1 Can algorithmic knowledge be critical?

Algorithms and you

Imagine turning on your Netflix in the evening to find out it had put on a movie, which fits perfectly with what you'd want to watch. It not only hits the right keys of your taste in movies and your recent and changing aesthetic interests but also it seems to take into account the specificities of your daily happenstances and mood. But you are not particularly surprised. You remember Netflix's chief executive officer (CEO) Reed Hastings' pronouncement that "One day we hope to get so good at suggestions that we're able to show you exactly the right film or TV show for your mood when you turn on Netflix" (*Economist,* 2017). You are also aware of the efforts and technological agility involved in reaching such a phenomenal knowledge of your taste, wants, and mood. Netflix, you know, monitors the data traces you leave on its platform. Maybe, you'd assume, Netflix complements it with data it gathers from other digital media, such as social networking sites. This big data set – about you, as well as about all its more than 200 million users – is crunched in real-time by algorithms, which are able to know not only who you are, what your taste in movies is, and so forth, but also discern very accurately your wishes, desires, and needs per a particular moment. Maybe, their choice of a Hollywood romantic comedy from the 1950s would have been different lest you were sitting there with your lover on a Thursday night. Who knows? But should you even care? After all, the match is perfect. As perfect, in fact, as the match of a dating site, which introduced you to your lover but a month ago. There, too, you'd assume a plethora of data (some of which provided by you) has been processed algorithmically to salvage you from your own failed attempts to find a suitable partner.

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Indeed, encapsulated in the digital devices we use – or better say, the digital environment we inhabit – is a promise to better the human condition and expand its convenience and contentment. With modernity, technology has come to play not only an instrumental role – making things and processes more efficient, quick, or at all possible – but an ideological role as well. Whether Left-leaning and progressive or Right-leaning and conservative, across virtually the whole spectrum of modern politics technology has come to be seen as means for political ends and as their guarantor. Technology promised to allow the fulfillment of the ideals of modernity and the Enlightenment, immortalized by the French Revolution's adage: *Liberté*, *Egalité*, *Fraternité*. Different political orientations defined these ideals differently, but they shared an underlying ideology, which sought to mobilize technology – that is, applicable, scientific know-how – in order to secure their materialization.

In *Media and New Capitalism in the Digital Age* (Fisher, 2010), I have shown the transformation in technology-*cum*-ideology with the rise of digital media. Whereas mechanical and centralized production technology, which dominated the industrial age, was seen as demanding a Fordist, Keynasian, social-democratic contract (as well as securing such a contract), digital, distributed, information and communication technology of the early digital age was seen as demanding and securing a post-Fordist, neoliberal social contract. At the heart of this new technology ideology were keywords such as distributed networks, de-hierarchization, flexibility, and adaptability, all of which allowed, demanded, and secured a neoliberal order. The current book, *Algorithm and Subjectivity*, continues this theoretical thread but turns its gaze to a more specific characteristic of digital technology: its ability – indeed propensity – to algorithmically render user-generated data into usable information and knowledge. I term this algorithmic knowledge, or algorithms, as a shorthand.

By algorithms, I mean a socio-technical assemblage geared toward rendering data into information and knowledge. This understanding is both wider and narrower than what the common use of the term suggests. Wider, because algorithms refer in this book not merely to lines of code, which render input into output in order to receive a desired outcome. Rather, by algorithms, I mean a whole socio-technical assemblage of people, technologies, practices, sites, and knowledges. This includes the incessant production and accumulation of big data in digital sites, predisposed to collect user-generated data (platforms); the construction of technological tools, which make sense of this data, turning massive amounts of personal data into knowledge (algorithms, machine learning, neural networks, artificial intelligence),

bodies of knowledge concerning these practices (e.g., data science), professionals, and executives. But my use of the term is also narrower in that it refers to the use of algorithms in digital media, specifically, algorithms integrated into online decision-making devices, or *interface algorithms* (more on that below).

Technologically, the promise encapsulated in algorithms is that by letting algorithms sip through the plethora of data, inadvertently created by users, they could determine who the users are and what their needs and wants are. But this technical promise to automate knowledge about the self – as part of a larger project to create algorithmic knowledge about the world – goes much deeper. It is ultimately an ideological promise to make us freer, more emancipated human beings.

But what does this human freedom entail in the context of digital media? Is it a promise to free us from the *Burden of Choice* (Cohn, 2019)? Since the emergence of the internet, our choices have been expanded exponentially, with access to a virtually endless array of information, cultural artifacts, products, and people. To paraphrase Chris Anderson, the monster of choice that had awaited us in the supermarket aisles has now grown a long tail over the internet (Anderson, 2006). With this promise for an endless supply of information goods we face an abyss: How are we to choose? With algorithmic devices, digital platforms created the solution to a problem of their own making. Algorithmic curation, recommendation engines, and the social graph were all new means put in place presumably to allow a happier marriage between users on the one hand and information resources – cultural, political, economic, and social – and the world at large, on the other hand.

But this seemingly technical solution underscores a promise, which is at an even more fundamental level: to bring individual subjects back into the scene, to facilitate the constitution of each of us in the wired world as a unique individual. Perhaps no other keyword in the universe of digital media reflects this promise more than *personalization*. After a century of mass-communication – which grew out of mass society and mass culture, as well as pampered it – digital media is able to offer each and every member of the masses his and her own bouquet of mediated artifacts, be them movies, consumer products and service, advertisement, or otherwise.

Know thyself

Most fundamentally, then, algorithms promise to expand the realm of personal freedom by offering a truer, richer, more precise knowledge

about the world and about our self. The idea that deepening one's knowledge also expands one's freedom was born with the Enlightenment. It is a specific articulation of the more general promise of knowledge (i.e., science and technology) to better the human condition. Modernity and the Enlightenment offered new forms of knowledge about the world and the self. Knowledge that involves self-reflection and expands self-understanding by engaging the self in deciphering the self. This new encounter of the self by the self, stimulated by self-reflection, is what I call here subjectivity. Subjectivity has always been a promise. A promise born in the Enlightenment to expand the realm of freedom from natural instincts and impulses, as well as from human-made coercive and oppressive social relations. Arguably, this promise has never been – and could never be – materialized to the fullest. But it nevertheless offered a horizon for what human freedom might mean. Subjectivity was not seen as ontological, a reality to be discovered, but rather as a project worthy of being achieved.

Digital media now offer a new model of knowledge, based on the algorithmic processing of big data gathered mostly by using this very media. If, for the past few centuries, self-reflection, a self, which knows itself, has been the cornerstone of subjectivity, which was, in turn, a precondition for freedom, my question in this book is: What kind of freedom underlies algorithmic knowledge? If *Know Thyself* was a route for a more emancipated subjectivity, what kind of freedom is promised by algorithms mediating for us knowledge about the world and about our self?

I argue that compared with this ideal of the Enlightenment, algorithms offer a very different conception of knowledge and subjectivity, a different imaginary (Bucher, 2016). Algorithms, I show throughout the book, offer not merely a new method and methodology to answer questions. Rather, they offer a new epistemology, which redefines what questions can be asked, and what it means to know. The Enlightenment's ideal of knowledge, particularly knowledge about the self, was inherently critical. This thrust is epitomized by Kant's three volumes of *Critique*. In the *Critique of Pure Reason*, Kant (1999) sought to lay bare the structural epistemological conditions and transcendental assumptions, which frame common and accessible conceptions of empirical knowledge, which is deemed true and valid. In his *Critique of Practical Knowledge* (2015), he sought to define the limiting conditions and assumptions, which dictate our behavior and to excavate the conditions of autonomy and morality. Kant, thus, signifies the high-point of Enlightenment, which enables both the development of objective knowledge and all the while guarantees subjective emancipation.

In contract, I argue, the algorithmic model of knowledge is one-sidedly based on positivist assumptions, which impels it to exclude subjectivity from knowledge about the self. Rather than promoting an interpretive, hermeneutic, and reflective approach to the self, it suggests to exclude subjectivity from such an endeavor. Instead, it suggests that we will be most authentic to our true self if we let algorithms tell us who we are. With the advent of algorithms and the interweaving of our existence with digital devices, which, in turn, gives us access to huge quantities of data, indicating actual behavior, the argument goes, we are in a unique epistemic position to know our selves better than ever before.

The purpose of this book is not to assess whether such a task has been achieved, nor whether it is at all possible. In fact, the question I pose makes such judgment irrelevant. I ponder, instead, what can be defined as *The Political Unconscious* of algorithmic culture (Jameson, 1981). With that task in mind, I ask: To the extent that the promise of algorithms – predicting which word we'd want to type next, what movie we'd like to watch, who we'd be interested to date, and so forth – materializes, what are the horizons of this promise in terms of our conception of subjectivity? My short answer is that it is a form of knowledge about the self, which ultimately excludes the self from the process of learning and knowing about the self, that is, excludes self-reflection, and in so doing subverts the Enlightenment project of subjectivity. To a large extent, an algorithmic social order requires no subjects at all, but rather seeks to turn them into objects. Karl Marx, a philosopher who supplemented Kant's line of *Critiques* with his *Critique of Political Economy* (the subtitle of his magnum opus *The Capital*) (1992), had already warned against the subsumption of the (working) subject under the (produced) object, a process that he termed the fetishism of commodities.

It is tempting, at this point, to read my argument as a reiteration of the old adage of humans versus machines, or rather, technology taking over humans (Winner, 1977). This, too – that is, not only technology as promise but also as peril – has been a staple of modernist though, epitomized by the likes of Heidegger (1977a) and Ellul (1964) (see also: Borgmann, 1999; Postman, 1993). However, my argument concerning algorithms strives to diverge from such analyses, which Robins and Webster aptly describe as "technologistic" (Robins & Webster, 1999). While my analysis seems to reach similar gloomy conclusions concerning algorithms, it finds the culprit not in "technology" as such, but in a specific constellation thereof. The threat of algorithms to subjectivity does not stem from the mere fact that knowledge about the

self is mediated. In fact, there has been a long history of media devices that have been helpful in creating knowledge about the self *with* the self, thus contributed to self-reflection and helped expand the realm of subjectivity (more on that in chapter 3). What these epistemic media share is the engagement of the self in the creation of new knowledge, which has led, either intentionally or as a side-effect, to the opening up of a new space of self reflection. Algorithmic devices, in contrast, as a very particular type of epistemic media, exclude the self from knowledge about the self, or rather reproduce the self as a media-made artifact.

Algorithmic knowledge and human interests

There is no doubt that, given the right resources, algorithms are able to create knowledge. The question is what is that knowledge and what is its truth value, that is, under which assumptions is this knowledge valid. From the perspective of the social sciences, questioning algorithmic knowledge has focused predominantly on the nature of that knowledge, how it differs from other epistemologies, and what are the ramifications of increasingly integrating algorithmic knowledge into the social fabric. Algorithmic knowledge has indeed been criticized for its biases (Crawford, 2016; Gillespie, 2012a, 2012b; Mayer-Schönber & Cukier, 2013). Such biases may have detrimental social consequences from distorting our image of the world to racial discriminating (Ferguson, 2017; Gillespie, 2016; Mehozay & Fisher, 2018; Tufekci, 2019). What is more, their opacity makes public audit and critique of them virtually impossible (Kim, 2017; Mittelstadt, 2016; Pasquale, 2015b; Soll, 2014). Algorithmic knowledge has also been criticized for creating and perpetuating a feedback loop for users, enclosing them in a *Filter Bubble* (Pariser, 2012; Turow, 2011). And given their underlying political economy and their reliance on personal data, algorithms have also been criticized for inherently undermining privacy (Dijck van, 2014; Grosser, 2017; Hildebrandt, 2019; Kennedy & Moss, 2015), and for exploiting audience labor (Andrejevic, 2012; Bilic, 2016; Fisher & Fuchs, 2015; Fuchs, 2011b). All these point to algorithms as constituting a new regime of knowledge, which has a huge impact on contemporary life, yet remains largely unknown, unregulated, and outside of the realm of democratic politics (Feenberg, 1991).

Yet there is another type of critique of algorithms. As research concerning various social fields has shown, algorithmic knowledge does not merely automate the process of knowledge creation but changes the very ontology of that knowledge. For example, algorithms implemented in the cultural context, such as recommendation engines,

also change the very meaning of culture, as well as cultural practices (Anderson, 2013; Bail, 2014; Gillespie, 2016; Hallinan & Striphas, 2014; Striphas, 2015). Last but not least, the self – the characteristics and qualities of which so much of algorithmic knowledge in digital media is oriented to decipher – is not merely gauged and monitored by algorithms, but is also altered (Barry & Fisher, 2019; Cheney-Lippold, 2011; Fisher & Mehozay, 2019; Pasquale, 2015a).

* * *

This book joins this last line of critique, which sees algorithmic knowledge as constituting a new epistemology, a new way of knowing. My understanding of knowledge – underlying the various engagements with algorithms in the following chapters – and its relation to subjectivity, draws predominantly on Jürgen Habermas's theory of knowledge, in particular his book *Knowledge and Human Interests* (Habermas, 1972). Before discussing his theory it's worthwhile recalling the state of knowledge – both in society and in social theory – which has prompted Habermas to offer his interjection.

Habermas reacted to what he considered to be a dual attack on knowledge. At the time of the book's publication in 1968, knowledge was becoming an important axis in sociological theory and would remain dominant for a few decades to come, as revealed by keywords such as post-industrial society, information society, knowledge society, network society, knowing capitalism (Castells, 2010; Mattelart, 2003; Stehr, 2001; Thrift, 2005; Webster, 2002). Knowledge was beginning to be understood as located at the center of a radical shift in the social structure of Western societies. This was a view shared by schools of diverse paradigmatic approaches and political affinities. The most notable sociologist to theorize the emerging centrality of knowledge in determining the social structure was Daniel Bell. A post-industrial society, Bell proposed, where knowledge and information gain an axial role in the organization of society, sees the rise of a rationalized class of professionals, and of a technocratic government, both bent on applying knowledge to solve political problems (Bell, 1999; Touraine, 1971). Such a society is managed more rationally, overcoming the ideological struggles that characterized the industrial society.

Bell's claim for a radical break in the social structure was coupled by post-structuralists' claim for a radical break in social epistemology, brought about by the centrality of knowledge – as well as infortmation, symbols, data, myths, narratives, and so forth – in society. Post-structuralism undermined the hitherto *sine qua non* of knowledge, its representationality: the capacity of knowledge (in principle if not

in reality) to correspond with reality. In the formulation of Lyotard (1984) and Baudrillard (1981), knowledge – particaulrly due to the introduction of information technology – was becoming a central axis of the social to a point of overwhelming the reality it is supposed to reflect. Joining Foucault (1994) and Derrida (1974), knowledge was now seen as explained better by reference to power relations than by appeals to reason and truth, thus losing its analytical distinction from power.

Both positions, then, undermined the *critical* potential of knowledge, its potential to transform society. Post-industrialism de-politicized knowledge, imagining it as a monolithic social endeavor, which makes politics redundant. Post-structuralism politicized knowledge to such a degree that it invalidated its autonomy from power. In both formulations, knowledge has become a force for conserving and stabilizing power relations. Or put somewhat differently, whereas Bell and other structuralists conceived knowledge as allowing the rationalization of society by making ideologies irrelevant, post-structuralists expressed deep disbelief in knowledge as a rationalizing agent, insisting on its interlacing with power. As both accounts also acknowledged the centrality of knowledge in contemporary society, this was not a happy predicament to a critical social theorist, such as Habermas, whose vista has been the resurrection of the enlightened subject and rational inter-subjective communication.

Habermas sought to offer a *critical* theory of knowledge, which, at one and the same time, upholds knowledge as a vehicle for rationalization *and* accounts for its ability to transform reality toward a horizon of emancipation. How can knowledge be committed to both (scientific) "truth" and (political) "enamcipation"? Habermas' solution is to suggest that knowledge is inextricably linked with human interests. In other words, *all* knowledge is political; it inevitably operates within the confines of human ends. The choice of the term "interests" in the title of Habermas' book is illuminating and makes for three different readings. "Interest" can refer to a sense of intellectual curiosity and a drive to understand reality; "knowledge for the sake of knowledge" (Habermas, 1972, p. 314). Such a reading would suggest that Habermas is concerned with what individuals and societies are interested in. "Interest" can also refer to having a stake at an issue, to standing to gain or lose something. That would suggest that the book title refers to what individuals and societies have a stake in. Finally, the title could also mean both and suggest, as I think Habermas does, that what humans are curious about is inextricably linked with what serves their interests. It suggests that we cannot dissociate the history

of knowledge from the political contours within which humans seek this knowledge. To use a later formulation, Habermas suggests that rather than denying, condemning, or duly accepting the knowledge/power nexus, it should instead be examined and theorized. And that's what Habermas sets out to do.

Habermas identifies three types of "knowledge interests" – that is, motivations to gain knowledge – each stemming from human existence and having come to be articulated in three types of scientific or scholarly inquiry. (That also means that knowledge is not monolithic, as Bell suggests, but multiple). The first is a "technical interest", our species' survivalist interest in controlling and predicting our natural environment. This interest has given rise to the "empirical-analytic" sciences, mostly the natural sciences, but also streams in the social sciences that have been modeled after the natural sciences. This knowledge approaches nature and society as objects, which are governed by predictable regularities, and which can therefore be discovered by controlled methodologies (e.g., experiments), articulated into law-like theories, and even manipulated through intervention.

Second is a "practical interest", which involves the attempt to secure and expand the possibilities for mutual understanding in the conduct of life. This interest gives rise to the "cultural-hermeneutic" sciences, a type of knowledge that presupposes and articulates modes of personal and inter-personal understanding, which are oriented toward action. Such understanding is not "scientific", or "objective" in the common sense, but concerned with the lifeworld and is expressed in the grammar of ordinary language. It is exercised in realms of knowledge such as history, anthropology, and parts of sociology and communication studies. Both the empirical-analytic sciences and the cultural-hermeneutic sciences are academically established and constitute a hegemony of knowledge.

But Habermas wishes to go beyond this hegemony by pointing to another deep-rooted human interest, which has given rise to another form of knowledge. This is the "emancipatory interest" of reason, an interest in overcoming (externally-imposed) dogmatism, (internally induced) compulsion, and (inter-personal and social) domination. The emancipatory interest gives rise to critical knowledge. Critical knowledge has a few defining features that Habermas would go on to examine in later works, most notably in *The Theory of Communicative Action* (Habermas, 1985). Particularly crucial to our discussion here is self-reflection, i.e., the central role of the knower in the creation of knowledge. Creating critical knowledge about human-beings (as social, anthropological, or psychological begins)

is a *praxis*, which requires the participation of the objects of that particular kind of knowledge, i.e., human-beings. Critical, emancipatory knowledge involves, therefore, subjectivity as both a precondition and an end-product. Critical knowledge can only emerge with the involvement of subjectivity; subjectivity, in turn, can only emerge with critical knowledge.

With the notion of critical knowledge, Habermas sought to offer a category of knowledge, which accounts not merely for reality, but also for the conditions under which this reality comes about and is made possible. Such knowledge can then serve to inform actions needed in order to change these conditions. It is therefore at once both objective and positivist (appealing to truth) and subjective and constructivist (appealing to power). As McCarthy notes in the introduction to Habermas's *On the Logic of the Social Sciences*, Habermas "finds that the attempt to conceive of the social system as a functional complex of institutions in which cultural patterns are made normatively binding for action" – a description corresponding more or less to Talcott Parsons' by-then hegemonic social theory (1968) – "does furnish us with important tools for analyzing objective interconnections of action; but it suffers from a short-circuiting of the hermeneutic and critical dimensions of social analysis" (McCarthy, 1988, p. viii). In other words, such theory excludes the communicative, subjective and inter-subjective dimensions of society, where actors reflect upon their actions, and are able to critique them.

It is worthwhile noting that Habermas does not critique positivism *per se*, as a mode of scientific inquiry. Rather, his critique is more nuanced: he rejects positivism's claim to represent the only form of valid knowledge within the scientific community, and more acutely, its application to concerns, which require critical knowledge. There are obviously concerns which require a strategically oriented action, demanding instrumental reason and constituting subject-object relations) (e.g., ensuring a given growth rate of the national economy). But such type of action, Habermas insists, must not colonize concerns, which require communicative action, demanding communicative reason and constituting subject–subject relations (e.g., questioning whether economic growth is desirable, or even what constitutes "growth" in the first place).

With critical knowledge, Habermas calls for the uncovering of that which not-yet-is, and which may-never-be unless we notice it and made knowledge about it explicit. This is the Schrödinger's cat of the social, the political, and the cultural. And whether we find out the cat is dead

or alive depends on our epistemology, that is, our understanding of what knowing is:

> In the framework of action theory [*à la* Parsons], motives for action are harmonized with institutional values.... We may assume, however, that repressed needs which are not absorbed into social roles, transformed into motivations, and sanctioned, nevertheless have their interpretations. (McCarthy, 1988, p. viii)

One of these "cats", which can hardly be noticed by sociological action theory, is subjectivity, an elusive construct, which is always in the making and which only through self-reflection can gain access to critical knowledge, which, in turn, will realize its emancipatory interests. The moment we start to ask ourselves about our self, we also construct it and change it.

The algorithmic knowledge that makes the focus of this book is not primarily scientific.[1] But as the production of "epistemic cultures" (Knorr Cetina, 1999) and of epistemic devices (Mackenzie, 2005) are no longer the hegemony of academia and books, but of the digital industry and software, we must take account of the kind of knowledge that algorithms create and how this knowledge shapes human understanding of the world and of itself. Similarly to the different theoretical schools that have come to grips with the centrality of knowledge in the reformation of the social structure since the 1950s, we must now acknowledge a new phase in that historical era. In this new phase of algorithmic devices, technology automates not merely human physical force, dexterity, and cognitive skills, but also tenets of our subjectivity and inter-subjectivity; automation which makes them redundant in the conduct of human life.

The performance of algorithmic knowledge

My choice of algorithms as an axial concept seeks to highlight the epistemic character of our contemporary techno-social order, i.e., their orientation toward rendering data into knowledge. The choice of algorithms as a vignette through which to examine our digital civilization stems not only from the increasingly central role that knowledge has come to play in society but also from its ubiquity and banality, that is, its integration into literally every sphere of life. This makes the knowledge that algorithms create about the world not merely Platonic and descriptive but also performative. In fact, as users, we encounter not so much the knowledge that digital media create about us, but the

effects of this knowledge, such as our newsfeed on social media sites or a book recommendation.

In professional and public lingo algorithms are often described as predominantly predictive devices. Digital platforms seek to know their users' tastes and wants in order to be able to make personalizations. But the political economy behind digital platforms suggests that their goal is not to predict behavior as much as it is to control it. Control means different things in different contexts. In the case of Amazon, for example, the goal of prediction is to make users purchase a product they would *not* have purchased otherwise. To put it boldly, Amazon's algorithms are oriented to predict not what users want, but what they don't want.

Because algorithms are future-oriented, because they seek to predict behavior and control it, they also seek to ascertain a particular type of subjectivity, which is predictable. To the extent that subjectivity is an important source for self-conduct, and self-reflection may change behavior, algorithmic prediction would be much less successful. For algorithms to deliver on their promise to know who we are and what we want, they must also assume a dormant subjectivity, a subject that is really more of an object (Fisher & Mehozay, 2019). Algorithmic knowledge, then, is performative in the deepest sense: it attempts to imagine and mold a human-being that is completely transparent and predictable. It describes only that which it can control. If algorithmic machines are becoming – or imagined to become – more accurate, it is not merely because of technological advances. Rather, it must also be attributed to the part they play in helping create a self, which trusts algorithms and the knowledge they reveal about it, and which, in turn, sedates mechanism of self-reflection and self-knowledge, precisely these faculties of the self that are potentially opening up a realm of freedom and make humans unpredictable and able to change.

And here, the deep political ramifications of the algorithmic subversion of subjectivity become more evident. Underlying the creation of critical knowledge about our reality is a human *interest* in transforming that reality, and a human *involvement* in creating this knowledge. If subjectivity is a realm of emancipation through critical knowledge, it is at the same time a precondition for critical knowledge to come about. Such is the case, for instance, in Hegelian-Marxist theory, which makes a distinction between class-in-itself (i.e., an objective reality of historical materialism) and class-for-itself, which involves a subjectivity, transformed by that objective knowledge, and which, at the same time, constitutes the agent of social transformation. Such is also the case with Freudian psychoanalysis where

self-knowledge is key to self-transformation. Psychoanalysis proposes that one's behavior, thoughts, and desires do not reveal the full scope of who one is; they are certainly not equal with one's true self. As much as our behavior reveals who we are, it also tells us what hinders us from being free, because it stems also from these hindrances. Enlightenment, in the sense of self-reflection, is supposed to make the self aware of these hindrances to freedom, with the hope of transforming the conditions for their persistence.

A self, structured within the contours of an algorithmic environment, is imagined in a radically different way from the self that was imagined during modernity, and has reached its most eloquent articulation with the Enlightenment idea of subjectivity. It is hard to imagine the rise to dominance of algorithmic knowledge in a world populated by human-beings keen on self-reflection in order to expand their subjectivity. Under such circumstances algorithms would not work well. Firstly, they would be rejected as unacceptable avenues for achieving freedom because they exclude the subject. And secondly, under conditions of reflexivity, algorithms would have a harder time predicting wants. By claiming this, I do not mean to play a *what-if* game with history. Rather, I wish to point out that algorithms assume and imagine a particular type of human-being, with particular horizons of (non)subjectivity and (un)freedom. It is the purpose of this book to register and analyze these assumptions, and ask what conception of subjectivity underlays the algorithmic model of knowledge. Owing to the performativity of algorithms, will they succeed in molding a new kind of person and a new self? As counter forces are also always in play, this is a struggle to be fought rather than to be either already celebrated or decried.

Subjectivity, algorithms, and privacy

The juxtaposition of algorithms and subjectivity sheds a new light on privacy and why we should be worried about its erosion. Subjectivity, this space of self-reflection – of thinking about one's thoughts, evaluating ones' desires and wishes, critically assessing one's tastes, and so forth – we could have also called the private sphere, lest this term was already occupied by a somewhat different meaning. Subjectivity can be thought of as a private sphere, where thoughts, wants, and needs of the self can be reflected upon and evaluated by that very self. It is a space that allows, at the very least, a possibility to question our self. The loss of privacy also entails undermining our ability to develop and maintain that space. It is private not merely in the sense of ownership,

that is, that whatever takes place in this sphere is mine (like "private property"), but also in the sense that it is autonomous and distinct from other social spaces, and impenetrable for them (like "private matters"). Just as we think about the public sphere as a space that facilitates communicative action, we could also think about subjectivity as a sphere that facilitates an internal critical dialogue. And just as Habermas described the contraction of the public sphere more than half a century ago (Habermas, 1991), we might describe subjectivity as a private sphere that is now facing an attack by algorithms. Simply put, algorithmic knowledge, and its inherent erosion of privacy, also erodes our ability to protect our subjectivity.

As algorithms seemingly try to gauge what takes place in the private space of subjectivity it also contracts that space; it destroys that which it seeks to capture. The innumerable and varied data points that algorithms are able to gauge presumably serve as proxy for that internal space, and get to the crux of personal wants, desires, and needs. But what algorithms cannot gauge is precisely the critical, reflexive events that take place in that space, which allow a dialogue between, on the one hand, what one thinks and wants, and on the other hand, what one thinks about one's thoughts, and how one wishes to deal with one's wants. This space of reflection, of making the self an interlocutor of the self, is not, as aforementioned, an inherent and given component of our humanity. Instead, it is a historical construction, a project of the Enlightenment, and a utopian ideal at that. By excluding this space from the understanding of the self, algorithmic knowledge also undermines this project.

Interface algorithms

The empirical scope of algorithms presented in this book is quite selective, and stems from my disciplinary embeddedness in media studies. I am interested in what could be termed *interface algorithms*: algorithms embedded in digital platforms, such as online retailing sites, social networking sites, and social media. Interface algorithms are geared predominantly toward rendering users' data into knowledge about them and, in turn, creating a personalized interface for each user. This, as aforementioned, is dependent not merely on getting to know users more intimately and intensely than before, but also *differently*, that is, on redefining what such knowing entails. I draw here on literature which sees algorithms primarily as epistemic devices. As knowledge-making machines, algorithms see reality in a

particular way, different from modes of knowing we have become familiar with. They offer what David Beer beautifully termed a *Data Gaze* on reality (Beer, 2019), reconceptualizing and redefining that which they see (Beer, 2009; Kitchin, 2017; Mackenzie & Vurdubakis, 2011). This has been substantiated in recent empirical research in relation to media audience (Fisher & Mehozay, 2019; Hallinan & Striphas, 2014) advertising (Barry & Fisher, 2019; Couldry & Turow, 2014) retailing (Turow, 2011; Turow & Draper, 2014), risk in the context of the criminal justice system (Mehozay & Fisher, 2018), and health in the context of medicine (Ruckenstein & Schüll, 2017; Van Dijck & Poell, 2016), to name a few fields.

But interface algorithms incessantly project the knowledge they create about users back at them; they act as mirrors, reflecting users' self. Users are learning to employ an "algorithmic imagination" (Bucher, 2016) to see the content they are offered as an indication of how they themselves are seen by the algorithms, and to some extent (albeit with potential critical distance) as an algorithmic reflection of their self. For example, the fear of remaining "invisible" to their friends on social networking sites disciplines users into productive participation, and shapes their media practices (Bucher, 2012). Algorithms' inner workings may be opaque but their effects are very present, as Bucher puts it. More broadly, Gillespie argues that "the algorithmic presentation of publics back to themselves shapes a public's sense of itself" (Gillespie, 2012b). And Neyland suggests thinking of interface algorithms as "a configuration through which users and/or clients are modeled and then encouraged to take up various positions in relation to the algorithm at work" (Neyland, 2015, p. 122).

This is not to say that people are duped by algorithms, but that they indeed find themselves in an inferior epistemic position to critique the new kind of knowledge they create. Algorithmic knowledge bares the aura of a superior model for representing reality. Most pertinent to our case, perhaps, is the key promise of algorithms to produce knowledge with no *a priory* conceptions, either normative or theoretical (Mayer-Schönber & Cukier, 2013). According to this increasingly hegemonic ideological discourse (Mager, 2012, 2014), by perusing billions of data-points in search of discovering mathematical patterns, algorithms let data "speak" for themselves, thereby purporting to offer a much more objective mode of knowing, evading biases which stem from human-centric normative predispositions. The fact that the basis for algorithmic knowledge is raw data – a "given", as the etymology of the word suggests, a seemingly

unobtrusive reflection of reality – contributes to their flair of objectivity (see Gitelman, 2013 for a critique of that assumption).

Subjectivity redundant

Our subjectivity, then, is under attack by algorithms. Or is it? Skeptics may argue that even if my analysis of the case studies presented in the following chapters is valid, my overarching argument is overstated, since subjectivity should not be seen in the first place as a space of emancipation, but as a disciplinary mechanism of governmentality, shaped in accordance with hegemonic social structures (Foucault, 1977, 2006). In other words, we have never been modern and have never been free; subjectivity is nothing but another form of social control.

This Foucauldian line of thought is important to pursue, and I have indeed implemented this mode of inquiry throughout the book. It opens up another interesting avenue for understanding the algorithmic episteme as algorithmic governance (Birchall, 2016; Danaher et al., 2017; McQuillan, 2015; Rona-Tas, 2020; Sauter, 2013). But this avenue, too, leads to a similar conclusion concerning the redundancy of subjectivity in an algorithmic environment. If governing, or the exertion of power, during modernity demanded the willing cooperation of subjects, then algorithmic governance makes such governmentality redundant. Subjectivity was required to keep particular social structures intact and allow them to mobilize individuals into particular social forms and actions. At the same time, of course, such subjectivity – for example, a neoliberal persona – could also be a site of resistance and change.

Much like Habermas, then, Foucault too sees in subjectivity not merely an effect of power but a space capable of resisting power and opposing it. And not unlike him, he too posits knowledge at the very center of subjectivity. The interests may be different – disciplinary rather than emancipatory – but the mode of operation is self-reflection, the dictum to *know thyself*. In this formulation, too, algorithms can be said to interject and change the subject. They expropriate the conduct of conduct from subjectivity, literally conducting behavior. If subjectivity harbors the commends that tell us how to conduct ourselves, then the introduction of algorithms conducting our conduct, governing it externally, makes subjectivity redundant.

Following this link of inquiry, too, leads us to consider how algorithms undermine subjectivity. Algorithms become a new governing agent, which manages life and populations without the need for

subjectivity. Under such conditions, does it make sense to talk about algorithmic subjectivity at all? Should we not, as Rouveroy suggests, think about the effects that algorithms pursue as creating objects rather than subjects? The political ramifications stemming from this line of though are troubling. As Rouvroy and Stiegler (2016) and Hildebrandt (2019) have convincingly argued, algorithms make claims for sovereignty of a new kind, as they are able to take decisions that are almost impossible to audit and critique, because they are opaque, proprietary, and subject to frequent change. It is therefore our task to critique algorithms' participation in social life and their claim for political rights through an interrogation of their political effect.

Knowledge about human beings – that is, the knowledge of the human sciences, which is at the center of most of Foucault's works – changes radically. Social epistemology, as we might call it, shifts from regimes of truth to regimes of anticipation, which are increasingly dependent on predictive algorithms (Mackenzie, 2013; Rona-Tas, 2020). In such regimes, "the sciences of the actual can be abandoned or ignored to be replaced by a knowledge that the truth about the future can be known by way of the speculative forecast" (Adams et al., p. 247, cited in Mackenzie, 2013). Knowledge, in the case of the algorithmic episteme, boils down to the ability to anticipate future trends and patterns. This entails seeing individuals based on the behavioral data they produce (Rouvroy & Stiegler, 2016), bypassing their self-understanding and identifying patterns from which a predictive behavioral analysis can be deduced.

There are many elements that make algorithmic knowledge an unsuitable foundation for critical knowledge, such as refraining from theory, and from an ontological conception of humans (Fisher, 2020). But most fundamental is the attempt of algorithmic knowledge to bypass subjectivity en route to the creation of knowledge. That is, to create knowledge about the self, which does not allow the subject – for lack of ability to use natural language – to audit such knowledge with the aid of reason. That is true to human knowledge in general, but it is doubly true for their knowledge about themselves, as social, anthropological, and psychological beings.

Note

1 It is worthwhile mentioning that the use of algorithms for scientific endeavour is on the rise also in the social sciences and the humanities. See, for example, Alvarez (2016), Dobson (2019), Levenberg et al. (2018), Marres (2017), and Veltri (2019).

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