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ABSTRACT

Our everyday practices are increasingly mediated through online technologies, entailing the navigation and also oft-simultaneous creation of large quantities of information and communication data. The scale and types of activities being undertaken, the data that are being created and engaged with, and the possibilities for analysis, archiving and distribution are now so extensive that technical constructs are necessarily required as a way to manage, interpret and distribute these. These constructs include the platforms, the software, the codes and the algorithms. This paper explores the place of the algorithm in shaping and engaging with the contemporary everyday. It does this via an exploration of some particular instances of algorithmic sorting and presentation as well as considering some of the ways these contribute to shaping our everyday practices and understandings. In doing so, it raises questions about understandings of agency and power, shifting world views and our complex relationship with technologies.

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Our everyday practices are increasingly mediated through online technologies, entailing the navigation and also oft-simultaneous creation of large quantities of information and communication data. The scale and types of activities being undertaken, the data that are being created and engaged with, and the possibilities for analysis, archiving and distribution are now so extensive that technical constructs are necessarily required as a way to manage, interpret and distribute these. These constructs include the platforms, the software, the codes and the algorithms. This paper explores the place of the algorithm in shaping and engaging with the contemporary everyday.

Algorithms are ubiquitous and pervasive, employed in many ways. For example, the work of algorithms can be seen in the generation of Twitter Trends or in Twitter follow recommendations; in Google personalised search results or Facebook newsfeeds; or in suggested Google map directions, just to note a few. These seemingly banal and mundane though multiple and often intersecting interactions online are becoming increasingly prevalent and extensive as more and more of our everyday activities are conducted in online spaces and through online processes (Figure 1).

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This article considers why algorithms are matters of concern when considering questions of the everyday. It does this via an exploration of particular instances of algorithmic sorting and presentation as well as exploring ways these contribute to shaping our everyday practices and understandings. In doing so, it raises questions about understandings of agency and power, shifting world views and our complex relationship with technologies.

The everyday

Everyday practices constitute the habitus (Bourdieu, 1997) or background within which people operate. They are the seemingly mundane or banal, recurrent and multiple activities and routines that we all engage with and that shape the form and flow of our individual and social lives in space and time. These activities and routines are replicated in countless ways by many people on a daily or regular basis. Through this process, practices become normalised or naturalised, usually enacted with minimal thought and often rendered invisible or in the background (or at the very least as largely unquestioned). Studies of the everyday are, therefore, partly concerned with rendering the seemingly invisible visible and thereby open to critique and the examination of power relations and practices that are in play. These studies are also concerned with understanding how everyday practices are also performative – not only being situated in, but also giving shape to the form/s of time and space.

The shaping of the everyday, at least for de Certeau (1988), is partly the result of the intersection of social, cultural, political and economic strategies enacted by powerful

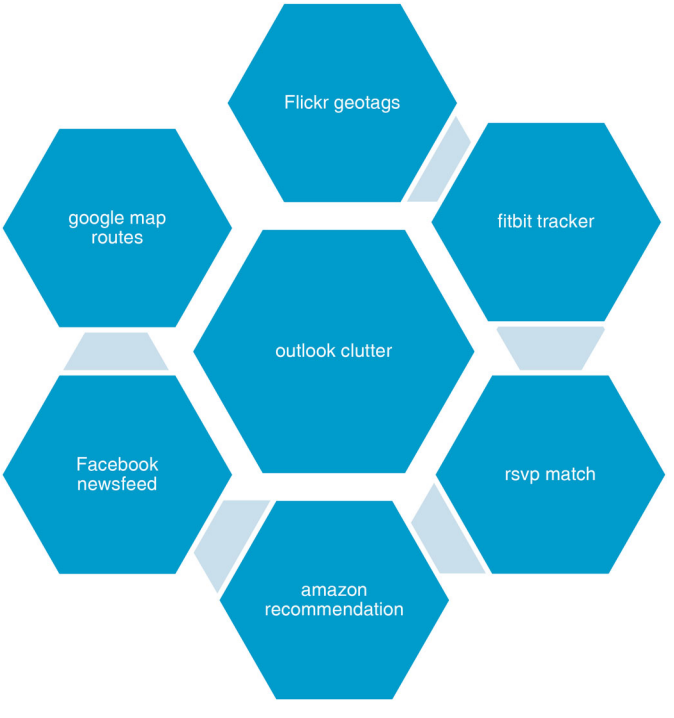

Figure 1. Examples of algorithmic output encountered in our everyday.

systems and actors with the tactics of those who are the consumers or users of these systems and the ways of operating that are employed as a result. For example,

> the street geometrically defined by urban planning is transformed into a space by walkers. In the same way, an act of reading is the space produced by the practice of a particular place: a written text, i.e. a place constituted by a system of signs. (de Certeau, 1988, p. 117)

If we extend these ideas to understanding the online as being spatialised and navigable, those who design and construct, navigate and use define the online (as well as its intersection or melding with the offline).

The Internet is a series of systems within which many people navigate and, therefore, must devise 'ways of operating or doing' the everyday (de Certeau, 1988, p. xi). Indeed, in many societies, Internet connectivity and associated digital literacies are increasingly necessary for the enactment of activities and functions that could be readily classed as everyday practices. By extension, then, we should consider the ways the online systems and practices – of searching, communicating, purchasing or other activities – enabled by code, software and algorithms work to constitute and enact the everyday: an everyday that straddles the on- and offline (the awkwardness of simply trying to demarcate these as 'different' spaces is evident in this phrasing, pointing to the intertwining and interrelationship of both spaces already perceived as commonplace). This translation of everyday activities (through delegation) into actions performed in online spaces is enabled by a range of strategies that include the use of algorithms to sort, manipulate, analyse and predict.

One of the things that render algorithms online interesting in any discussion of the everyday is the ways they can operate semi-autonomously, without the need for interaction with, or knowledge of, human users or operators. Latour (1998) would refer to this as delegation. An algorithm is delegated a task or process and the way it is instantiated and engaged with in turn impacts upon those things, people and processes that it interacts with – with varying consequences.

Latour uses the example of a door groom (or door closer) to illustrate the ways the delegation of an activity or process to a technology (or nonhuman) has broad and differing outcomes and responses according to design and interactions. The automatic door groom does not require a salary or to have working hours allotted; however, the way in which it is designed means that there are influences upon particular human interactions with the door and the passing-through-the-door process. For example, Latour (1988, p. 302) notes that the design of the particular automatic or technical version of his door groom means that 'neither my little nephews nor my grand-mother could get in unaided because our groom needed the force of an able-bodied person to accumulate enough energy to close the door'. The assumptions built into the door groom design along with its implementation presume a certain type and capacity of person who will be using the door. The replacement of a human door groom with an automatic closer also impacts upon labour relations and opportunities through changing the types of work available, operating hours and so forth.

Similarly, the delegation of an everyday practice such as the searching for and evaluation of information by a human agent/actor to an algorithmic equation/process also assumes certain parameters or values. In developed nations with high end computing capacities, the delegation of a range of everyday practices to technologies, and to

algorithmic processes is extensive and ever-expanding. As noted above, search, communication, information analysis, decision-making, navigation and route determination are all routine and mundane functions that are increasingly delegated to and through software, code and algorithmic functions. Google is not only the name of a corporation, but it has also become a verb. Comments such as 'Why don't you google it?' or 'I googled x,' for example, has slipped into the vernacular in a way that denotes the commonplace conflation of corporate service provision enabled by algorithms with the activity itself.

This fits nicely into de Certeau's (1988) discussion of strategies. Strategies refer to:

> the calculation (or manipulation) of power relationships that becomes possible as soon as a subject with will and power (a business, an army, a city, a scientific institution) can be isolated. It postulates a *place* that can be delimited as its own and serve as the base from which relations with an *exteriority* composed of targets or threats (customers of competitors, enemies, the country surrounding the city, objectives and objects of research etc) can be managed. (pp. 35–36)

By extension, the delegation and management of everyday practices within online places by powerful actors (such as Google) demonstrate the application of complex strategies of control and manipulation of users and data. However, it is also important to note that de Certeau did not see those upon whom such strategies were directed as passive or lacking in power. He refers to the use of tactics by such targets – users and consumers, for example – to describe the ways that the seemingly less powerful appropriate (poach) and subvert through their ways of doing or making things happen. It is the intersection of strategies and tactics that lends shape to everyday life.

Algorithms

Many of the algorithms we encounter daily are proprietary owned – and thus opaque and inaccessible to outside critique; and their parameters, intent and assumptions indiscernible. And yet the working of algorithms has wide-ranging consequences for the shape and direction of our everyday. As researchers are increasingly able to demonstrate, the ways algorithms are designed and implemented (and their resultant outcomes) help to influence the ways we conduct our friendships (Bucher, 2013), shape our identities (Cheney-Lippold, 2011) and navigate our lives more generally (Beer, 2009).

Tarleton Gillespie notes, 'in the broadest sense, they [algorithms] are encoded procedures for transforming input data into a desired output, based on specified calculations' (2014, p. 167). Algorithms make things happen – they are designed to be executed and to bring about particular outcomes according to certain desires, needs and possibilities. In online spaces, algorithms are central to the ways communication and information (including the relational) are located, retrieved, filtered, presented and/or prevented.

To describe algorithmic processes, the analogy of a recipe is often employed. A recipe has a particular identified end point – a meal, or a cake, for example. What the recipe provides is a list of ingredients (contributing items or variables), but more importantly, it also contains a step-by-step description of a process that outlines what needs to happen and when, what needs to be combined or separated and when, following a very specific, detailed order. It also needs to be written in a way that the user will understand and be able to follow. Similarly, an algorithm considers particular variables or items that need

to be included or excluded, particular steps to be followed in a particular order and a number of decision or action points to be identified and negotiated eventually to result in a desired outcome or end point. The algorithm is formulaic with an identified function or role that determines the steps and the processes that are employed. It is also relational in that it needs to communicate with other systems and structures with which it interacts; it needs to be able to speak to or be read by other systems and entities. In that sense, it articulates a particular operating logic.

Constantiou and Kallinikos (2015, p. 54) note that,

> Although certainly important, algorithms are the last step in a complex chain of data operations, data structures and architectures that harvest and make data available for aggregation and computation … . Algorithms without data are just a mathematical fiction.

Their point is well made; algorithms cannot be adequately studied as stand-alone processes if we are to start understanding the roles they now play. But they are also more than technical infrastructures – algorithms also need to be recognised more broadly as both situated artefacts and generative processes that engage in complex ways with their surrounding ecosystems. This is an ecosystem that involves technical – software, code, platforms and infrastructure – and human designs, intents, audiences and uses more broadly.

In many arenas (amongst public, corporate and increasingly academic entities), there is a tendency to see online-generated data and algorithmic output as being a simple resource able to guide consumer behaviour, encourage particular choices and change the ways we live and see our lives. Yet as those who critique this understanding of data as able to simply and cleanly collect and analyse note, there is no such thing as 'raw data' (Gitelman, 2011). There is also no such thing as a raw algorithm in terms of it being seen as an uncomplicated and objective instruction. Algorithms are embedded in complex amalgams of political, technical, cultural and social interactions. As Roberge and Melançon (2015, p. 3) note, 'They [algorithms] construct meanings as much as they are shaped by meanings and thus exhibit a form of double agency'. As a result, algorithms help to bring about particular ways of seeing the world, reproduce stereotypes, reify practices (Postigo, 2014) and world views, restrict choices or open possibilities previously unidentified.

When we talk about algorithms and the delegation of tasks and processes to them, we therefore need to take into account the ways their designs and their actions interact with their human counterparts, their relations, systems and structures (social, technical, cultural and political). We also need to consider who designs and implements them and what intended and unintended outcomes result. The question of who designs and implements them is often intimately bound up with questions of power and control, particularly (though not exclusively) in the case of large corporate online entities such as Google.

The power of Google

When organisations have the technical skills and the data resources readily at hand, the consequences of their algorithmic practices can be far-reaching. Google is a vast multinational company that has a long (and seemingly ever-expanding) list of product and capabilities that it offers to companies, shareholders and consumers. As a result of these

extensive engagements through online systems and human and technical users, Google has access to ever-increasing quantities of data drawn from across these platforms, alongside the technical ability to aggregate, combine, manipulate and process these in ways that are not open to those outside of its corporate system: granting them considerable power to shape lives and outcomes as a consequence.

In its efforts to maximise its profits and thereby satisfy its shareholders, Google needs to meet a number of objectives: ensuring viable and attractive consumer products (e.g. Search, Maps, Gmail, YouTube, Android and Google Play), facilitating and providing compelling industry products (data analytics, targeted advertising and platform for app purchase and distribution) and in the process generating growth and income. This means the plethora of algorithms being designed and enacted similarly are required to meet differing needs and functions, sometimes simultaneously. These requirements necessitate the incorporation of an iterative process of feedback and change to accommodate the shifting environments upon which the algorithms operate.

Google's chief economist Hal Varian has publicly noted that Google runs continual experiments on its users to try to identify causality and consequence: what might drive changes in user behaviour, changes in the way in which information is found and displayed, the list is endless. The online environment is a perfect test site for trying new things, monitoring what happens and playing with variations. In a paper given at the National Association for Business Economics annual meeting in 2013, Varian wrote,

> Experiments. … . This is pretty easy to do on the web. You can assign treatment and control groups based on traffic, cookies, usernames, geographic areas, and so on.
> Google runs about 10,000 experiments a year in search and ads. There are about 1,000 running at any one time, and when you access Google you are in dozens of experiments. (Varian, 2013, p. 27)

A decision by Google to privilege mobile-optimised sites in its mobile technology search results required the implementation of an algorithm that would push those sites better suited to mobile screen views and navigation to the top of a user's search results. Google explained the reasons for its decision as their effort at enhancing user experience in accessing search results in an environment of increasing mobile use. While this change obviously makes sense in terms of optimising the user's viewing and navigation experience, the display algorithm makes its decisions on this basis in conjunction with other parameters around the usefulness of the search information retrieved. The mobile friendliness design of the site becomes one of the indicators of 'quality' for this type of search purpose. Google discussed the algorithm update in its *Webmaster Central Blog*:

> As we noted earlier this year, today's the day we begin globally rolling out our mobile-friendly update. We're boosting the ranking of mobile-friendly pages on mobile search results. Now searchers can more easily find high-quality and relevant results where text is readable without tapping or zooming, tap targets are spaced appropriately, and the page avoids unplayable content or horizontal scrolling.
> While the mobile-friendly change is important, we still use a variety of signals to rank search results. The intent of the search query is still a very strong signal – so even if a page with high quality content is not mobile-friendly, it could still rank high if it has great content for the query. (http://googlewebmastercentral.blogspot.com.au/2015/02/finding-more-mobile-friendly-search.html)

Google's Panda, Penguin and Hummingbird algorithms and recurrent updates are other examples where changes are made in order to encourage some outcomes, shift priorities: technical and social. These possibilities to shape, direct and reflect outcomes and behaviour on the basis of algorithmic sorting of large data sets gleaned from everyday activities alongside the ability to test or experiment with these and to be able to track and identify resultant changes place enormous power in the hands of organisations such as Google, whose products are fundamentally entwined in the everyday lives of its users.

However, these possibilities also raise questions as to how we can conceptualise the delegated agency of the algorithms themselves and as to how we can analyse and position their place in the everyday. While the strategies of corporations such as Google work to shape the environment and practices of its users, for example, the tactics users employ when engaging in these practices and in these spaces intersect and iteratively shape the ways in which the everyday is manifest and experienced. Relationships and understandings of technology are inferred: These relationships are complex with many descriptions connoting an interpersonal or anthropomorphic framing of everyday algorithmic output. This is evident when exploring the language used by technology researchers. For example, in the following quotation, despite the use of scare quotes around terms indicating a certain appropriation of language and actions being applied to technological process, the choice to include such language is interesting, indicating the complex relationship between human and algorithm and also the lack of an appropriate language to describe these complex processes.

> Search engines 'learn' about our preferences and desires as they endlessly concatenate information about the potential quests of searchers. As algorithms come to 'know' more about our search activities, search and targeted advertisements become more effective, which leads to better understanding of searchers' supposedly 'inner' selves, and so on in a recursive circle of adaptation and modulation driven by the algorithms as much as searchers and their desires. (Hillis, Petit, & Jarrett, 2013, p. 16)

Increasing everyday dependence on and engagement with and through the online, and extending out to our engagement with other objects (Internet of things, driverless cars or with robots, e.g.) render these relationships and the 'algorithmisation' of everyday practices as commonplace and unremarkable and yet relatedly, worthy of closer critical attention.

Unlikely or unintended relationships

> Larry Page used to say that the trouble with Google was that you had to ask it questions. It should know what you want and tell it to you before you ask the question. Well, that vision has now been realized by Google Now, an application that runs on Android phones. One day my phone buzzed and I looked at a message from Google Now. It said: 'Your meeting at Stanford starts in 45 minutes and the traffic is heavy, so you better leave now.' The kicker is that I had never told Google Now about my meeting. It just looked at my Google Calendar, saw where I was going, sent my current location and destination to Google Maps, and figured out how long it would take me to get to my appointment. (Varian, 2013, p. 28)

The extract above points to the increasing reliance and almost interpersonal engagement that we are beginning to have with our devices and our desire to delegate many of our everyday needs, decisions and actions into a synergistic melding of human and machine. Individual user responses to a technology anticipating their movements might

invoke mixed feelings: for some users such as Hal Varian, this is uncritically accepted as a helpful and obvious relationship, whereas others, as Varian notes, may feel uncomfortable with the obvious surveillance and data monitoring of everyday routines that this interaction infers. Yet, this continual expansion in delegation and prediction is likely to become increasingly normalised and even expected. The increase in the number of personal assistants such as Apple's Siri or Microsoft's Cortana, and the continual extension of 'their' personal assistant capabilities, encapsulates this desire within its very expression and intent. The attempts to render the interface between the user, the device and the software and algorithms, and the activity itself seamless and ubiquitous, also work to obscure the range of powerful strategies and interests involved.

These potentials accentuate the drive to design ever more sophisticated and extensive algorithmic processes that can analyse, manipulate and predict on the basis of broader and more complex data sets enabled by the relocation of everyday practices online. Yet hidden away behind the screen and from the everyday user's ability to unpack and understand the specific practices, programming choices of these algorithms (even more difficult with machine learning possibilities and multiple algorithm interactions), what they do and do not do, are less transparent or able to be critiqued. Unintended and unanticipated consequences are an obvious, and will be an increasingly common, outcome. It is, therefore, the outcomes that signal issues or problems that need to be addressed and that we need to be alert to. These issues may be a result of internal programming or interactions, but they can also be a result of the algorithmic outcomes and interactions with other social systems and practices – as a result of their engagement with people.

Recommender systems, for example, employ algorithms to identify and present recommendations on the basis of a user's preferences and online practices. The Amazon website will appear to 'recommend' particular purchases according to the assumption of shared associative interests – if you are interested in a book on algorithmic processes, then it is likely there might be other relevant books that you might be interested in around this topic. This assumption is translated into the system then presenting to you, the algorithm interested user, the search or purchase results of other people who also searched or purchased that book along with other books that they have purchased, books that possibly have similar search terms in their metadata, on the assumption that a shared interest will result in an increased likelihood of purchase. This results in not only varyingly useful, but also at times strange or unanticipated associations.

McKelvey (2014, p. 589) points to the ways a recommender system's inference of a relationship or association between users and users' interests can be translated into troubling or unexpected connotations more broadly. He recounts an article by Mike Ananny that noted an associative relationship inferred on the basis of recommendation and placement on Google Play Store between Grindr (self-described as a gay guy finder) and a sex offender search app. The title and byline of Ananny's (2011) article makes the connections and consequences clear: 'The Curious Connection between Apps for Gay Men and Sex Offenders: Reckless associations can do very real harm when they appear in supposedly neutral environments like online stores'. By the very coupling of these two apps on an online store website – linked by the tag, related and relevant applications – an association is made raising questions about the algorithms and programming that are being used in order to generate such results, but also highlighting the possibilities for human associative interpretations of these recommendations that are problematic socially, ethically and

politically. The algorithm/s involved would not distinguish between the data they have been instructed to analyse and manipulate in terms of its political or social values explicitly. Yet the outcomes point to the lack of nuance or contextual understanding that such processes often do not accommodate, and the impact they may have when being addressed to complex, socially embedded human users and systems. They are also not open to outside scrutiny that might enable underpinning assumptions to be interrogated: it is only their products or outputs that can be addressed. In this instance, a direct inference could be drawn between sex offenders and gay men.

Bias

This combination of delegated everyday practices and algorithmic functions within social, cultural and political systems inescapably results in biases being enacted. In 1996, Friedman and Nissenbaum categorised the range of biases evident in computer systems at that time.

These biases derived from a range of inputs, social, technical and emergent, as time, technology and social influences impacted on outcomes. Bias could be beneficial or detrimental or both, similarly they could be intentional or unintentional. Friedman and Nissenbaum use the example of travel airline operator listings as demonstrating bias. In their example, they noted the way in which airlines operators were listed on a screen, whether ordered by alphabet or by preferred supplier, had an impact on which airlines were used or referred to by the travel agents. As agents were more likely to refer to those operators listed on the top page, this meant that decisions as to ordering criteria benefitted some airlines and disadvantaged others. This is not a dissimilar practice and outcome to the one that has been noted with Google search results and the fact that users rarely refer to listings after the first or second page of search results. More recently, in relation to algorithms and social media, Bozdag (2013) noted how Facebook prioritises popularity of posts or particular types of interactions in its ordering and inclusion of items in a user's newsfeed, and the ways Twitter prioritises currency as an important ranking value: these choices and actions demonstrate particular biases and in the process, particular practices of power.

Friedman and Nissenbaums' (1996) categories of bias as well as their origins are listed below.

- Pre-existing: from social institutions, practices and attitudes
  - Individual
  - Societal
- Technical: technical constraints and considerations
  - Computer tools
  - Decontextualised algorithms
  - Random number generation
  - Formalisation of human constructs
- Emergent: arises in context of use
  - New societal knowledge
  - Mismatch between users and system design (differing expertise or values)

This delineation of different types of bias reveals the multitude of factors that come into play when technical, social, cultural and political elements are engaged. Bias is generated and enacted through the ways the technology is designed, the ways that the data are encoded into various relationships and actions, and the ways people and broader society engage with one another and with the various systems that they have put in place in order to navigate and control their lives. Twitter Trends analysis, for example, highlights the technical and emergent biases embedded in algorithms that value particular types of activity and push these to the forefront. Gillespie (2011) notes the process by which a Twitter topic is prioritised up the list according to the value given to certain criteria, and also the possible human/social bias displayed in the categorising of content in Amazon filtering processes. As Mackenzie (2006, p. 44) notes, '[an algorithm] naturalizes certain orders and animates certain movements. An algorithm naturalizes who does what to whom by subsuming existing patterns and orderings of cognition, communication and movement'.

The challenge for many researchers who are trying to understand the role of algorithms and the ways they intersect with and influence the everyday is trying to understand the origin of such bias when the origin, outcomes, instructions and implementation of many algorithms are not open to scrutiny and are multidirectional. This is not only partly due to the proprietory nature of many algorithms, their multiplicity and complexity, their embeddedness in many online processes and the mundane nature of much of what they do, but also by the requirement for technical knowledge or literacy that many people lack when dealing with often complex mathematical and technical systems.

Different frames: ways of seeing

Mackenzie (2006, p. 43) notes that 'algorithms carry, fold, frame and redistribute actions in different environments'. The suggestion being made in this article is that algorithms are being increasingly delegated the function of performing or enabling everyday practices enacted through technologies. And in turn, the practice of delegation of functions to algorithms is itself becoming an everyday practice, that is, increasingly mundane and normalised. In this delegation process, data (actions, relations, and objects) of the everyday are translated, framed and reconfigured.

From algorithms telling us what we are seeing or the filtering and curation of what we are seeing online, we have also framings that tell us what we, the user, *should* be seeing. A random selection of news headlines on algorithm-related topics searched (using Google search functions) for this paper brings forth the following titles: Algorithm spots beauty that humans overlook; The algorithm that can spot the 'beauty' in your holiday snaps – and tell you which selfies to delete; The shortest path to happiness. There are many, many others.

While these news headings tell us much about human belief in the capacity of technology, the stories themselves also detail the ways we – human users – can use (or delegate capacity to) these technologies to enact everyday practices with the inclusion of certain assumptions and parameters as a result. The algorithm that spots beauty carries within it assumptions and definitions of beauty represented as though they are universal and timeless and easily reduced to a particular combination of data; the one that edits your selfies implies you are less than capable and that you should trust the technology more than yourself to make these aesthetic choices; the shortest path to happiness suggests

various routes to travel depending upon what the algorithm determines is the quietest, the most peaceful or the most beautiful route (without sacrificing too much time).

The goal of the travel algorithm was to 'suggest routes that are not only short but also emotionally pleasant' (Quercia, Schifanella, & Aiello, 2014, p. 1). According to the researchers,

> To date, there has not been any work that considers people's emotional perceptions of urban spaces when recommending routes to them. We thus set out to do such a work by collecting reliable perceptions of urban scenes, incorporating them into algorithmic solutions, and quantitatively and qualitatively evaluating those solutions.

When the development process is investigated further, the interplay of human emotions, decisions and inputs alongside the sorting, analytical and manipulative capacity of the technologies becomes more complex and reveals an iterative, multilayered exchange that takes place between human process and technical process. In the travel algorithm, input data were drawn from combining the analysis of data from a crowd-sourcing platform that shows two street scenes in London, and inputted user votes selecting which scene looked more beautiful, quiet or happy. This information was then analysed to form a model of the characteristics of beautiful, quiet and happy travel.

Then, to test for generalisability, the developers investigated whether their algorithm model would also work to predict beauty scores on Flickr by first analysing Flickr user votes, and then holding interviews directly with users about the choices that were suggested to validate their findings. As a result of this analysis, the developers of the algorithm claim that their algorithm can suggest, with reasonably accurate results, a number of possible travel routes able to meet the traveller's requirements in order to make a journey more pleasurable, while still accommodating the need for time considerations.

While it is not clear whether this algorithmic model was applied or developed further, it is clear that it could be monetised and offered within services such as Yahoo maps (it was developed in conjunction with Yahoo) or other GPS-based services. Zuboff (2015, 2016) makes this link quite explicit in her description of the rise of surveillance capitalism and the capture and commodification of users' behavioural data for persuasive and predictive application.

Capitalism, modularisation, quantification and the everyday

Algorithms are able to function as a result of the translation of items, actions and processes into calculable and malleable units or data points – rendering all (objects, actions and relations) in some senses as equivalent regardless of the actual content or context, and in turn these renderings are attributed value, meaning and relationships through the very design and operation of the algorithm itself and its interaction with its broader environment. In some ways, this rendering process is indiscriminate and without judgement: time, bodies, friendships, transactions, sexual preferences, ethnicity, places and spaces are all translated into data for manipulation and storage within a technical system or systems. On that basis alone, questions can be posed as to the broader philosophical issues raised around ontological understandings and experiences of the world that are engaged with and developed when the everyday is increasingly algorithmically articulated, or more simply, to ask how this might affect how people see and understand

their environment and their relations (when all is reducible to malleable discrete but combinable units).

An illustration of this reduction and increasing fragmentation of every *thing* including the everyday can be seen in the growth of the quantified self and self-tracking movement and the ways various aspects of human activity and individual biological and health data are identified, tracked, captured by wearable technologies and then analysed and relayed back to the individual, the provider of the various monitoring service providers, and other interested parties (such as health services). These reductive manoeuvres are necessary to be able to capture and manipulate biological items and actions into data and processes; yet the very act of translation is also transformative: the process from biology (heart) and practice (walking) to data becomes unquestioned, normalised and invisible.

This reduction to singular data or units is, however, only one aspect of the process. The use of algorithms requires this reduction but then introduces, defines and creates relations between these varying units through the processes they are instructed or designed to implement. Therefore, algorithms are also incredibly relational – it is the relation that defines, describes and shapes how that data are then (re)presented. These relations are defined and designed by the architects of the algorithm according to a design brief, a particular desire or identified output, and shaped by technical specificity, commercial incentive and social predispositions, bias and cultural understandings.

The delegation (and resultant commodification that often results) of everyday practices such as information search and analysis functions or of communication between friends to algorithmic processes and software coding forms part of the fabric of the everyday (or habitus). Here, the strategies of actors (such as Facebook) to enframe, shape and capture user practices and desires intersect and engage with the tactics of users in making operational their everyday.

Conclusion

Algorithms invoke questions about how to conceptualise issues such as agency and power within a technologised everyday. Algorithms are dynamic processes designed and implemented by humans in conjunction with technical affordances and within broader political, social and cultural environments that are shaped by the continual interactions of strategies, structures and tactics. As a result, they are in a constant flux – think about the continual updates that we see with Google search algorithms, for example – with changes made by humans and by machines. We cannot ignore their actions, or fail to deal with their consequences. Science and Technology Studies, software studies and actor network theory all provide some fruitful insights and methods particularly in relation to the specificity of particular algorithms, yet largely fail to address many of the broader issues and questions of the everyday that are raised.

Some of the questions raised in this article relate to the relationship we have with our machines and the broader inability to critique and guide many of the algorithmic processes enacted by large corporations with which we increasingly interact. Another relates to something that Zuboff refers to with her term *surveillance capitalism*, though there is more involved in this process than increased commodification alone. As de Certeau made clear, consumers and users are not passive – they work within the systems in which they find themselves and appropriate, and subvert through various tactics of

making do (something that Zuboff fails to acknowledge). Yet this still does not completely encapsulate what I am pointing to.

I suggest that by delegating everyday practices to technological processes, with the resultant need to break down and reduce complex actions into a series of steps and data decision points, algorithms epitomise and encapsulate a growing tendency towards atomisation and fragmentation that resonates more broadly with an increasing emphasis on singularity, quantification and classification evident in the everyday. Algorithms, and the delegation of human behaviour to algorithmic processes, also become part of the (technologised) everyday as a result. What this might mean for broader social and ethical relations with one another, our technologies and our understanding of the everyday itself is a question worthy of further consideration.

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