



The tyranny of perceived opinion: Freedom and information in the era of big data



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ABSTRACT

Never before have we had access to as much information as we do today, but how do we avail ourselves of it? In parallel with the increase in the amount of information, we have created means of curating and delivering it in sophisticated ways, through the technologies of algorithms, Big Data and artificial intelligence. I examine how information is curated, and how digital technology has led to the creation of *filter bubbles*, while simultaneously creating closed online spaces in which people of similar opinions can congregate – *echo chambers*. These phenomena partly stem from our tendency towards *selective exposure* – a tendency to seek information that supports pre-existing beliefs, and to avoid unpleasant information. This becomes a problem when the information and the suggestions we receive, and the way we are portrayed creates *expectations*, and thus becomes *leading*. When the technologies I discuss are employed as they are today, combined with human nature, they pose a threat to liberty by undermining individuality, autonomy and the very foundation of liberal society. Liberty is an important part of our image of the *good society*, and this article is an attempt to analyse one way in which applications of technology can be detrimental to our society. While Alexis De Tocqueville feared the tyranny of the majority, we would do well to fear the tyranny of the algorithms and perceived opinion.

1. Introduction

Never before have we had access to as much information as we do today, but how do we avail ourselves of it? In parallel with the increase in the amount of information, we have created means of curating and delivering it in sophisticated ways, through the technologies of algorithms, Big Data and artificial intelligence. In this article, I examine how liberty is threatened by the way in which information is now handled.

I start by examining some aspects of human psychology, such as the phenomenon called selective exposure, which denotes a human tendency to seek out information that supports pre-existing beliefs, and to avoid unpleasant information that contradicts our opinions. I then discuss how information is curated in today's society, and how digital technology has led to the creation of *filter bubbles*, while simultaneously creating closed online spaces in which people of similar opinions can congregate. While some liberals argue that more information can lead to exposure to new ideas and something akin to general enlightenment, I argue that we might be seeing the *opposite* happening in today's society. If people today, despite all the information that is available, are less exposed to ideas they consider undesirable, uncomfortable and provocative, Big Data and algorithms might lead to less liberal societies, with individuals living in conditions that do not allow for the full

development of individuality.

More specifically, I consider how certain effects created by Big Data, and the algorithms used to (a) deliver information to us, and (b) deliver information *from* us to others, might make the problem discussed above even worse. When the information and the suggestions we receive, and the way we are portrayed creates *expectations*, they become *leading*, and thus of interest in relation to liberty. I focus on how all these issues operate in concert, and thus become more threatening than each phenomenon seen in isolation. In addition, I argue that the theories of expectation I employ are useful additions to the current debate on how our use of Big Data and algorithms is non-neutral, manipulative and shaping. In addition, I argue that traditional political philosophy provides a good framework for understanding what we really mean when we say that *liberty* is threatened.

The issues discussed may not be very problematic if we regard liberty as only consisting in freedom from intentional physical interference. I, however, consider liberty to be a broader concept, and in this article I focus on liberty of opinion and the idea that liberty is as much a social as a political phenomenon. With this understanding of liberty, the technological developments described above can be seen as posing a threat to individuality, autonomy and the very foundation of liberal society. I focus in particular on the issues of perceived opinions and expectations and the renewed relevance of a Tocquevillian tyranny of

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opinion. This article is an answer to the call by Griffy-Brown, Earp & Rosas [1] to analyse the *Good Society*, in which liberty is a core value and is affected by technology. While many disciplines are, or can be, used to analyse these issues, I agree with Coeckelbergh's [2] view that it is important to draw on *political philosophy* if we are to understand the nature of liberty, and how it is impacted by technology.

I mainly limit my discussion to the effects these developments have on *individuals*, but these issues are also of great importance to society in general, as there are clear connections to issues such as increasing polarisation, the changing nature of capitalism and the health of liberal democracy [3]. Bozdag & van den Hoven [4] provide an important account of how the phenomena I discuss relate to these broader societal issues, and to theories of democracy in particular. See also Sunstein [5] for an analysis of the implications for deliberative democracy.

While Alexis De Tocqueville feared the tyranny of the majority, we would do well to fear the tyranny of the algorithms. In the modern age, we traverse a digital landscape that largely consists of opinions similar to our own, and in this sense the tyranny of opinion feared by Mill and Tocqueville may be more oppressive now than ever before.

2. Big Data and information

2.1. Background and terminology

Our era is often referred to as the *Era of Big Data* [6–8]. I referred to the *amount* of information available today, and this is the first *V* in Laney's definition of Big Data: *volume* [9]. The other two *Vs* stand for *velocity* and *variety*, referring to the speed at which we now generate and gather data, and the 'structural heterogeneity' of the data [10]; p. 137). In addition to the three *Vs*, we can note that Big Data is *organic* in the sense that *everything* is collected, and that, in this respect, it reflects the real world more faithfully than traditional data; it is also a *global* phenomenon [11]; p. 2).

In the following, I discuss Big Data in combination with two other concepts of importance to the issue at hand. *Artificial intelligence* is used as a term to describe machines that are capable of performing tasks that are thought to require intelligence [12]; p. 9). They can be very simple tasks performed by industrial robots, or they can be tasks we consider to be both more complicated and more important, such as determining who gets a loan from a bank, who is given bail and who is not when placed under arrest [13]. *Machine learning*, another term we often hear in the same context, refers to systems that 'improve their performance on a given task over time through experience', and not through being trained or controlled by humans [12]; p. 9). When algorithms learn from Big Data, we enter the world of which I write.

The technologies themselves are not necessarily the problem, Zuboff [3] argues. She maintains that the true problem is the underlying system she refers to as *surveillance capitalism*. Large corporations that control the new technologies operate by a logic where there are few, or no, limits on the gathering and analysis of data for commercial purposes. It is how we *employ* technology, then, that is the main problem. A proper understanding of algorithms requires that we understand the 'warm human and institutional choices' behind them, instead of seeing them as neutral technological phenomena [14]. It is also very important to be aware of the business models that form the basis for commercial applications of Big Data and algorithms. Foer [15] provides a good account of how the profit motive has changed the media landscape as we know it. The never-ending demand for more attention and more clicks is fed by deep insight from Big Data, which, in turn, is used to tune algorithms in ways that provide people with the kind of content that maximises the variables the provider of information desires to be maximised. These variables are usually not our enlightenment, or the health of our democratic societies, and he fears that a 'world without mind' will be the result [15]. Bucher [16] also describes how algorithms have changed news and journalism, while Gillespie [17] shows how the rhetorical and discursive tactics of companies are often employed to

give an air of neutrality. In the end, however, they are driven by the pursuit of profit. While Foer [15] focuses on the monopolistic ambitions of the big tech companies, Zuboff [3] argues that surveillance capitalism is something *new* that defies old analytical tools such as monopoly and privacy. Lanier [18] asks *Who owns the future?* In societies where the underlying system is based on monetising data, and problematizes the distributional effects of present day society. According to Zuboff [3]; we are neither consumers nor employees of these large companies, and Lanier [18] argues that a radical new approach to handling data is required if we are to live in a society in which technology is used as we use it today. These debates are of great importance to society, and it is necessary to understand these phenomena if we are to understand the true effects of technology. I will at times refer to these broader issues, but will focus on how the mechanisms described threaten liberty even without phenomena such as Zuboff's surveillance capitalism.

I deliberately choose a non-technical approach to the issues at hand, and my goal is to present a simplified, but credible picture of these technologies that covers (a) the basic workings of Big Data and AI, and (b) a future in which these technologies have evolved slightly. I posit that the issues I discuss will only become more pressing with time, and that it is important to deal with the fundamental issues, rather than with specific implementations of the technologies as they have existed or exist right now. In this section, I establish three propositions that will function as premises in my conclusion. They are related to (a) human nature and our tendency to seek information that corroborates, rather than challenges views we already hold, (b) algorithms and filter bubbles, and (c) the way in which we can now live digital lives in digital spaces inhabited to a large degree by like-minded people.

2.2. Human nature, selective exposure and confirmation bias

Man is a peculiar species, and people who study our behaviour tend to describe us as *biased* in our search for information. We are not fully rational, and there are many facets of our psychology that make us vulnerable to bad decision-making. These effects are discussed in detail in the literature on nudging [19,20]; p. 91), and, for example, by Kahneman [21]. How these biases can be exploited using Big Data and AI is discussed in Sætra [22]. Here, I focus more specifically on *selective exposure* and *confirmation bias*.

Selective exposure concerns individuals' propensity to seek out information that 'aligns with their views and beliefs and avoid such content that is different in perspective or even challenging to their position' [23]; p. 153). This theory is from the 1960s, but it has received increasing attention as the algorithmic curation of information has become widespread, and is now 'one of the most commonly used theories in communication scholarship' [24]; p. 677 [25]; p. 342).

The reason for its resurgence should be clear: personalisation means that selective exposure has never been more relevant [26]; p. 21). Explicit, or implicit, personalisation makes the task of avoiding uncomfortable information, and obtaining information that supports our views, beliefs and decisions, much easier than at any previous point in history [27]; p. 3). Personalisation does not just make it *possible* to choose what one is exposed to, it *actually* leads to increasing selective exposure [28]. While there is disagreement about the *strength* of this effect, even people who tell us to relax say that the effect is there [27]; p. 10).

A related phenomenon is *cognitive dissonance*, which is studied in the work of Festinger [70]. The reason we avoid information that conflicts with our beliefs is that it causes discomfort, and, as with other aversive stimuli and uncomfortable phenomena, we seek to reduce exposure to it [29]; p. 470 [24]; p. 676 [23]; p. 154). The work by Garrett [24,30] suggests that the possibility of selecting what we are exposed to leads to greater exposure to supporting information, but not necessarily less exposure to information that conflicts with our existing beliefs.

As such, the theory of *confirmation bias* is proposed to be a better explanation of what *actually* happens in our new digital landscapes

[24]; p. 679 [31]; p. 557). Confirmation bias explains the tendency we have to seek or interpret information in ways that support 'existing beliefs, expectations, or a hypothesis in hand' [32]; p. 175). This bias is not the result of *conscious* effort, and people are not aware that they are seeking and evaluating information in the way described here [32]; p. 175). Nickerson [32]; p. 175) describes how our unconscious selves at times work in a way resembling a lawyer building a case – not in order to shed equal light on all aspects of a case, but in order to *win*.

Iyengar & Hahn [26] show that, in experiments, people prefer news sources they *expect* to agree with, both for political issues and 'softer' issues, such as travel. They point to a growing body of evidence, and others such as Jonas et al. [31]; p. 557, 568) have carried out experiments in which stronger selective exposure effects are found in settings that resemble real-life situations, with information being presented sequentially [26]; p. 21). Festinger originally considered selective exposure to be a problem related to conscious *choice* [24]; p. 679). With the rise of algorithms, *unconscious* selective exposure seems to be of even greater interest to us today.

2.2.1. Proposition 1

Individuals have a propensity to seek information that corresponds to their pre-existing conceptions, through such mechanisms as selective exposure and confirmation *bias*.

2.3. Algorithms, curation of information and 'filter bubbles'

Attention is a scarce good, and even before the advent of online abundance of information, we all filtered, constantly [5,21]. The main filtering tool is the *algorithm*, which is little more than computer code that transforms input into output [33]. What makes algorithms interesting is that they are not, and cannot be, considered *neutral* [34]; p. 35; [33]. The input could be *all* the news articles available, and the output could be what I see in my News Feed in Facebook. Bucher [35] provides a good account of how Facebook's algorithms choose what we see based on *affinity* (to authors), *weight* (of different kinds of material) and *time decay* (giving us more new stories). Of particular interest is her argument that these algorithms create clear rules for how to act in order to be successful (get a lot of attention), and quite severe sanctions for those who violate these rules (invisibility) [35]. See Bucher [16] for a more complete account of the relationship between *algorithmic power* and politics, as well as a history of algorithms and an exposition on their technical aspects.

While algorithms are automated and a machine technically chooses what I get to see, the choice is based on some initial instruction, and it is performed in pursuit of a set goal. If I run a social media site and want to maximise my revenue, I will instruct my algorithm to provide you with as much pleasure as possible, in order to maximise the amount of time you spend on my site, which maximises the revenue I receive, both in terms of advertising income and, most importantly, the data I collect about you. Like a map, or any other *model* of the world, an algorithm includes some things and leaves other things out, and what is left out is based on the 'explicit and implicit values of their designers' [34]; p. 35). Gillespie [17] describes how companies that employ algorithms have become 'the primary keepers of the cultural discussion', and states that this is deeply troubling, due to their as yet quite unregulated operation. These digital 'platforms' are not merely neutral areas in which information is freely given and acquired, since their owners seek the maximisation of profit – they are not philanthropic well-doers [17].

What is interesting is that (a) people do not realise how these algorithms work, and (b) this process might lead to what Pariser [36] has called *filter bubbles* [23]; p. 153). An algorithm works as a filter, and when this filter (a) only lets *some* information through, and (b) is used for most of an individual's information needs, the result is that the individual in question will be living, metaphorically, in a *bubble*. His perception of reality becomes skewed.

Customisation and the prevalence of social networks and other sites

that provide content through algorithms makes this a real problem. The algorithms are driven by Big Data and the abundant information we all leave behind about our preferences and personalities. This means that sites such as Facebook can end up creating *separate* filter bubbles for many of us.

Here, I focus on two factors that make algorithmic curation of information problematic. Firstly, an algorithm, combined with Big Data and machine learning, may start out quite naive, but as soon as we start making choices – liking some things, disliking others, spending a lot of time on specific kinds of content etc. – the better the algorithms become at providing us with exactly what we desire. They thereby lead to a *narrowing* of the world we perceive. What we *prefer* is allowed through the filter, while things that *upset us* are filtered out. Secondly, the creators of algorithms program them in order to achieve certain goals. The specifics of these goals are undetectable to us and unrelated to our own preferences. This means that, even if a person did *not* exhibit selective exposure, the world he sees through the algorithms by which he lives will not be a neutral representation of the world.

The way algorithms shade the glasses through which we see the world is of greater and greater importance as customisation and personalisation increase [27]; p. 2). Personalisation can be *explicit*, in the sense that we actively help to train the algorithms by telling them to hide particular content etc., or it can be *implicit*, as the algorithms simply learn from our behaviour [27]; p. 2). The effects of *both* kinds of personalisation may be problematic, as the research of Rader and Gray [33] shows. Social networks are at the forefront of the personal curation of information, and about 68% of Americans already get news via social media sites [37]. One in five get news there often, and Facebook is by far the most popular network, as 43% of Americans get news via Facebook. Flaxman et al. [38]; p. 298) notes that the effects of social media are tempered by *regular media*. Zuiderveen Borgesius et al. [27]; p. 2, 7, 10) have examined mainstream media outlets, and say that they are, *as yet*, still in the infancy of personalisation. As such, they are not as likely to create algorithm-based filter bubbles.

2.3.1. Proposition 2

Algorithms powered by Big Data play an increasingly large part in curating the overwhelming amount of information that is available in modern society. Such algorithms are not neutral, and will always choose what information to present to users based on some pre-determined logic.

2.4. Intergroup heterogeneity and intragroup homogeneity

The third factor I consider is that it is now possible for us to create digital spaces in which like-minded people can congregate. Historically, such contact has not been easy. When at work, with my family, or when shopping in the small town I live in, the chances of finding someone who shares my views on, and interest in, say, Thomas Hobbes, are not great. The fact that I constantly have to deal with people who do not agree with me could potentially be quite upsetting to me. I get little support for my opinions, and I constantly have to deal with everyone around me saying things that fit poorly with how I see the world. Previously, I might have attempted to relocate, say to a university with plenty of political theorists, or I might find a pen pal with whom I could share my views and interests. Either way, historically, I would be living most of my life interacting with real people with opinions very different from my own.

Today, however, I could simply create an online group for all the happy Hobbesians out there. I could also befriend these people, and after not too long I might have a social network that was predominantly composed of Hobbesians. The occasional family member and childhood friend might drop by of course, but they can easily be hidden from my newsfeed, making them merely *hypothetical* friends that I never see. It is important to note that, even if I do not *explicitly* hide these people, algorithms will be hiding them for me, often without me even realising

it, as a result, for example, of the algorithmic weight given to *affinity* as described by Bucher [35]. See Gillespie [14,17] for a more thorough discussion of how non-neutral algorithms based on non-neutral datasets leave some things out, while highlighting others.

In this new digital space, I would see news stories shared by my fellows, their comments on these stories and other events, and their opinions on all sort of other things. This would *be* my new world. I might occasionally have to leave my house and briefly interact with real people, but I needn't place much emphasis on this, as my *real* life is now in my new digital world. Whenever I criticise a scholar for treating Hobbes as a straw man, I hear nothing but cheers, and when others post their Hobbesian analyses of current world affairs, the whole group applauds. We have created an *echo chamber* [5]. And while my Hobbesian echo chamber might be considered quite benign, other echo chambers are far darker, and can consist of people who, for example, share a hatred of everyone who is different – in their opinions, politics, skin colour, religion or anything else.

An echo chamber is a space in which 'individuals are largely exposed to conforming opinions' [38]; p. 299). As such, we 'inhabit different worlds' when we inhabit different echo chambers [23]; p. 152). In these worlds, we tend to share *more* of the information we believe to be conformable to group opinion, and so will the others [38]; p. 299). The effect is increased polarisation, as described by, for example, Sunstein [5]. Allcott & Gentzkow [39] conducted a study showing that 20% of liberals' friends have the opposite ideological view, while the proportion for conservatives was 18%. One important aspect of digital media is that it is becoming easy to cater to much smaller groups (even individuals) than was possible with mass media. While mass media could cater to different positions in binary situations (blue/red, pro/con Brexit, etc.), the process described here divides these large groups into ever smaller groups, with great intragroup homogeneity. In large groups with little intragroup homogeneity, the effects described here will not be as severe, as there is a broad range of choices and opinions contained within them.

In echo chambers, people are comfortable, and while their own opinions are reinforced, they 'lose the inclination to proactively discuss ideas with people or groups of a different position' [23]; p. 151). When we consider the fact that groups tend to take more *extreme* positions than individuals, this spells danger [40]; p. 125 [23]; p. 151). We are less exposed to 'cross-cutting content' on social media, and our *friends* are the most important factor: people choose like-minded friends who share news and opinions based on similar positions [41].

Consequently, we now belong to groups with a high degree of intergroup *heterogeneity* and a higher degree of intragroup *homogeneity*. When considered together with the two preceding phenomena, the compound effects we can envisage warrant a warning. Gerken [42] calls this phenomenon *second-order diversity*, and Sunstein [5] discusses how such a society can benefit from enclave discussions. The issue of individual identity vs. Group identity falls outside the scope of this article, but I refer readers to Postmes, Spears, & Lea [43] and Postmes, T., Spears, R., Lee, A. T., & Novak, R. J [44]. for a discussion of these issues.

2.4.1. Proposition 3

In the digital world, it is easy to create areas in which people can associate with like-minded people. In contrast to our lives in physical space, where (a) fewer like-minded people are accessible, and (b) there are greater chances of encountering people with various beliefs, such areas can become what are referred to as echo chambers.

3. Freedom

3.1. Positive liberty, negative liberty, and a third, different kind of liberty: non-domination

Liberty is a many-faceted term, and among the most famous of these

facets are Berlin's [45] concepts of *positive* and *negative* liberty. Positive liberty is what Carter [46] prefers to label *self-mastery* – by which he refers to 'the dominance of an "authentic" self over a merely empirical self' [46]; p. 6). Berlin mentions being a *subject*, rather than an *object*, as central to positive liberty, and he also mentions such things as being one's own master and being in *control* of one's own life in the sense of being self-directed and autonomous [45]; p. 178).

Negative liberty, on the other hand, consists in the absence of interference [45]; p. 169). Absence of interference from other *men* is what is considered, and not the absence of interference from nature, or being obstructed by internal obstacles, such as desires, irrationality, weakness of will etc.

MacCallum [47] and Skinner [48] are among those who criticise the idea of two separate forms of liberty. Carter [46]; p. 6) also seeks what he calls *overall freedom* – a freedom compatible with both negative liberty and the idea that freedom might be *ability*. The final concept I shall mention is that of liberty as *non-domination*, where domination consists in (a) the capacity to interfere, (b) arbitrarily, (c) in choices a person could otherwise make [49]; p. 52). Pettit [49] advances this idea, and places it *between* negative and positive liberty. It is negative in that it requires the absence of domination by others, and positive in the sense that it requires *more* than this absence; it also demands *security* for this absence [49]; p. 51). If I am not interfered with right now, but something *could* interfere with me at any time, I am not fully free. Freedom requires my freedom to be *protected* as well, according to Pettit [49].

3.2. Liberty and tyranny as political and social phenomena

There is no tyranny more dangerous than an invisible and benign tyranny, one in which subjects are complicit in their victimization, and in which enslavement is a product of circumstance rather than intention [50]; p. 582).

In order to evaluate the threats posed by the phenomena described in this article, I turn to Tocqueville and John Stuart Mill – two classical liberals who were concerned with liberty.

Tocqueville is perhaps most famous for his warnings against the effects of the tyranny of the majority. What struck him when visiting America was that freedom of discussion – and even freedom of thought itself – was limited, which led to a lack of 'independence of mind' [51]; p. 293). This lack of independence of mind might be seen as a lack of liberty, particularly positive liberty. At the very least, it is a cause for concern about the *meaning* of both liberty, in general. and such terms as, for example, freedom of speech [5]. Mill and Tocqueville both opine that people need access to a wide or full set of facts and opinions in order for these forms of freedom to be truly meaningful.

Tocqueville's concept of a tyranny of the majority is often thought to refer to the possibility that a small majority could subjugate and dominate the rest of the population. This is not the kind of tyranny I am concerned with, and I will instead speak of a *tyranny of opinion* when I discuss what I find to be most interesting in Tocqueville's concept.

When Tocqueville speaks of tyranny in America, he discusses tyranny as a *social* and *cultural* phenomenon [52]; p. 301; [53]. Mill [54]; p. 178) reviewed Tocqueville's book, and he noted that Tocqueville's tyranny 'is of another kind – a tyranny not over the body, but over the mind'. Liberty does not just consist in political liberty and safety from a majority that creates poor laws or arbitrarily abuses physical power. It also consists in a liberty of *spirit* and *opinion*, and this liberty is threatened, or preserved, by society – not primarily through politics and the government. This form of liberty is particularly interesting with regard to the technologies I examine. Tocqueville describes America's 'own unique brand of tyranny', where the tyrant is 'the entire society itself, acting in concert without the need of oppressive laws' [52]; p. 301). The lack of independence of mind is seen as the result of the 'moral power' of the majority [52]; p. 301 [51]; p. 293).

This moral power is not used to direct the actions of individuals

through force, but to mould ‘their very natures’ [52]; p. 301). I argue that a tyranny ‘over hearts and minds’ that manages to strip individuals of individuality cannot be considered less of a threat to liberty than a tyranny based on physical oppression and interference in the more obvious sense [52]; p. 302). Today we have a tyranny that has come to power right before our eyes – partly by superficial consent. Some might claim that the tyranny of opinion is something different from the facets of society Zuboff [3] describes as surveillance capitalism. However, it makes sense to view, as Zuboff does, the rise to power of the surveillance capitalists as one of the main reasons for the developments leading to the increasingly social nature of all aspects of life, and the race towards a world where nothing is truly private. We could also invoke the concept of *societies of control*, in which individuals have become *dividuals* – divisible entities that can be recast in various forms [55]. These aspects of power and individuality are of great interest, but they fall outside the scope of the current article.

However, even if such a tyranny is voluntary, it must be guarded against if liberty is to be preserved, particularly since such a tyranny is hard to perceive and may arise gradually without people noticing. Furthermore, as Zuboff [3] notes, the initial phases of such a tyranny are marked by stealth and lawless conditions, and even today it is arguable that few people really give what would be considered *informed* consent when they agree to the terms required for access to what has become almost vital social infrastructure.

For Tocqueville, the very notion of *coercion* had to be redefined, as people did not recognise it in its classical form – the coercing tyrant was apparently nowhere to be found. Horwitz [52]; p. 304) even uses the term *psychic coercion* to describe the way the majority forces everyone into something resembling uniformity. Coercion is usually thought to involve the use of *physical* compulsion, but, in lack of a better way to describe the psychological dimension of domination, I argue in favour of broadening the concept of coercion to also include such phenomena. This is in accordance with the approach taken by Sætra [22]; where the coercive potentialities of the combination of nudging and Big Data is discussed. In America, *everyone* was the source of this tyranny – ‘each member of the community was both oppressor and oppressed’ – and the instincts that make us rebel against injustice and oppression do not seem to be triggered by such a tyranny [52]; p. 303). In Horwitz’s words:

Coercion was not abhorrent because it was not really coercion; conformity was hardly onerous because it was freely chosen. Despotism, Tocqueville argued, had arrived at a new stage of perfection, since those who were oppressed glorified their oppression and honored their oppressor [52]; p. 303).

Tocqueville himself says that he sought ‘in vain for an expression that exactly reproduces my idea of it and captures it fully ... [t]he old words “despotism” and “tyranny” will not do ... the thing is new’ [51]; p. 818). Maletz [53]; p. 756) points to the penalty for opposing the tyranny in question, which consists of being ‘disregarded, ignored, overlooked’ – in short, of being ostracised [53]; p. 756). ‘Chains and executions’ are a thing of the past, Tocqueville says, as modern society ‘has today brought improvement to everything, even to despotism’ [51]; p. 294). The modern tyrant does not punish unpopular utterings with death. Instead, he sentences dissenters to live as aliens in their own country, to the scorn of fellow citizens, and to being shunned ‘as one who is impure’ [51]; p. 294) ‘Go in peace,’ the tyrant says, ‘I will not take your life, but the life I leave you with is worse than death’ [51]; p. 294). In the modern world, some argue that this would be invisibility [35].

Freedom requires more than me being allowed to swing my arms and legs around without restriction – it demands that I am also able to, so to speak, swing my tongue, and my *mind*. For me to be free, I must be able to say and think things that are contrary to popular opinion, without risking ostracism and heavy social sanctions. A tyranny that ‘ignores the body and goes straight for the soul’ cannot be considered any less of a threat to liberty than its opposite [51]; p. 294). It would

surely violate Pettit’s conditions for non-domination [49].

3.2.1. Proposition 4

Liberty requires, in addition to freedom from physical interference, an absence of social and psychological interference – domination – that blocks the freedom of spirit and opinion.

3.3. Information and individuality

One of the main concerns of Mill in *On Liberty* [56] was to convey the importance of being exposed to novel opinions, regardless of whether or not they contain truth, non-truth or partial truth. He describes the ‘the quiet suppression of half’ of the truth as the ‘the formidable evil’, and writes that ‘there is always hope when people are forced to listen to both sides; it is when they attend only to one that errors harden into prejudices, and truth itself ceases to have the effect of truth by being exaggerated into falsehood’ [56]; p. 115).

For Mill, the idea of *individuality* is crucial, and individuality is important with regard to the developments I deal with here. Mill does, however, state that he regards ‘utility as the ultimate appeal on all ethical questions; but it must be utility in the largest sense, grounded on the permanent interests of man as a progressive being’ [56]; p. 70). I argue that utility also requires that we foster individuality, because in ‘proportion to the development of his individuality, each person becomes more valuable to himself, and is, therefore, capable of being more valuable to others’ [56]; p. 127).

One reason why *individuality* is important is that it prevents *subjectivity* and *communal values* from developing ‘in lockstep’ [57]; p. 1911). Individuality is important to Mill, and Hamburger [58]; when discussing Mill’s ideas about *control*, states that ‘for Mill, interference, denial of choice, coercion, and encroachments on individuality are abhorrent’ (2001, p. 4). Individuality is both a precondition for and a guarantor of liberty in Mill’s work.

Individuality requires that one has access to a variety of information – for inspiration, or simply to realise that something *else* is possible [5]. Similarly, for it to be meaningful, liberty requires that there are options. If a society removes all options but *one*, but insists that people are free to choose whatever they desire, liberty has little meaning. A functioning liberal democracy also requires that citizens have access to a variety of information [50]; p. 582). In order to make reasonable choices, awareness of a broad set of ‘opinions and options’ is required [4]. These concepts are related, in that one could argue that, if liberty is to be preserved, one has to provide the individual with the opportunity to (a) be informed about the world in which he lives, and (b) to be free to choose the way in which he wants to live. Considering man’s tendency to selective exposure, and how companies program their algorithms to maximise profit, we might even argue that, in addition to access to a broad array of information, one should also seek to attain a certain level of minimum exposure to this information. Sunstein [5] enters a plea for serendipity and examines how we can counter the effects I discuss. See also Bozdag & van den Hoven [4] for a discussion of some ways to technically combat filtering effects.

3.3.1. Proposition 5

Access and exposure to a broad array of information is a requirement for the development of individuality.

4. The threat of a tyranny of perceived opinion

4.1. Turning the propositions into premises

I have thus far put forth five propositions that will now be considered as premises for my concluding argument. A summary of the premises is presented here, but please refer to their full statement for a more precise rendition of the complete argument.

- P1: Individuals have a propensity to seek information that supports their pre-existing conceptions (and to avoid information that conflicts with the same).
- P2: Algorithms, which are not *neutral*, function as curators of information in modern society.
- P3: Digital technology and social networks allow people with similar opinions to congregate, and tend to make them do so, minimising the need to deal with people with conflicting opinions.
- P4: Liberty requires, in addition to freedom from physical interference, an absence of social and psychological interference that blocks freedom of spirit and opinion.
- P5: Access and exposure to a broad array of information is a requirement for the development of individuality.

My first conclusion is that premises 1, 2 and 3, when combined, create great potential for living lives in which one is predominantly exposed to information that supports pre-existing opinions and minimises contact with opposing views. Algorithms are not neutral and may distort and restrict the information we receive, and tend to do so, both unintentionally and for the purpose of achieving some goal of their creator. When our views are further driven to narrowness by the human tendency to prefer information that confirms our preconceptions, our window to the world becomes a slit. When, in addition to this, individuals also congregate with like-minded people and get *social* support for their opinions, the potential for citizens to live with *radically* different perceptions of reality becomes quite great. The difference, then, is apparently *intergroup*, while there is great *intragroup* homogeneity. I will refer to this as the *compound confirmation effect* of information technology and social networks.

The second conclusion I wish to draw is that the effects of premises 1, 2 and 3, combined with premise 5, point to a threat to individuality. If the compound confirmation effect just described makes it difficult to have access to varied information, individuality is threatened. And, if individuality is lost, liberty makes little sense. The main conclusion is that, when all the premises are considered, they paint a picture of a substantial threat to liberty.

4.2. The tyranny of perceived opinion

If the premises established above are accepted, the threat to liberty emerges as a two-headed creature. The two heads are somewhat similar, but the creature in question is a hybrid, with one human head, and one that is the head of a machine.

The human side of the threat is nothing short of a resurrection, with a vengeance, of the phenomenon described by Tocqueville. His tyranny is most prevalent when the *moral power* of popular opinion is (*actually*, or is *perceived to be*) strong, and it seems evident that this power becomes greater as groups become more and more homogenous. The cumulative force of uniformity is heightened as more and more people get in line.

It may seem paradoxical to claim that modern society is homogenous, and this is where I argue that we have a *new* form of Tocquevillian tyranny that follows from the increased within-group homogeneity that follows from the tendency of like-minded people to gather in what have been referred to as echo chambers.

What happens on Facebook when one of your friends posts a rant that greatly displeases you? You immediately feel your heart rate increasing and your hands becoming moist. An opinion radically different from yours has triggered something in you, and you have three options. You can (a) ignore it, (b) argue with the person, or (c) *hide* the person. If you become sufficiently annoyed, alternative (a) is hard, and you know that this person will most likely post something similar again quite soon. Alternative (b) is an often advocated option, but it is a *costly* option. You will have to engage with someone very different from yourself, and you will be at risk of losing a very public debate in front of all of your, and his, friends. Option (c) thus becomes an attractive

option. If I simply tell Facebook that I do not want to see this anymore, I want to *hide* this person from my sight, the problem disappears. I must note that I do not consider the more active ways in which a tyranny of opinion can be amplified in the digital sphere. Blackford [59] provides a good discussion of issues such as online moral police, online shaming and what he calls cybermobs. While Tocqueville's tyrant can employ such tactics, he may not need to when the perception of prevailing opinion and expectations are strong.

But how does knowing all this affect how I act? If followed by many, is the option of hiding other people from sight very different from the punishment Tocqueville's tyrant meted out? The dissenter was shunned and ignored – put out of sight, and not even dignified with a response. The possibility of such punishment makes most of us wary of what we say and proclaim [35]. In addition, as human beings we have a strong desire to be, or at least appear to be, *consistent* [32]; p. 197). Every time I choose *not* to state something I believe to be controversial, or every time I half-heartedly 'like' something just because I realise that it is expected of me, I may *commit* myself to the mainstream position. If so, the problem of selective exposure will be increasingly severe, and I will, unconsciously, have locked myself into the cage of the opinions of my group [40]; p. 128). Bucher's discussion of how sites such as Facebook can create a *fear of invisibility* is highly relevant in this respect, and so is the fact that, while we may not actively tell Facebook to ostracise those we do not like, the mere fact of indicating little affinity will lead the algorithms to do it for us [35]. The details of how users change their behaviour in order to convince the algorithms to make them visible are described by Bucher [16] and Turkle [60].

4.3. When predictions and expectancies threaten liberty

I now turn to the mechanical head of my two-headed creature. The problem, in short, is that algorithms and Big Data can be seen as partly determining our development, while also removing the opportunity to see alternatives to, and resist, the path with which we are presented [61]; p. 579). Baruh & Popescu [61] are concerned with the power imbalances created between individuals and institutions, and they fear that the dynamics involved in employing Big Data may *form* individuals by creating self-fulfilling prophecies [61]; p. 584). When Big Data leads companies to predict preferences and actions, these very predictions may lead people to live up to them [61]; p. 584). For example, a search provider knows much more about us than the query we enter at a certain point in time, and uses these data to *predict* and anticipate our desires [14]. Using knowledge about us to improve a specific service is behavioural *feedback*, but the data are used for much more, creating what Zuboff refers to as behavioural *surplus* [3]. This leads to problems deciding whether an algorithm is successful because it provides the correct output, or because the users adapt to the output, as discussed by Lanier [18]. It is important to keep in mind that algorithms can be used to *intentionally* influence actors as well, but I do not focus on this particular danger here.

This is particularly important as we are not sufficiently prepared to assess ethical issues involving machines. Zwitter [11] states that 'the very nature of Big Data has an underestimated impact on the individual's ability to understand its potential and make informed decisions'. Of particular interest is his point about ethical issues being obscured by the current state of affairs in which 'actions by many unaware that they may have taken actions with unintended consequences for anyone' is the norm when new technologies are deployed [11]; p. 1).

Dwork & Mulligan [34]; p. 38) use the language of freedom, as they state that the process of Big Data and the subsequent classification *shackle* users to profiles that are then used to determine what is relevant for them, a process that relates to Deleuze's [55] concept of the *dividual*. The algorithms are 'prediction engines, constantly creating and refining a theory of who you are and what you'll do and want next' [36]; p. 10). That such profiles are not accurate representations of a person seems obvious, since some information is gathered, some is

approximated, and a lot is considered unimportant for the purposes of the profile manager [14]. My argument is that such predictions, and the expectations they create, are coupled with the tyranny just discussed, and I focus on three ways in which we might go from the seemingly useful to something more ominous.

Three theories from psychology and sociology can form the basis of an objection to Big Data as we apply it, based on the effects it has on the free development of individuals. The theories are (a) the expectancy effect, (b) the Proteus effect, and (c) the Thomas theorem. Other ways of explaining how people adapt to algorithmic output are used by others, and I focus on these effects as being particularly effective in showing how an expectation can shape reality.

4.3.1. The expectancy effect

The expectancy effect, or behavioural confirmation theory, describes a phenomenon whereby my *expectations* of someone actually influences how he or she acts and performs [62–64]. It comes into play as soon as individuals experience individualised profiles on websites, entertainment services etc. Data are used to create an environment that the service provider expects us to be comfortable with, and this involves everything from the subtle organisation of content, the visual presentation of the content, and the various forms of suggestions offered. The entire service is experienced as custom-made for each individual, which makes their expectations more likely to have the effects described as expectancy effects or behavioural confirmation. People may perceive the suggestions and selections they are offered on sites such as Facebook and Netflix as being based on relatively objective criteria, such as their usage history, but that is only partly the case. They are based on history, what people similar to the user in question tend to do, and on what the provider *wants* the user to consume [14]. Once again, we must keep the non-neutrality of algorithms in mind.

This constitutes what is perceived as an expectancy, which can in fact be self-fulfilling. We usually evaluate the accuracy of our predictions by seeing how well actual behaviour conforms to our predictions [61]; p. 584; [18]. If the predictions themselves *cause* behaviour to change, this is obviously not a very useful measure of accuracy.

4.3.2. The Proteus effect

The Proteus effect describes how people might change their behaviour as a consequence of how they perceive themselves. Changing their appearance in a digital setting also changes their behaviour (regardless of how, or whether, others see them) [65]. The Proteus effect, which is based on the self-perception theory of [66]; suggests that ‘people often infer their own attitudes and beliefs by observing their behaviors in the same manner they would observe another person’ [67].

This effect describes behavioural change resulting from changes in how a person is portrayed in a virtual environment, for example as an avatar – a digital representation of the self – in a computer game, or an online casino [61]; p. 584). When the avatar changes, the behaviour of the user changes too. For example, when I am portrayed as attractive, I tend to move closer to others and disclose more personal information, and when made tall I tend to be more confident in negotiations [65]. Furthermore, when women are portrayed in a sexualised manner, they become more prone to self-objectification, and even report higher acceptance of rape myths [67]. How then, is this related to Big Data? In social media, people are portrayed in various ways, and they are also made aware of what is shown to, and liked by, other people. The framework for this representation of self is controlled by companies such as Facebook, and what they choose to highlight to my friends from my posts is also controlled by Facebook. Bucher’s [35] fear of invisibility may be the result of a conscious effort to promote a certain behaviour, and in portraying the user in different ways, they may effect real changes in user behaviour. I venture the proposition that changes in online representations of the self – arguably one of the most important ways to portray oneself for many people in our age – can also change behaviour and feelings of self.

4.3.3. The Thomas theorem

The final theory to keep in mind is the Thomas theorem, which in short-form details self-fulfilling prophecies [68]. The theory states that, if people *define* situations as real, the consequences of those situations *are* real. If I portray a situation – a prediction, or prophecy – and get you to believe in it, there is a greater chance of my prediction actually coming true than there would otherwise have been. Merton [68] gives examples such as banking crises happening because of *rumours* about banks having problems or a student failing a test *because* he worries and believes he will fail. When algorithms present us with clear expectancies, we may perceive these expectations as prophecies that *we*, in turn, make reality. Furthermore, since Big Data is based on inductive and historical data, predictions will have a conservative force that promulgates old definitions of how things *are*, despite the possibility that things could very well have been different. This is related to the discussion of fairness in algorithms, and I refer to Binns [69] for a discussion of fairness in machine learning based on political philosophy.

Merton points to the ethnic conflicts between Afro-Americans and whites, where the whites fail to see that ‘he and his kind have produced the “facts” which he observes’ – the facts that prolong the conflict [68]; p. 196). The Thomas theorem shows how algorithmic prediction could lead to *external* impediments to individuals’ liberty, but, in combination with the two other theories, it seems clear that such prediction can have internal *and* external effects simultaneously. Assuming that these effects are real, it seems uncontroversial to assume that the level of personalisation of expectations and representations made possible by Big Data and algorithms makes these effects stronger.

5. Conclusion

Alexis De Tocqueville feared an immaterial tyranny of public opinion – a tyrant who was hard to perceive, and whose tyranny was a seemingly benign and voluntary reign. He showed that such a tyranny was no less of a danger to liberty than the tyranny of old. I argue that a tyranny of minds, not bodies, that people consent to because they do not perceive what is happening, is an even greater danger than a tyranny that we would all immediately recognise as such. In this article, I show that we would be wise to heed the warnings of Tocqueville in our own day and age, even if the tyranny he described now appears in a slightly different form.

The threat of tyranny, which is a threat to liberty, has arisen because (a) we tend to seek facts that correspond to our pre-existing opinions, (b) we use algorithms as curators of information, and (c) it is now easy for us to create networks in which we mainly, or exclusively, associate with people like us. The compound exposure effect created by these three factors is what makes Tocqueville’s warning prescient. In our echo chambers and filter bubbles, the tyranny of perceived opinion is a clear and present danger to liberty.

While negative liberty is perhaps not most threatened, positive liberty requires a form of autonomy that can easily require that we have access to the information we need to be autonomous citizens. Pettit’s [49] concept of non-domination is very much applicable to our algorithms, as they, and their creators, clearly have the capacity to interfere arbitrarily in the choices we make when we seek to understand the world and make the choices we do in our lives [4]. In this article, I have deliberately chosen not to give a central place to discussions of the possibility of abusing algorithms, as I believe the threat to liberty is clear enough even without this form of manipulation and coercion. It is very easy, however, to include this aspect of Big Data and algorithms in order to make the argument far stronger, and I refer again to Sætra [22] for an account of the coercive aspects of Big Data.

In addition to the threat to liberty, we should also take note of the fact that a liberal and healthy society seems to require well-informed citizens with a similar *enough* worldview to enable them to discuss, debate and deliberate together in order to find a direction ahead for

society. This is a concern even if we are not inclined to view *deliberative* democracy as the main concern [5]. The decreased breadth of the information we receive due to the situation I have described here has clear implications for the development of each individual's individuality and liberty, and I have restricted myself to this level. The threat to *society* posed by these developments is of great importance, and it is paramount that they are given more attention in the disciplines of political science and law, so that they do not remain in the exclusive domain of communication studies and information technology. These are important disciplines, but the issues in question require a thorough debate in other disciplines as well about the proper role of technology and the legislation of it. I agree with Coeckelbergh's [2] view that political philosophy should be included in this debate.

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