Pascal A. Nonnen

Do digital markets and algorithmic governance pose intractable problems for existing forms of regulation and policing?

Essay

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ESSAY QUESTION:

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Introduction

Within the past 10 years we've witnessed a dramatic shift in global markets: the most valuable publicly traded companies measured by market capitalization are big tech-companies such as Apple, Alphabet, Microsoft, Amazon and Facebook (PWC Report 2017). At the same time, everyone's life in the western hemisphere has become more digital. With the emergence of Web 2.0, new platforms are created in such a way that users can directly interact with one another and participate in the decision-making process of how these platforms function. They do this by producing and exchanging cultural/informational content, products and services via web networks (Terranova, 2000). At this point, we could state that in the era of digitalization users become empowered by their consumptive[1] behaviour and by the possibility to connect with like-minded people. They decide whether they want to participate in (user generated content) platforms and they decide what they want to share and what not (Ritzer, Dean, Jurgenson, 2012).

But there is also another, opposing narrative: The digitalisation of the past years suggests that the more we use digital platforms –for e-commerce, social networks, search engines or media - the more powerful the platforms become and the more influence they have on us (Pasquale, p. 14). As most of the aforementioned companies are monopolies in their markets, we have reason to scrutinize the emerging shift not only within markets but also within society (Pasquale, p. 141). From a governance perspective, I will argue that this shift to an increasingly digitalized world poses intractable problems for existing forms of regulation and policing. This paper's focus lies on one of the driving forces of this shift: *algorithms*. Once we zoom into the business

[1] Alvin Toffler (1980) coined out the term: *Prosumption* – a combination of production and consumption.

models of (gigantic) tech-firms we note that their success heavily relies on gathering and valorizing (big) data, through algorithms, implemented as software. Nowadays, there are many ways to monetize data, data has undoubtedly become an economic asset class (Just & Latzer, p. 240), and the effects are wide-ranging. While people's lives become more transparent, firms take advantage of their right to privacy and secrecy (Pasquale, p. 3). But the situation becomes even more confusing: There are spaces in the Internet in which both individuals and businesses can act as anonymous persons, such as the dark net (Aldridge & Decary-Hetu, p. 4). In this essay, I argue that the emergence of digital markets constitutes a break with past social forms. Chapter one will examine the new social order by introducing Michel Foucault's concept of 'Governmentality', followed by 'algorithmic governance' as governance by algorithms (governance by technology) ((Just & Latzer, p. 242). I will outline how algorithms are not only shaped by humans but also shape humans and co-determine how social reality is organized. Chapter two will focus on how algorithmic governance and dark net as a space of anonymity pose challenges to society and to current forms of regulation and policing. It will also discuss whether, and to what extent, authorities can respond to the particular problems raised by digital markets and algorithmic governance. This essay will conclude that algorithmic governance and dark net as a space of anonymity confront both society and authorities with intractable regulatory problems. Due to the rise of a new social order, various effects such as secrecy, opacity, and inscrutability complicate regulatory responses on the part of authorities. As all members of society become more dependent on complex technology, it will be impossible for authorities to tackle the effects of algorithmic governance and dark net as a space of anonymity as a whole.

I. A New Social Order

The break

This section aims to trace the break between media, its usage and its effects on society by introducing a distinction: the distinction between old and new media and the use of technology. Harry Pross, a German social scientist, proposed the organization of media in three categories: 1) Primary media is speech which does not require any technological devices, 2) secondary media: books and newspapers and only requiring technology (for production and distribution) on the sender's side, and 3) tertiary media:

telephones, televisions, and radios. The latter also necessitate technology on the recipient's side (Pross, 1970). Just and Latzer introduced quarternary media as the new media, the digital media, defined by a further step of technologization: the dependent relationship to devices and technological artifacts, especially the dependence on software, for both sides- the sender and the recipient (Just & Latzer, p. 242). Not only do software and hardware become inseparable, but also the distinction between sender and recipient dissolves, as everybody can potentially produce services, products or content for an audience (Terranova, 2000).

This constitutes a break because digital/social media has utterly changed the way we perceive and construct social reality (Just & Latzer, 2016). Following Langdon Winner (1986), a US-American philosopher of technology, technological innovations do not leave political, governmental and economic spheres untouched (Winner, 1986). As users of this media, we become witnesses of how software and therefore algorithms co-determine how social reality and thereby political and economic matters are produced and organized - what seems relevant, what should be discussed, liked, commented, bought, recommended, and so forth is influenced and organized by algorithms (Just & Latzer, p. 247). In addition, algorithms passively co-determine what should be ignored or neglected. As many people use new media, a shared social reality is formed both by humans and algorithms: 'Humans shape algorithms and are simultaneously shaped by them' (Just & Latzer, p. 252). But what exactly are algorithms? And why are they so powerful? Before exploring these questions, I will briefly introduce the concept of "Governmentality as a framework for the discussion about the intractable problems algorithmic governance and dark net as a space of anonymity pose on existing forms of regulation and policing.

Foucault's Governmentality

The French philosopher and sociologist Michel Foucault developed the concept of 'Governmentality' to refer to techniques, practices and procedures that direct human behaviour (Foucault, p. 82). His concept comprehends governance not as a singular concentrated (oppressive) power authority - as one might think of a state (Murray Li, p. 272). On the contrary, Foucault was more interested in the techniques and practices, which would allow humans to govern others and their selves (Rose, O'Malley & Valverde, p. 83). As these practices of Governmentality operate within assumed domains

of knowledge, Foucault focuses on 'how practices, knowledge and power become interconnected to enact particular governed subjects (or rather subjectivities) in a variety of institutional settings' (Introna, p. 26). Defining it shortly as the 'conduct of conduct', Foucault provides a concept of governance that is able to look into the activities, which shape and guide the conduct (actions) of others (Introna, p. 26). With Foucault we can comprehend the extent of the aforementioned break and explain the concept of algorithmic governance. Hence, the next section starts first with a short definition of an algorithm.

Governance by Algorithms

In a technical sense an algorithm can be defined as a set of decision-making instructions for solving a well-defined problem (Goffey, p. 16). They can be expressed in different computer programming languages (e.g. Java, Python, PHP, and SQL) (Goffey p. 16) and are 'fundamentally relational in the sense that they depend on some kind of external input (data) in order to function'[2] (Bucher, p. 1172). Picturing an input-throughput-output model, algorithms use input (data) to 'operate'– in the throughput stage– in order to deliver a desired output (specific results) (Just & Latzer, p. 241). However algorithms are not only static pre-programmed procedures. Even though these kinds of algorithms do exist and can be understood as 'recipes' (MacKenzie 2006, p. 43), they are also fluid, adaptable and variable, as they can modify themselves and make their own decisions (Bucher, p. 1172).

We can now define the term *algorithmic governance*, before discussing the effects it has on society and on existing forms of regulation and policing. For the purposes of this essay, algorithmic governance can be understood as the governance by algorithms, thus governance by technology (Just & Latzer, p. 242). Algorithms (implemented as software) govern because they are not only designed but also co-design the virtual paths we take and, hence, affect us in all kind of contexts: as customers, applicants, friends, colleagues, activists, and even as porn watchers (Introna, p. 18). They analyse users' past behaviour to predict their future actions (Pasquale, p. 19). They can interpret pieces of user behaviour and generate profiles in order to categorize users as e.g. potential customers for certain products and services, or even as suspects and threats (Pasquale, 2016).

[2] Picturing an input-throughput-output model, algorithms use input (data) to 'operate'– in the throughput stage– in order to deliver a desired output (specific results) (Just & Latzer, p. 241).

Often the aim of programming algorithms is to have automated self-learning algorithms, (machine learning) which decide on their own if, for example, a job applicant is a good match for the company, if a person is worthy of credit or worthy of insuring (Pasquale, 2016). Thus, they have the power to co-determine how sociality is produced and organized (Kitchin & Dodge, 2011). Moreover, algorithms have interrelationships with one another, sometimes even without human support (MacKenzie, 2016). One example is high frequency trading. At the time of writing, algorithms do most of the trades executed at financial markets (MacKenzie, 2016). In the World Wide Web, algorithms also make decisions without human intervention (Introna, 2016). As a consequence, algorithms can act as relatively autonomous non-human actors and therefore fill a governing role (Just & Latzer, p. 252). This certainly poses intractable problems for existing forms of regulation and policing: humans modify their own behaviour based on the expectations of algorithmic governance – individuals begin internalizing, and they learn to govern themselves according to the algorithms' expectations. This can be seen in an example given at end of the next chapter, showing the extent to which Chinese people tend to internalize algorithms' expectations because they need to. The next chapter starts with the challenges both society and regulators are confronted with.

II. Challenges for Regulation and Policing

The effects of algorithmic governance and the challenges it creates for regulation and policing are huge. According to Frank Pasquale, authority is progressively asserted algorithmically (Pasquale, p. 8) which manifests in three major issues: *secrecy, opacity and inscrutability*. Secrecy can be quite problematic because companies are able to hide their actions behind laws, which protect their algorithms from disclosure. For example, Google refuses to disclose its PageRank algorithm because it is Google's key to continue running a successful business, which is legitimate (Guardian, 2016). On the other hand, it doesn't allow users to understand why Page A seems to be more relevant to them than Page B - it creates and maintains a lack of transparency. However, secrecy becomes even more problematic due to the fact that most of the data collected in the Internet is owned and controlled by (large) private companies (Pasquale, 2016). As a consequence, governments are dependent on private companies' collected data *and* on their algorithmically analysed results through those data (Pasquale, p. 22). One good example is the case of the US-American Eric L. Loomis who was sentenced to prison because of a

report generated by an algorithm (NYT, 2017). A product called Compas created the report in question which was then sold by a private company offering a Court Case Management and Decision Support Software (equivant, 2017). The algorithm is proprietary and remains secret. One of the companies' executives stated last year: 'We've created them, and we don't release them because it's certainly a core piece of our business' (NYT, 2017). Another significant concern about this algorithm is its tendency to discriminate black defendants by incorrectly judging them to be a higher rate of recidivism (ProPublica, 2017). Here we can see that the power of the law to protect intellectual property transitions into the power of algorithms to affect people's lives - whilst remaining secret. This tendency leads to another issue: opacity.

As we face an infinite number of discrete and interwoven algorithms operating in the web it is hard to comprehend their assemblage into larger decision-making processes (Introna, 2016). Certainly, the best example for the (deliberate) creation of opacity through obfuscation and complexity is the financial crisis in 2008 (Pasquale, p. 102). Since the financial industry has been digitalized one might believe that it would improve the industry and economy by wiping out human biases and establishing decision frameworks. Unfortunately, the contrary happened both on a micro level and a macro level (Pasquale, p. 102).). On a macro level we all became witnesses of the deliberate obfuscation of financial businesses and its transactions to give specific actors advantages at the expenses of others (Pasquale, p. 102). On a micro level, this severely affected many US American citizens who were subjected to bad credit scores and higher interest rates by banks and credit institutes for arbitrary reasons; the calculations of these scores were highly black-boxed (Pasquale, p. 23).

The third issue algorithmic governance evokes is the effect of secrecy and opacity: inscrutability. It becomes impossible to scrutinize the infinite amount of interwoven algorithms, as algorithms can modify themselves without human support (Pasquale, 2015), work in the background or under the surface, and yet become part of a co-evolutionary interplay (Just & Latzer, p. 254). Thus, algorithms become inscrutable instruments forming a complex, diffusive and liquid sociomaterial assemblage (Bauman & Lyon, 2012). Also, considering the tendency that our own private lives become more transparent, we have reason to be concerned about regulation and policing. One overall example is the implementation of the Chinese Social Credit System in some areas of China in 2014. This functions as a national reputation system and assigns a social credit

rating to every citizen dependent on what the citizen does (WIRED, 2017). Regardless of what citizens do online – buying, writing, reading, commenting and so forth - the social score will either increase or decrease. The social score will decide whether the citizens get good conditions for a loan or not and whether their children will go to a good school or not (WIRED, 2017). By 2020, it will be mandatory for every citizen to become part of that system. Some citizens do already adapt their actions to the system in its current format (ZEIT, 2017). Again: the owner of the algorithms analysing the data and generating the social credit scores for Chinese citizens are private companies which do not disclose their algorithms (WIRED, 2017).

The space of anonymity

Another issue that we face with the rise of digital markets is the dark net. Ironically, the overlay network, which can only be accessed with a specific software service, called The Onion Router (TOR), was originally developed for secure and anonymous communication of the US military (ForeignPolicy, 2013). Today it is a place where guns, drugs, child pornography and other licit and illicit goods are openly traded on so called 'cryptomarkets'. The aim of setting up marketplaces as crypto-marketplaces is to obfuscate peoples' identities, transactions, and physical locations of its servers (Aldridge, Decary-Hetu, p. 4). One notorious, but shut, cryptomarketplace was Silk Road. It mostly offered drugs, but also other goods and ensured that vendors could sell their goods anonymously, all over the world, and with relatively low risk to just as anonymous buyers (Aldridge, Decary-Hetu, p. 4). A terrifying phenomenon showing the extent of cybercrime in the dark web is the trade of view-on-demand child sex and abuse videos. Over the past five child abuse through cybersex has become a significant issue in the parts of the Philippines, particularly Cebu and several islands of Mindanao. To pay the bills, parents force their children to perform sexual acts in front of the camera while people all over the world pay to watch anonymously (The Sydney Morning Herald, 2017). Even though law enforcement authorities have closed a few marketplaces within the past few years, the nonprofit TOR-project will release new tools to secure privacy and online anonymity, despite the heavy abuses happening by means of their technology (WIRED, 2017). Therefore, the dark net is the most obvious example to show how authorities are confronted with intractable problems such as cybercrime due to online anonymity, opacity, secrecy and inscrutability.

The question remains: can and should authorities intervene? If so, to what extent would it be possible to govern the governing algorithms? At this point, I will provide only some of the ideas being mostly discussed: One proposal has been made by many scholars in the past: To directly govern the algorithms or those who write the code (Introna, p. 26). In this scenario, coders would need to reveal their codes (Lessig, p. 139), and an agency would then 'regulate' the code. It has also been suggested many times that private companies should disclose their algorithms to every user of the specific service. This idea might sound appealing from a transparency perspective, however realistically millions of users would still not understand the algorithms as they consist of thousands and sometimes even millions lines of computer code (Guardian, 2017). One argument against this disclosure is that hackers can exploit the code for abusive reasons (Guardian, 2017).

Another proposal is to make the companies themselves become regulators (Baker & Potts, 2013). If we take our former example of the Court Case Management Software, the company itself should then regulate the algorithm and prevent any discrimination. However it is doubtful that this would be sufficient, as the coders rarely create these issues on purpose. Rather, these are side effects and show that also humans who create algorithms are susceptible to making mistakes. One example of a regulatory response to algorithmic governance on financial markets is the German High-Frequency-Trading Act of 2013, which proposes algorithm-tagging to enable surveillance and efficiency in investigations (EurExchange, 2013). This seems to be a very reactive tool of regulation, as it doesn't determine the 'rules of the game'.

These few examples show the endeavours made to control algorithmic governance. Even though there have been some efforts at regulation, there is, and probably will be no effective solution to handle the intractable problems algorithmic governance poses as a whole. The technology changes too quickly for regulators to keep pace. In a Weberian sense we might recognize that we as ordinary citizens have only little control over algorithms and their interplay with us and with one another (Maley, p. 73). Perhaps the picture of the iron cage as a metaphor for the rigorous and technically ordered efficiency of our high-technologized world is still appropriate for the state of our society as 'we become more dependent on complex networks of technology to simply function every

day in the most mundane routines of our existence' (Maley, p. 73). However, we need to learn that every click has consequences.

Conclusion

This essay has argued that digital markets and algorithmic governance pose intractable problems for existing forms of regulation and policing. By tracing the media break we face due to the rise of digital media, I have elaborated the concept of Governmentality and algorithmic governance, and illustrated the new social order it produces. Algorithms increasingly shape humans. Our society faces new challenges such as secrecy, opacity and inscrutability through the nondisclosure and obfuscation of (large) companies and the complex assemblage of algorithms' decision-making processes. In addition to the tendency that companies become more secret and our own lives more transparent, there seems to be a detached space called dark net in which cybercrime is concentrated due to online anonymity. Foucault's concept of Governmentality allowed us to understand the reach of these tendencies: we begin to internalize the algorithms' expectations, as algorithms and humans co-construct and organize social reality. Authorities have responded with only a few regulations so far, as technology becomes more complex and the power of tech-companies grows too fast. For society, the Weberian metaphor of the iron cage still seems to be appropriate as we become more dependent on technology whilst not understanding its complexity.

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