, 'received' from the military, it is also building an infrastructure for intensified logging of data. Note the recent controversies regarding instances when states wish to access data gathered by civilian infrastructure – such as Canadian dissent over the fact that the US Patriot Act allows all Google searches to be accessed by the US government (Avery 2008), and reports of police at Tehran airport using Facebook for security checks (Fassihi 2009). A study of the panspectric diagram in business cannot be dissociated from the study of the same diagram in the context of the military and intelligence services.

4. The expressive components of panspectrocism

So far, this text has focused on 'the visible' – the technological architectures of the panspectric diagram. The same can be said for previous work on contemporary modes of surveillance that draws on Deleuze's notion of the assemblage (Haggerty and Ericson 2000; Elmer 2004; Bogard 2006). What, then, about 'the sayable', the expressive aspects of this diagram? What statements, knowledges and world-views have started to resonate with the new technologies that log behaviours and mine data? As noted earlier, visibilities are only half the story. This section argues that the panspectric diagram rests on a particular set of views on the constitution of the human subject – a set of knowledges that emerge in the context of an unlikely alliance of academics and marketing professionals. This, in turn, raises interesting questions for social scientists.

In Deleuze's societies of control, surveillance is a matter of rendering supra-individual aggregates, as well as sub-individual mimetic contagions, visible. The objects of this surveillance are not so much individuals themselves but the patterns of behaviour that they form in conjunction with other so-called dividuals. Here, Deleuze's postscript chimes with more recent work that connects to the contagion-centric thought of

Gabriel Tarde (Lazzarato 2002; Barry and Thrift 2007; Blackman 2007; Thrift 2009). Google's algorithms can be understood in a Tardean manner: patterns of previous browsing tell Google something about our propensities to act in a certain manner, because our subjectivity is supposedly produced by the 'imitative rays' (Tarde 2000, 50) that hit our brains when online. Consequently 'Googlesque' prediction presupposes that our minds are 'radically open' to imitative currents, which flow between and through our minds.

Nigel Thrift has pointed to how the recent academic interest in Tarde has coincided with marketing professionals' interest in how desires propagate themselves through the ranks of consumers:

> The 'economy' described by Tarde is perhaps closest in form and spirit to modern consumer 'flock and flow' economies which are based on tracking and periodically initiating consumer enthusiasms. […] It is an economy which depends on tracking as well as generating the propagation of desires. (Barry and Thrift 2007, 518-519)

As a result, ironically,

> a certain form of Tardean programme for social research is only beginning to be realized, although it is likely to be carried out not primarily by academic researchers but by corporations, market research agencies, governments, and regulators. (521)

Earlier, we saw how Wal-Mart operates such social research, taking factors like weather patterns into the equation when predicting consumer behaviours. In a recent paper, Thrift (2009) points to the emergence of a new form of 'capitalist meteorology';

> an atmospherics dependent upon unpacking what might be called the simple mechanics of sociality, a mechanics which operates at the intersection between the biological and the cultural. (90)

In this nascent body of knowledge, the biological is on the same footing as the cultural – an idea that is fashionable within cultural and social theory, yet also useful for corporations wanting to construct a 'buy-ology' about the nature of the consumer. Thrift points to how this capitalist meteorology is reflected in three different forms of 'knowing' corporate practices: 'Neuromarketing'; the study of imitation through face and gesture recognition; and the tracking of imitative rays through digitised logging and analytics (i.e. the issue discussed in section three). As a further indicator of how 'capitalism tracks Tarde', he cites the example of Duncan Watts, quantitative sociologist and author of the best-seller *Six Degrees: The science of a connected age*.

> Several degrees removed, Watts' work on social influence and contagion bears some
> relation to Tarde's work and it has been influential in business as well as academe.
> Indeed, in 2007, Watts moved to Yahoo as a Principal Research Scientist, working on the
> determinants of success in cultural markets. (91)

Watts' work is discussed in Thrift's earlier work, *Knowing Capitalism*, in reference to 'the cultural circuit of capital' and a 'tightly interlocked set of institutions, responsible for strewing the world with knowledge of business and for making that knowledge of business into a business' (2005, 13). So, the above-mentioned issue of how 'capitalism tracks Tarde' can be rephrased in the following terms: in the rise of capitalist meteorology, we see how Tarde-like arguments about human nature and 'the simple mechanics of sociality' are becoming a part of the self-reflective, 'knowing' character of contemporary capitalism.

In other words, there is a wider issue at stake here. While researchers may decry the practices of neuromarketing and speculative mobilising of consumers' desires, academics are fellow travellers in the

shift towards panspectric modes of organisation. After all, notions of 'dividual selves' and 'imitative rays' serve to stabilise a world-view in which the human mind is seen as dispersed and configured by traceable influences – effectively cementing the idea that human behaviour can be predicted. If there is such a thing as a post-human condition (Hayles 1999), such discourses seem to dovetail with the architectures of panspectric surveillance.

How, then, are we – the social scientists – to relate to this issue? Uprichard, Burrows and Byrne (2008) point towards 'a stark ideal-typical contrast to which [they] hope colleagues will react' (615); an emerging new face of quantitative sociological research that significantly challenges the very possibility of prediction (618). Thrift, on his part, proposes that the increasing concern with 'the engineering of propensity' requires a reworking of Tarde. This might

> enrich Tarde's view of a universe of imitative currents and also produce formats for enquiry that counter the brutally instrumentalist view that underlies developments like neuromarketing. (92)

In this vein, social researchers may produce something more than expressive components that resonate with the panspectric architectures. This 'something more' is a new 'political economy of propensity', which explores the notion of 'the political' in the context of an economy increasingly stratified through panspectric modes of surveillance. Indeed, the power wielded by Chandler's corporation is of a different kind than that projected by the likes of Google and Harrah's.

5. Conclusions

This paper sets out from an assemblage theory perspective and posits that economic order should be understood as an actualisation of the 'abstract machine' of stratification, which has taken the concrete form of the modern corporation. In recent years, the shift towards a 'postfordist' economy has meant that this actualisation, as produced through the panoptic diagram, occurs to a lesser degree. Instead, new material architectures – which are a result of the pervasive digitalisation of everyday life, advances in database compatibility and software, and database storage capacity – have produced a constellation in which consumer behaviours can increasingly be predicted. These technologies already operate within credit card issuers, as well as within major corporations such as Google, Wal-Mart, and Harrah's casinos. Nevertheless, while these so-called 'panspectric' modes of ordering the economy are enacted through computer technologies, they are no more 'virtual' (in a Deleuzian sense) than the panoptic modes of ordering. Instead, both modes should be understood as different ways of actualising the abstract machine of stratification, as discussed by Deleuze and DeLanda.

This shift towards panspectric modes of ordering the economy is not simply a matter of material architectures; as a part of a social diagram, these visibilities cannot be separated from new 'expressive components', or new sayabilities regarding human nature. In this way, the emergence of new marketing and surveillance practices must be understood in the context of novel models of the human subject that marketers and social/cultural theorists both share. This implies that a new meteorology of the 'business environment' is taking shape, and that academia is actively participating in this 'knowing' character of contemporary capitalism. The upshot of this development, however, is that a new 'political economy of propensity' is emerging, the outlines of which have yet to be written.

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