

Data Enlightenment and its Discontents: Free Will and Myth of Human Authority in the Age of Big Data

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Abstract | New technologies of data-extraction, such as Big Data, collect information from online users and connect them in order to trace behavioural patterns and predict future marketing choices. Online activity is becoming more essential than ever before despite growing concerns about privacy. Personalised advertisements based on prediction not only manipulate online users, but they even create their needs and desires by influencing their decision-making process and choices, thus, facilitating the growth of online capitalism. Is there even a small place for human free will in the age of Big Data? This paper examines the possibility for agency as it is framed in the age of Big Data, and contends that although technology is the offspring of humanity's alleged scientific rationality, it paradoxically questions the myth of man's mastery over himself and the world. By exposing humankind's self-contradictions and vulnerability to control, Big Data dismantles and simultaneously continues anthropocentric myths regarding human reason and supremacy, while promoting new forms of surveillance and state control.

Keywords | Big Data, Agency, Free Will, Technology, Data-Mining, Surveillance, Digital Panopticon, Online Capitalism, Enlightenment

These days it is almost impossible to follow the speed of technological progress. New devices and services designed to improve daily life appear in the market every day. These advancements in computer science facilitate communication, consumption, and self-improvement in unprecedented ways. They enhance the speed and quality of research in fields like medicine, astronomy, and climate change, but they also have negative implications concerning the manipulation and privacy of individual users. At the end of the 20th century, Gilles Deleuze's vision of control societies describes but the foundations of the world today. He perceives a movement away from the disciplinary society illustrated by Michel Foucault in *Discipline and Punish*. Docile bodies and sites of confinement give way to new forms of control within "[...] a system of varying geometry whose language is digital" (Deleuze 178). This new kind of society is dominated by digital codes, which allow or inhibit access to information. In this context, according to Deleuze, individuals and masses are reduced to "'dividual' matter to be controlled" or, in other words, to data (182).

Almost thirty years after the publication of Deleuze's *Negotiations*, it can be observed that life is indeed dominated and, by extension, controlled by the digital. This kind of exploitation presupposes an understanding of the human as something that can be reduced to data, to information that can be analysed and used for marketing and surveillance purposes. On this basis, Byung-Chul Han contends that the world has moved from biopolitics, characteristic of Foucault's disciplinary society, to psychopolitics, the interference with the subject's psychic processes (25). Neoliberalism, as the latest mutation of capitalism, turns freedom into a new form of subjugation, no longer under the guise of regulation and conditioning but as digital exploitation of personal information shared online (1; 5; 9). The internet has thus become an indispensable tool in the 21st century. Although it began "as a medium of boundless liberty," today it is a new form of panopticism, a site of "total control and surveillance," exercised through the collection of user data (8). At the centre of these functions is capital increase. As the world's new master, capital "generates needs of its own; [and] mistakenly we perceive these needs as if they belong to us" (7). This false assumption, however, is reached after undergoing digital manipulation. Neoliberal power, Han insists, is invisible and pleasing instead of forbidding, and it operates through positive emotions and desire, making individuals dependent on it (14). This is achieved through Big Data, the collection and analysis of large sets of data, which read into users' behavioural patterns and use them for prediction. As the world becomes more and more digitalised, it is almost impossible to hide from the watchful eye of algorithms.

It is impossible to talk about the modern world without referring to the Internet. Its use has spread to the fields of education, social services, politics, marketing, and others, while at the same time it has become one of the most subtle yet effective mediums

of control. This evolution of purpose has taken the Internet far from its original purpose. Introduced in the 1960s as a means of distance communication, the Internet connected scientists from different places and facilitated their collaboration as well as the fast exchange of information. At this early stage, the exchange of data between a computer and a server remained anonymous (Peacock 5). This was before the employment of browser cookies. These first appeared in 1994, “when Lou Montulli assembled a piece of code in hypertext transfer protocol language [...] called the HTTP cookie” (5). The implementation of cookies changed the Internet drastically as regards its use and secure connectivity. In the second decade of the 21st century, the majority of websites have a cookies policy which users need to agree to in order to access information. Strangely, however, most individuals are oblivious to the nature of cookies and to what such an agreement entails. A cookie is “a small text file [...] that a website [places] on a visitor’s computer” (Turow 55). This file is constituted by a number of codes, which can be used to identify the user and the clicks they made while visiting the website. Upon the user’s return to the website from the particular computer, the browser recognises and decodes the information on the cookie. This includes the user’s past activity, such as previous purchases and even items they might have been interested in simply by clicking on them (55). This explains why cookies have become so fundamental to online advertising and marketing. They allow companies to collect information and shape their business according to users’ needs, thus laying the foundations for the personalisation of ads.

However, not all websites require the user’s permission to place cookies on their computer. This has created anxiety about user privacy and online security, not only in relation to digital transactions, but also for the dissemination of personal information. Consequently, although cookies have enhanced the efficiency of advertising, they have also led to the decline of secure online communication, since marketers perceive them as means of learning more about individuals without them knowingly giving information. Opposition to cookies has so far come to no avail. Instead, they have even evolved to ‘evercookies,’ which “[...] continuously track online activity, are independent of the software used, and cannot be deleted” (Peacock 7). Cookies, then, have become one of the most prominent tracking methods on the Internet.

The development of more advanced algorithms has given rise to a relatively new technological phenomenon, which has taken web tracking to unprecedented depths. Big Data is defined as “high-volume, high-velocity and high-variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making” (qtd. in Baruh and Propescu 581). According to boyd and Crawford, Big Data depends on the interplay between technology, analysis, and mythology. Algorithms collect and analyse data with increased accuracy, so that they can identify patterns in user behaviour and make suggestions accordingly, on the assumption that the knowledge they have collected is objective (boyd and Crawford 663). The neutrality of these large data sets allows for their interdisciplinary use, from fields such as politics to medicine and criminology.¹ Thus, although it is understood that Big Data

¹The implementation of data sets constitutes a new strategy for tracing and preventing crime. Algorithms collect personal information which is then linked to behavioural patterns and personality traits associated with criminal behaviour (Cf. Nikolas Rose).

can offer new insights in science, it is also perceived as a potential threat to privacy and freedom at the service of state control over individuals.

The growing power of Big Data has sparked concern regarding privacy and agency, as users are forbidden access to most websites unless they accept their cookies policies. This results in the collection of personal information of users and subsequent personalised ads following them around different websites. In this context, the present paper examines the concept of free will as it is problematized in the age of Big Data. It investigates the ways in which data-mining and prediction, especially for marketing purposes, affect the decision-making process and undermine user agency by serving personalised ads and information, thus limiting options and manipulating selection. This study will use free will and agency interchangeably, following the most widely accepted definition that understands free will as the occasion when it is up to the subject to “choose from an array of alternative possibilities” so that “the origin or source of [their] choices and actions is in [themselves] and not in anyone or anything else over which [they] have no control” (Kane 5). This process of free choice and action is “based on reflection [...] making sense of the world so as to act in it” (Couldry 891). The model of free will problematised in this study situates itself in the centuries-long debate regarding the existence and nature of free will, especially in relation to determinism. The paper aims to show that, by hindering agency, Big Data questions the myth of man’s mastery over himself and nature, an idea established in the Enlightenment. By exposing humanity’s self-contradictory response and subjection to its own technologies of control, a new Enlightenment of “data-driven knowledge” (Han 58) dismantles and at the same time, paradoxically, continues anthropocentric myths constructed during the Age of Reason, and passed onto the next generations to the point where they are perceived as inherent truths.

New systems of knowledge and power arise, governed by the belief that everything and indeed everyone can be quantified, measured, and turned into data. This process is called “datafication,” meaning the transformation of what was previously thought of as unquantifiable aspects of life into data (Kennedy et al. 1). Through this lens, everyday activities are reduced to data streams. The self does not escape this trend. Data collection produces a digital replica of the individual, which can be observed and analysed independently of the actual person (Baruh and Popescu 581). This replica of the self is but an assemblage of data gathered from multiple websites visited by the individual. These include the user’s social background, location, relationships, and activities. As a result, access to personal information has generated new ways to monitor citizens. Jeremy Bentham’s Panopticon has assumed a new, digital form. The Digital or Electronic Panopticon as the new invisible and limitless means of surveillance collects and matches data on individuals in order to create an artificial version of their personality (Lyon 69). Categorising users, by extension, allows for the identification of collective patterns of behaviour as well as the needs and interests of the masses. This information is then used for government administration and law compliance (Fox 265). What can be inferred from this is that even though data sets are neutral, their analysis and implementation by marketing companies and governmental institutes serve a capitalist ideology, whose aim is to control humans on both an individual and a collective level.

As the internet is increasingly being used for marketing purposes, methods of data collection, also known as data-mining, are being utilised at the service of capitalism. In

a world where citizens are being turned into consumers (Han 10), Big Data has become an indispensable tool for targeting individuals with what is understood to be, based on their digital profile, their needs and desires. As Turow observes, in exchange for access to information, companies place cookies on the user's computer and track their online activity throughout different websites, which then allows them to infer the individual's lifestyle and consumer intentions (105). It is not just marketing websites that are involved in this process. Informative websites use cookies and clicks for tracking, but the greatest source of data today is social media. Social media websites, such as Facebook and Twitter, offer free services in return for user data. This data is then sold to companies which target individuals with personalised ads (Bartlett 12). This becomes possible with the use of predictive algorithms which analyse user data and make predictions about future behaviour (Palmas 347). Thus, thanks to Big Data, prediction and personalisation have become the most effective tools for controlling consumer activity.

The problem of user agency begins from the very first moment an individual goes online. From that moment on, their activity is watched as it falls within the digital gaze of the new Panopticon. No online move escapes it. All the clicks and searches a user makes are stored (Han 61), which means that no step of online activity can be lost or deleted. This includes posts on the social media. Whether they are kept or deleted by their owner, their existence as data can always be accessed by companies and used in order to obtain user information. However, the majority of users are not always "aware of all the multiple uses, profits, and other gains that come from the information they have posted," especially since the publicity of data does not connote permission for free use (boyd and Crawford 673). Although websites create the illusion that users are still in control of their information and activity, they have in fact lost control from the moment they go online. There is no option to limit the extraction of data or use the Internet incognito. The extent to which users are conscious of their online activity also shapes their relationship to the so-called technological unconscious, meaning infrastructures comprising of patterns, predispositions, and responses of individuals. The recording of "user's responses and interactions reveal more and more about her predispositions," thus enhancing "the possibility of surveillance" (Hayles 119). Yet, it is questionable whether users are conscious of the information that can be exacted from their online activity.

Despite the increase in privacy complaints, the use of the Internet is certainly not diminishing. On the contrary, anxiety about privacy and online activity seem to be growing parallel to each other. Although more and more websites inform users about their cookies policy, which should mean that they are raising awareness of the extraction of user information, the activity of individuals and the sharing of information online is flourishing relentlessly. A "privacy paradox" can be identified, therefore, in the incompatibility between the online behaviour of users today and their ardent privacy concerns (Baruh and Propescu 587). If users are informed that their data will be stored and used, and nevertheless agree to it, then they also become responsible for data extraction. However, as the majority of social services and everyday life activities today require at least some involvement with the digital world, it becomes more or less inevitable for citizens to sacrifice, or better to sell, personal information in order to be functional and have access to services. Convenience is prioritised over privacy, inasmuch as there is basically no other option (Peacock 4). Most commonly, users are given the option either to agree to policies that store their information and track their activity, or

they are denied access to websites. They do not have the freedom to negotiate the terms or choose between alternatives (8). Web tracking technologies have advanced to the extent that Internet users have no choice but to bear with them. This is a case where logic of consent becomes dubious, as individuals do not truly have a choice: they can either agree to the terms or fail to function adequately in today's increasingly technological society.

The thoughts and motives that drive individuals to decisions are one of the major interests of advertising and marketing companies, and Big Data is providing them with fresh insights into these mental processes. On the assumption that everything can be quantified, decisions made by users are turned into "factual states" (Han 12), meaning data can be mined and analysed by algorithms in order to make predictions about future economic opportunities. Decision-making has been turned into a science for companies, who use data to understand and manipulate marketing behaviour. They build on the theory of human malleability according to which behaviour is the result of external stimuli (Bartlett 13). Big Data is the key to success. Data-mining, matching, and analysis produces a digital replica of users, which then allows algorithms to observe patterns and identify probabilities about future action on both individual and mass level. Han contends that this digital version of users is possibly more accurate than their own constructed self-image (62). This may be the case because data-mining technologies, by following the clicks and the time users spend on particular websites, gain access to mental processes and spontaneous interests about which individuals are unconscious. It is this digital spectre of individuals that with the help of Big Data becomes available to marketing companies, which then target consumers with personalised websites and ads (Baruh and Propescu 582). In fact, personalisation involves even news, entertainment, and general information (Turow 118). If what a user sees online is determined by capitalist ideology and the individual's digital categorisation, which is out of their control, then their agency is jeopardised. The users' ability and indeed their right at self-definition and control of their digital and social identity are compromised by Big Data and sorting methods that serve capitalism. Users become identified with their past activity. How does this complicate the future?

Personalisation and prediction are the most subtle and shrewd tools for the online exploitation of consumers. According to Hayles, the biggest part of human behaviour is not conscious (66). Big Data, however, has managed to access its unconscious elements. It can capture "micro-actions that elude detection by the waking mind" as well as "collective patterns of behaviour" which make "the collective unconscious" itself "accessible" (Han 65). Big Data's ability to read desires, which users themselves are unaware of, opens up space for psychopolitical exploitation and control on individual as well as mass level. Based on a user's data, companies make predictions about future behaviour, and personalise ads and websites in order to make this future behaviour a reality. To this end, personalised ads, for instance, use language that has been previously used by the user so that it gives an impression of authenticity (Bartlett 29). Unlike humans, data streams do not forget. By storing information, which users are not conscious of or have forgotten, corporations end up having better knowledge of users than users do themselves (Palmas 348). Furthermore, Big Data-based marketing, by playing on unconscious processes, interferes with mental operations and manipulates decision-making in ways that could be "faster than free will" (Han 63). The smarter

predictive algorithms become, the deeper this invention goes. Although personalised ads do not compel the user to click on them, their constant appearance across a variety of websites affects thought and action in devious, unconscious ways. As a result, users consent to suggestions on offer without checking them cognitively (Berry 145). If the user was not interested in a particular item beforehand, then a case could be made that they were tricked into being interested. Thus, these “recommendation systems” do not “only detect preferences, but also construct them” (Baruh and Propescu 589), thereby depriving users of agency and even of control over their own thoughts and actions. Algorithms take the place of agency, and make the users’ decisions for them. Freedom of choice is substituted by selection from suggested items (Han 15). Consequently, the lack of alternatives and the manipulation of action by outside forces jeopardise the nature and even the existence of free will.

In the age of Big Data, the agency of users is thus overshadowed by determinism and its incompatibility with true free will. According to determinism, it is necessity that motivates an individual’s actions, inasmuch as there are no other possibilities and it could not be otherwise. The source of will and, by extension, of action is not in the individual, and this is the case in the digital world as well. A user’s thoughts and actions are guided by external stimuli, and they are determined by spontaneous and even unconscious decisions encouraged by the capitalist system. The origin of their behaviour can be traced back to their digital replica and online marketing manipulation. However, it may not be possible to completely deny moral responsibility since it is their earlier online choices and actions that determine their future manipulation. Thereafter, running into a vicious circle of jeopardised agency, the development of individuals is falling into the hands of corporations, and users are turning into their digital shadows, guided by a new god: Big Data.

The technological achievements of the 21st century are products of a long history of thought, whose roots can be traced back to the Enlightenment. The Age of Reason, as it was also called, claimed a place in history as “the advance of thought” that “aimed at liberating human beings from fear and installing them as masters” (Horkheimer and Adorno 1). To this end, it promoted scepticism towards religion, tradition, and all kinds of superstition, and sought to dissociate belief from knowledge. To know meant to enquire into the observable world and liberate the mind from the chains of fantasy. The goal of this philosophical movement, therefore, was “the disenchantment of the world” (1). The new forms of empirical knowledge that arose would then allow humans to establish their dominance over nature and replace the gods they had rejected. As masters of nature, however, humans would also have to become masters of themselves, and of other people (Berry 94). The dream of the Enlightenment has been realised in the modern era, albeit with complications. These include the concepts of self-exploitation and self-optimisation, identified by Han, which characterise citizens today (6; 30). Caught in a loop of compulsive self-control and self-betterment, humans lose touch with impulse and, by extension, with their free will as they always strive towards the goal of becoming masters of themselves. On a larger scale, new technologies of surveillance serve the purpose of keeping individuals on track and under the control of corporations and the state. Han argues that the 21st century can be perceived as a second Enlightenment, an era when knowledge is defined as data (58). However, given the new systems of coercion and the jeopardy of free will discussed in the previous sections, one ought to ask, “how

does the project of enlightened autonomy and freedom become instead a reality of radical heteronomy and domination?” (Berry 102).

Technology in the modern age has created new and unprecedented possibilities for knowledge. Its project is based on the empirical developments of science that sprang during the Enlightenment. Empiricism, in fact, laid the foundations for the quantification and measurement of everything in nature, although it failed to predict that one day this would include humans. Centuries later, humans “define themselves [...] as things, statistical elements” (Horkheimer and Adorno 21). The rise of the capitalist system transformed the principles of the Enlightenment so that they would serve its own ends, and the ramifications of this procedure can be observed in the mechanisms of the modern world. Knowledge is power and has no boundaries. Therefore, if “technology is the essence of this knowledge” today, and its interest is utility, it can be used for the sole purpose of producing capital (2). Indeed, human capital is at stake in the digital era, when the self becomes a commodity sold online in exchange for information and free services. Thought itself, as argued earlier, becomes objectified, reduced to data that can be observed, analysed, and used for particular ends. Thinking, Horkheimer maintains, “has been reduced to the level of industrial processes [...] made part and parcel of production” (qtd. in Berry 24). A paradoxical difference thus arises between the first and the second Enlightenment, although the latter is the offspring of the former, since human reason laid the foundations for scientific and technological advancement. Following the Enlightenment’s principle that whatever cannot be turned into numbers is an illusion (Horkheimer and Adorno 4), the age of Big Data turns even the self into numbers, which, however, goes against another Enlightenment principle—human authority. Agency itself is resolved into data, which makes freedom of choice an illusion too. A knowledge and power imbalance emerges, as knowledge is no longer the object of humans but of the technological mechanisms they have created (23). Individuals are therefore conditioned to think within the confines of computational systems (Berry 104), which then analyse their mental processes. As a result, the anthropocentrism of the Enlightenment is being deconstructed from within.

The purpose of the Age of Reason was to liberate humanity from superstition and metaphysics, but since then it has been observed that the Enlightenment itself was caught in myth. Despite the disenchantment of the world that came about with the rise of empirical science, individuals and their relationships fell under the spell of rationalisation (Horkheimer and Adorno 21). This is true in the modern day as well, when more and more citizens of all ages become infatuated with technology, especially with the Internet, which is a scientific invention, thereby also a by-product of human reason. However, the most fundamental of myths of the Enlightenment is the one regarding human authority and sovereignty. The possibility of controlling the world went from the hands of god to the hands of man, the possessor of reason. The mind no longer needs god, for it has its own sovereignty and creativity, and through knowledge it is capable of making and manipulating all things (Horkheimer and Adorno 6). However, in the digital age, it is humanity that is manipulated by the offspring of its thought and science. In fact, domination by technology goes so far that free will itself is at stake. It has long been believed that agency is the source of authority that allows humans to dominate the world. This is humanity’s “founding myth” (Bartlett 31). Without it, humans would no longer be in power. What is paradoxical is that humans are losing their agency and authority to

technology, which is itself a product of the tradition that places humanity at the centre of the world. In this light, the second Enlightenment reproduces and, at the same time, contradicts the principles of the first Enlightenment.

What can be inferred is that humans are in fact much different to what the age of Enlightenment imagined them to be. Passive submission to the workings of Big Data, and to the economic and political interests it serves, shows that “we bear little resemblance to the idealised, rational beings imagined by the Enlightenment philosophers” (Pentland 88). The way in which algorithms manage to manipulate the mind by appealing to its unconscious operations shows that humans are not in control of the processes within themselves as much as was once believed. Conceptualising individuals as agents was an anthropocentric myth, which was also politically encouraged in order to serve the interests of the state (Hayles 77). It could be suggested that this illusion was created in order to mislead the masses and thus control them in more subtle, invisible ways, as is indeed happening in the digital age. The continued usage of technology by online users, in spite of the known privacy risks, demonstrates that despite its rationalisation, the human world remains paradoxical and indeed inert (Horkheimer and Adorno 98). Thus, the deconstruction of the idea of human authority helps demolish the barriers built by anthropocentrism, and at the same time it emerges from within a system that jeopardises free will and imposes new forms of coercion.

Regardless of the dissolution of the anthropocentric myth and the odd kind of equality between species that emerges, the oppressive implications of Big Data utilisation should not be overlooked. These technologies do not only guide society’s consumption choices, but they also encourage the establishment of consumerism and material insatiability as dominant ideologies of life. Big Data’s tendency to sort users into categories may also sow the seeds of new forms of racial profiling based on an individual’s online activity. Furthermore, the rising use of algorithms for the implementation of tasks usually undertaken by individuals not only puts humans in a position of ever increasing passivity and submission, but also leads to the decline of their mental capabilities. Hayles gives the example of GPS navigation and the atrophy of the human capacity for orientation (125). For centuries the enemy of the state has been the thinking subject. In the 21st century, the state is winning. With the help of Big Data, neoliberalism has trapped its subjects in a loop of unending self-optimisation, as citizens perceive themselves as projects that always need improvement (Han 1). To stop and think is not an option in this spiral of compulsion that finally humbles individuals to absolute docility. The concept of freedom is fading, and it will not be long before it becomes only a memory instead of a living ideal.

However, though the purpose of structures is to regulate and control people and their agency, human subjects can “act against, as well as within them” and become agents “in conditions not of their own making” (Kennedy et al. 2). Big Data sorts individuals into categories without taking into consideration the factor of difference and divergence. It fails to identify the uniqueness in individuals, namely the exceptional aspects of the self that escape standard categorisation and which have the power to transform the future. According to Han, such an individual would be “a modern-day heretic” and “a figure of resistance,” inasmuch as they would exist outside the digital network of control and thus thrive on the ability to choose freely (75; 76). The possibility for agency, therefore, can emerge not in spite of the malleability of humankind but because of it, as it constitutes a

process of subject development. Furthermore, Big Data has provided new insights into a multitude of areas, including medicine and climate change—two of the most central concerns of the 21st century. If considered for its essence rather than for its commodity value, information does not by default negate individual sovereignty (Peacock 4). It is not too late for collective oppression to be turned into meaningful collective cooperation in a manner that benefits not only humankind but the entire world itself. Thanks to the abundance of information today, it is possible to create “*knowing* rather than *known* publics” (Kennedy et al. 5).



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