

Understanding the algorithmic society

Concluding thoughts

Marc Schuilenburg and Rik Peeters

The classification of societies

In the history of humankind, there have been various ways to classify a society. One classification is based on the evolution of types of pre-industrial societies, including hunting and gathering, horticultural, pastoral, and agricultural societies. Although not all hunting and gathering societies are exactly alike, anthropologists and sociologists agree that they all share the basic feature of economic relationships based on cooperation. There is no conception of private property or ownership in these societies and members simply give things to one another. Another well-known example to categorize societies is the distinction between cremating and burying societies. Scholars such as archaeologist Gordon Childe (1945) have pointed out that this distinction has several analytical implications for our understanding of past and present human societies. In the case of burial societies, their proliferation derived partially from the desire to lend order and dignity to the hour of death and burial. Subsequently, there is the assumption that burial treatment is a reflection of the hierarchical nature of society, with defined classes and elites controlling social groups. A third example of classification is the difference between the hegemonic power structures ('power over') in a disciplinary society and a communicational society in which power becomes more immanent in its processes ('power from within'). According to sociologist Scott Lash, these mutations occur in conjunction with the advent of a society of ubiquitous media 'in which power is increasingly in the algorithm' (2007: 71).

The point here is that these classifications, as anthropologists such as Morton Fried (1960) and Marshall Sahlins (1961) have stated, can be placed in broader categories and stages of social complexity. However, many ethnographic studies show that to define societies as hierarchical for example is to oversimplify and generalize the complex social order of many western and non-western societies. Other scholars have objected that these categorizations do not explain how different types of societies are related to one another, blend into one another, and ultimately partially replace one another. What causes, for example, the transition between a disciplinary society and a communicational society at a certain moment? As Gilles Deleuze remarked in his book *Foucault*: 'When a new formation appears, with new rules and series, it never comes all at once, in a single phrase or act of

creation, but emerges like a series of “building blocks”, with gaps, traces and reactivations of former elements that survive under the new rules’ (1986: 30). This poses the question about the ‘basis’ of our society in terms of technology, power, and knowledge, without having to fall back on a fixed and unchangeable form or a deeply rooted essence.

Technology, power, and knowledge

It seems almost a cliché to say that algorithms are so deeply embedded in our society that they are affecting decisions everywhere. But what is not trite is analysing *how* they are affecting the key pillars of our society, such as administration, health, education, work, criminal justice and cities. Although algorithms are not confined to mathematics, there is a tendency to see algorithms, amidst the expanding capacities of Artificial Intelligence and machine learning, as a recent technological innovation that applies abstract mathematical principles to massive quantities of data. According to philosopher Matteo Pasquinelli, the first machine-learning algorithm was the Perceptron from 1957. The Perceptron was invented by the cognitive scientist Frank Rosenblatt at the Cornell Aeronautical Laboratory in Buffalo, New York. Pasquinelli writes in “Three thousand years of algorithmic rituals” (2019) that ‘the Perceptron was a sort of photo camera that could be taught to recognize a specific shape, i.e. to make a decision with a margin of error (making it an ‘intelligent’ machine)’.

The depth of this technological change, in which the repetition of similar patterns ‘teach’ the machine and cause the pattern to emerge as a statistical distribution, has triggered all manner of sociocultural visions of society. One of these is the way algorithms and analytics give rise to a new power dynamic. Scholars from a range of backgrounds are increasingly investigating how new modalities of power are enfolded in our algorithmically-mediated society. Philosopher Colin Koopman, for example, speaks of “infopower”, which works upon us through the formats of data. Koopman defines infopower as a ‘political assembly of information [...] which is political because it disposes us as subjects of data prior to any communicative exchange’ (2019b: 1334). A key element of infopower is the way it binds us in the sense that it ‘both ties us down and speeds us up’ (2019a: 12). Another new form of power is, what lawyer and critical theorist Bernard Harcourt (2007) calls, “expository power”, revealing how unfree we are becoming because our subjectivity is moulded by algorithms. Algorithms define us as particular kinds of persons whose possibilities for action are conditioned in particular ways.

Such plural forms of power show that our present society does not bring the world together in a single harmonious entity, but regularly produces social syntheses between different forms of technology, power, and knowledge. Accordingly, the discerned forms of power and knowledge described in this volume are not mutually exclusive nor do they displace ‘old’ forms of power and knowledge. The example of smart cities makes this clear. Although the concept ‘smart city’ suggests that only smart technology is used to transform and improve life within a city, this provides a limited perspective on what smart surveillance currently entails. Smart

cities still use ‘dumb’ tools and techniques to improve public safety – by, for instance, placing large concrete planters, heavy trucks and cement barriers along busy pedestrian streets and squares to restrict access and improve security (Pali & Schuilenburg, 2019). Another example is the digital form of predictive policing, where predictive analytics are used to assess likely future behaviours or events and to direct appropriate action by the police. In relation to the question of power, it can be argued that predictive policing is an expression of classic state surveillance (“sovereign power”), which operates, however, through data-driven technologies developed by private companies to track and monitor the behaviour and movements of people (Schuilenburg, 2021).

The main theme of this book revolves around a critical concern with how algorithms are shaping society now and how they might shape it in the future. To approach these concerns, we define *the algorithmic society* as ‘a set of practices and discourses, implicating hybrid connections between governmental and private parties, that is underpinned by a repertoire of relatively new data-driven technologies, which adds new layers to the governance of society through own modes of knowledge, and particular ways of forming new subjects’. In many respects, the research conducted in the preceding chapters advances our understanding of *how* the algorithmic society functions. Based on the contributions by different scholars, we can draw five observations on the mechanisms and dilemmas regarding the impact of algorithms in our society.

Five observations

Techno-utopia

A first observation is the seemingly contradictory *techno-utopian vision* that the widespread use of algorithms implies (see, for instance, the contribution by Schuilenburg and Pali). Algorithms have been identified as an advanced technological form of solving humanity’s problems that insists on a particular model of development and governance. Its sequencing and black boxing of procedural steps creates a machine-like logic, befitting of a Weberian analysis of late-modern bureaucracy. The alienation that marked the classic bureaucracy is brought to a new provisional conclusion in the automation of decision-making processes in the provision of public services, the administration of criminal justice, and the surveillance of urban spaces. Even though human agency is rarely fully eliminated and many automated decisions require a follow-up decision by human agents (civil servants, judges, police officers, etc.), the analyses presented in this volume converge around the idea that algorithms pursue a further rationalization of governance, which is closely related to our data-driven economy.

At the same time, however, the use of algorithms is also infused with a utopian vision of control, prediction and efficiency. As several contributions have outlined (see, for instance, the chapters by McGuire and by Hayward), at least three core beliefs of algorithmic governance can be identified to make governance ‘smarter’. First, algorithms promote efficiency, not only in private life and the economy but

also in government processes. They are both capable of processing and analysing enormous of data and finding patterns where human reason falls short. Second, the use of algorithms is believed to be positively related to equity. They reduce human bias and subjectivity, are citizen-centred, and enable participation. And third, algorithms can be applied to improve safety and security. They allow prediction of crime as well as soft forms of behavioural control (rather than strict discipline) in urban areas. However, these promises are, at least partly, utopian. Efficiency is instrumental to an economic rationale of competition and consumption. Human bias might be reduced in street-level decisions, but continues to play a major role in the design and data input of algorithms. And reliable prediction remains fundamentally unattainable while it also legitimizes new forms of control.

Inequality

A second observation that can be drawn from the contributions in this volume is that the social consequences of algorithmic governance are *distributive* (see the chapters by Van Brakel and by Ávila, Hannah-Moffat and Maurutto). The effects of, among other things, the automation of administrative decisions, risk prediction in criminal justice, and behavioural interventions in the public domain are not evenly distributed among the population. The algorithmic society has winners and losers. The winners are those that benefit from competition and consumption, that are not subjected to biased data, and that are in the ‘happy flow’ of standardized administration decisions. Conversely, the losers can be found where people become superfluous or unproductive in the name of efficiency, in already overpoliced urban areas and profiled high-risk groups, and where administrative errors or other bureaucratic complications occur.

At least two factors of algorithmic governance complicate the mitigation of these distributive tendencies. The first complication is that algorithms are not evenly applied nor implemented according to a grand design, but instead resemble more of a *patchwork*. There is, however, a ‘logic’ in this patchwork. For instance, algorithms tend to be applied in specific urban areas, such as in business improvement districts or commercial centres where ‘smart city’ incentives are rolled out, and in high crime areas where instruments such as hot-spot policing are commonly applied. Furthermore, algorithms are often used in exactly those administrative decisions where citizens are most vulnerable for abuse or exclusion, namely decisions regarding the access to welfare services or benefits and decisions in criminal justice sentencing and probation.

The second complication concerns safeguarding the *fairness* of decisions for individuals. Algorithmic decision-making implies a large level of standardization: processes are designed with abstractions of individual identities in mind. As a consequence, people may be profiled because of certain characteristics of a larger population group (as in the case of predictive policing). Furthermore, algorithmic decision-making is often highly opaque for citizens. They may be subjected to administrative decisions based on data they have no access to, based on obscure

algorithmic processes and data sharing, and based on designed-in outcome options without individual human case assessment. As several contributions have demonstrated, a challenge remains in safeguarding fairness of algorithmic decisions for every citizen and organizing practical accountability of public organizations. The people most likely to be negatively affected by algorithms are also the most likely to be left without a clear path to appeal algorithmic decisions.

Technological usurpation

A third observation is that algorithms push towards a *technological contamination of justice* by overriding existing legal processes and safeguards (see the chapters by Meijer and Grimmelikhuijsen and by Widlak, Van Eck and Peeters). Three inter-related problems in the design of algorithmic governance can be identified in this respect. A first problem is the lack of algorithmic transparency. It is often unclear for both human decision-makers and affected citizens what kinds of data are used and how algorithms are designed, thereby complicating the possibility to assess the fairness of an algorithm. A second issue is the lack of algorithmic accountability. If a decision is automatically generated, who is to be held accountable for it? How can we tell if all relevant elements in an individual case have been weighed? And how can citizens appeal against a decision if they do not know on what data or criteria it was based? Finally, a third issue is the lack of street-level discretion. In ‘analogue’ decision-making, discretion by street-level bureaucrats or frontline workers serves as a key mechanism to balance general rules with the need to apply them in a fair way in highly diverse situations. The ability for organizations to weigh individual circumstances has been limited by the introduction of automated decision-making. Rather than factual assessment, algorithms now provide the default for the decisions by human agents.

A challenge remains in making algorithmic decision-making compatible with the *rule of law* (see Coglianese’s contribution). As mentioned above, transparency and fairness are being redefined under the sway of emerging technologies. More in general, there has already been a strong backlash against algorithmic decision-making from privacy and human rights advocates. The issues of transparency and fairness are complicated ones for automated projects. Algorithms are designed by IT professionals rather than decision-makers and often remain secretive due to their proprietary nature. Moreover, as in the case of automated network decisions, there can be a schism between the owners of the decision and the owners of the data upon which decisions are based. Often neither the decision-making organization nor the affected citizen have insight into the source and correctness of the data.

Algorithmic agency

A fourth observation is that we can only understand the impact algorithms on the governing of society by taking into account *human–algorithm interactions* (see the chapter by Van Eijk). However, keeping ‘humans in-the-loop’ of data-driven

regulation is in itself not enough to make a meaningful impact. Various contributions in this volume have demonstrated the behavioural elements at play in day-to-day algorithmic governance. Crucially, even if humans have to follow-up on an algorithmically-generated outcome, algorithms tend to produce a default that decision-makers do not deviate from. Algorithms do not argue. They present an outcome without an argument or reasoning. They present a truth without revealing sources or assumptions. ‘Merely’ organizing discretionary space and algorithmic transparency may not suffice to overcome behavioural and organizational barriers for the actual use of human discretion. The agency of algorithms extends beyond their immediate calculations and computer codes.

Various mechanisms can make it likely that human agents stick to the algorithmic outcomes. It is a well-known fact from behavioural psychology that people in general tend to follow the default option rather than question it. In addition, algorithms are especially attractive defaults since they are usually presented as ‘non-ideological’ – with an aura of scientific objectivity and rationality. Moreover, research in probation and policing studies has shown that human decision-makers may fail to properly understand algorithms and, for instance, conflate correlation and causation and, consequently, attach too much weight to predictive algorithms. Various classic insights on satisficing behaviour from organizational studies are at play in algorithmic governance as well. For instance, it takes a lot of capacity – both analytically and in terms of time – to pick out the problematic cases from a large bulk of algorithmic administrative decisions or to make a factual assessment of a case rather than trust the data provided by the computer system. Furthermore, organising meaningful transparency, accountability and fairness can also be complicated by epistemological issues. The problem here is not that algorithms lack transparency, but that certain algorithms are so complicated that they become incomprehensible for human reasoning.

Big tech companies

A fifth and final observation is that a fundamental shift in *sovereignty* takes place from governments to big technology companies in the algorithmic society (see, for instance, Henman’s contribution). We understand sovereignty here as the authority to make decisions within a given sphere that impact how people live, the places where they live, and the things that regulate their lives. Several contributors demonstrate that private companies have a decisive influence on which digital products and services are developed, how they will increasingly affect the governance of public affairs, and how our behaviour is influenced by their decisions. If this development continues, the most important story we will tell about algorithms is how the private sector dictates the terms of innovation and development, including what ‘good governance’ entails. This leads to the final question: How can we *re-politicize* the use of algorithms and data in democratic ways?

The path forward

Our goal is not to outline an argument that is simply ‘against algorithms’; after all, algorithms are already deeply woven into the fabric of the social world, they will undoubtedly continue to spread, and the positive effects of algorithms can outweigh the downsides for individuals and society in specific applications. However, there are also expected and unexpected pitfalls, as the contributions in the book have convincingly shown. Therefore, it can be productive to develop local practices that offer an alternative regime for dealing with the anxieties of the algorithmic society.

In this context, critical theorists Evgeny Morozov and Francesca Bria (2018) speak of “technological sovereignty” as a way to preserve a degree of autonomy and establish a buffer between citizens and technology providers. They argue that technological sovereignty may promise a more meaningful social license to govern our lives as it denotes the capacity of citizens to have a say and participate in how the technological infrastructure around us operates and what ends it serves. In the end: humans still design algorithms, determine their objectives, and decide in which areas they should be applied. The most ambitious program to reclaim technological sovereignty to date has sprung up in Barcelona, where the government and its citizens determine their own priorities in terms of the direction and use of technological innovations, with clear social benefits and public returns. Here, there is a commitment to using open source technologies and the city council has appointed a commissioner of Technology and Digital Innovation.

The relevant problem, therefore, is what human agency should look like in an algorithmic society. In terms of initial suggestions, the following guidelines can be formulated:

- Citizen control should be central in algorithmic design – not just organizational effectiveness. How are citizens affected in their daily lives? How can they defend themselves against unfair algorithmic decisions?
- An organizational context for meaningful human discretion should be organized. To overcome the convenient default of algorithmic outcomes, human agents must have the freedom and incentives to deviate if they deem it necessary from their professional perspective.
- Independent watchdog institutions must have a crucial role in organizing voice and counter-narratives. It is unlikely that governmental agencies or private tech companies alone will organize sufficient checks and balances for algorithmic decision-making in accordance with principles of social justice and the rule of law. These independent institutions should also test in advance whether the algorithms used by governmental agencies actually work.
- The introduction of algorithmic applications should keep in step with public legitimacy and acceptance. Forcing algorithmic tools upon citizens for instrumental reasons can backfire if it undermines citizens’ trust in governmental agencies.

This is an ambition we aspire to: to seek practical and political interventions that launch a new collective vision for the improvement of our algorithmically mediated society. This is by no means an easy task; it implies a tension with traditional measures of success and performance. Yet the increasing integration of algorithms in our social infrastructure requires us to widen our understanding of the functioning of technologies beyond a narrow instrumental focus.

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