AI and Democratic Equality: How Surveillance Capitalism and Computational Propaganda Threaten Democracy

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Abstract. In this paper, I argue that surveillance capitalism and computational propaganda can undermine democratic equality. First, I argue that two types of resources are relevant for democratic equality: 1) free time, which entails time that is free from systemic surveillance, and 2) epistemic resources. In order for everyone in a democratic system to be equally capable of full political participation, it's a minimum requirement that these two resources are distributed fairly. But AI that's used for surveillance capitalism can undermine the fair distribution of these resources, thereby threatening democracy. I further argue that computational propaganda undermines the democratic aim of collective self-determination by normalizing relations of domination and thereby disrupting the equal standing of persons. I conclude by considering some potential solutions.

Keywords: ethics of AI, AI and democracy, democratic equality, surveillance capitalism, computational propaganda, epistemic agency, epistemic resources, free time

1 Introduction

The threat that AI can pose to democracy is an increasing concern. Two of the most notable problems that arise with AI systems is the lack of transparency and accountability, two key features for a democratic system [7, 10, 12, 28, 48, 53]. In a democratic system, transparency involves openness around political processes, changes, etc., like documenting the steps involved in implementing a given policy and making that information accessible to the public [28]. Transparency around political information and procedures is critical for political agents to make informed decisions and meaningfully partake in a democratic system. Accountability is important for a democracy because government bodies and representatives need to be accountable to the majority's will and interests, especially so they can be held responsible for failure to do so [28]. Transparency and accountability are intertwined in a democratic system because the power of political actors needs to be confined by relevant standards (i.e., ethical, legal) as well as the majority's will, and in order for their power to be kept in check there needs to be full transparency around how that power is exercised within the demands of the system. The back-and-forth engagement between the public and

political actors with power is crucial for a healthy democracy, and transparency and accountability are vital for this dynamic to work.

The issue with AI is that even though it is increasingly shaping the social and political world, dominant tech corporations are not beholden to the public in the same way that formal political representatives and bodies are. This means that these corporations are not bound to principles of transparency and accountability that are important for a democracy. Notably, there is a lack of transparency around the information that dominant algorithmic systems collect and how that information is used [36, 37]. This is largely because AI systems and the data they collect is privatized, which means the corporations that create and use these technologies are not obligated to share this information with the public [55]. But as I just noted, transparency and accountability are closely intertwined. These tech corporations are not bound to the public by norms of accountability because they are private entities – for instance, the public is not guaranteed a role in determining the parameters of use of dominant algorithmic systems – and the lack of transparency from these corporations disconnects users from the information needed for active democratic participation, which undermines the democratic relation between those who have power to enact political/social change and those affected by that change [10, 29]. Thus, while some algorithmic systems can have profound effects on people's lives and can even violate anti-discrimination laws (e.g., by using race as a proxy for denying insurance requests [36]), these systems and the corporations that own them are privatized and thus go beyond the regulatory scope in a democracy that encompasses norms around transparency and accountability.

Accountability and transparency are critical for a democracy in part because of the relationship between knowledge and political agency [11]. In order for people to be able to politically represent their beliefs and interests, they have to at least be well-informed. One side of the problem with AI is that people are not given the relevant information needed to make informed decisions – like information around how an algorithmic system might affect them. Other than withholding information, the other side of the epistemic problem with AI involves deception through the proliferation of fake news and disinformation [1, 8, 17]. Disinformation and fake news like deepfakes, for instance, can make it hard for people to know what information to trust and, correspondingly, what political decisions to make [11, 16, 33, 39]. Beyond the worry about the lack of transparency and accountability with how these AI systems are used is the worry that these algorithmic systems can facilitate the destabilization of one's epistemic and political agency by making it difficult to discern what is true or false.

My aim here is to consider the relationship between AI and democracy by first analyzing what a theory of democracy entails. In Section two, I use Elizabeth Anderson's [2] theory of democratic equality, which states that everyone must have the equal capability for full political participation, including the capability to engage in open political discussion. For Anderson [2], being capable of doing something extends beyond formal opportunities like having the right to vote. People also need to have whatever resources are needed to be capable of full political participation. Although Anderson does not specify what kinds of resources are relevant for this capability, I augment Anderson's theory in Sections three and four by arguing that democratic

equality requires a fair distribution of two kinds of resources: 1) free time (which I'll argue entails time that is free from systemic surveillance) and 2) epistemic resources.

In Section five, I argue that AI used for surveillance capitalism disrupts democratic equality by creating a disparity of free time and epistemic resources. Surveillance capitalists can use AI to collect highly detailed behavioral data on their users through constant surveillance while simultaneously remaining unencumbered by public regulation due to free market protections. This inequality in capacities for systemic surveillance undermines the need for transparency and accountability that is critical for a democracy. This disparity in free time also facilitates a significant wealth gap in epistemic resources (e.g., behavioral data) between surveillance capitalists and the users of major online platforms, which can translate into a disparity of political agency. In Section six, I argue that AI used for computational propaganda destabilizes the foundation of democracy by producing a hostile political environment that undermines the process of collective self-determination. By artificially silencing or amplifying certain viewpoints or political representatives, AI bots that are used for computational propaganda constitute a domination tactic that violates the equal standing of persons and the democratic obligation to engage in productive and open discussion. Thus, AI used for computational propaganda undermines the democratic aim of collective self-determination. In the seventh and final section, I consider some possible solutions.

2 Democratic Equality

For Anderson [2], a democratic system operates through "collective self-determination by means of open discussion among equals, in accordance with rules acceptable to all" (p. 313). Accordingly, there are two key elements for democracy:

1) People have to stand in *equal* relation to each other to be able to collectively self-determine.
2) Democracy is not just a majority rule, it is constrained by standards like human rights (e.g., no one's basic human right to life can be compromised for the interests of others).

While the second feature of democracy is certainly relevant for thinking about the ways that AI can threaten democracy through human rights violations [15, 34], I will be focusing on the first dimension of democratic equality. In order for everyone to stand in equal relation to each other in a democracy, everyone needs to have an equal capability for full political participation [2]. Following Amartya Sen's capability approach, capabilities for Anderson [2] represent what a person is free and able to do given the resources and opportunities available to them. Having a capability in this sense, then, is more substantive than merely having formal liberties and opportunities. It is not enough for someone to just have the right to vote; they also need to be given whatever resources are needed to exercise that right. If a language barrier prevents someone from voting, for instance, language lessons or interpreters need to be provided. Anything that a person needs to be able to fully participate in political life should be available to them.

Crucially, Anderson [2] argues that being able to fully participate in political life requires freedom from domination, exploitation, or oppressive relations. Democracy is fundamentally about collective self-determination, which requires open discussion amongst equals. This means that everyone is equally obligated to hear and respond to each other's contributions, and no one should be in a position to silence or dominate others. Accordingly, democratic equality refers to the equal standing of persons such that each person has the equal capability for full political participation, which requires being free from oppressive relations.

Moving forward, I use Anderson's theory in two ways. First, I'll augment her theory by arguing that the fair distribution of two kinds of resources is relevant to the capability for full political participation: 1) free time, which entails time that is free from systemic surveillance, and 2) epistemic resources. Specifying what kinds of resources are relevant for democratic equality enables me to argue that AI used for surveillance capitalism undermines the fair distribution of these resources. Second, I'll focus on Anderson's requirement that the equal standing of persons requires freedom from relations of domination, and I'll consider how computational propaganda undermines this requirement and the democratic aim of collective self-determination.

3 Free Time and Surveillance

To begin I'll start with the claim that democratic equality requires fair distributions of free time, which entails time that is free from surveillance. I build my argument from Julie Rose's [41] position that free time should be considered a resource in its own right – separate from the distribution of material goods – because time is a distinct resource that affects people's ability to exercise formal liberties and opportunities. Certainly, in order to vote, people need the time to vote. Regardless of material wealth, people cannot pay another person to vote on their behalf. Accordingly, material resources cannot compensate for the free time that's needed for political participation [41]. Free time is relevant for democratic equality, then, because it affects people's capability for full political participation. Thus, democratic equality requires a fair distribution of free time, meaning that each person should have whatever amount of free time is needed to be equally capable of full political participation. Given that everyone's needs vary (e.g., a physically disabled person may need additional resources and time to make it to a voting booth), the amount of free time each person should get will vary.

But having free time to exercise formal liberties and opportunities – like the having the time to vote – is not the only dimension of time that's relevant for democracy. Aside from the formal liberties and opportunities people can exercise in their free time, relations of domination and subordination in the private sphere can also affect the free time that people have for political participation. That is, even if people have free time to vote, they can still be subject to dynamics in their free time that undermine their ability for political participation. As AI and other smart technologies become increasingly ubiquitous in our daily lives, it's critical to think about the ways that exposure to digitally mediated systemic surveillance can facilitate relations of domination that undermine people's ability for full political participation.

Let me illuminate this point by way of example. In *Private Government*, Anderson discusses how most modern workplaces are taking on the structure of private authoritarian governments – one reason being because most modern workplaces have the legal authority to surveille and regulate the private lives of workers, including the political views they share online [3]. Indeed, over half of U.S. workers lack legal protection from being fired for the political views they express outside of work (e.g., on Facebook) [3]. A poll recently shared by The Financial Post reveals that 86% of Canadian companies admitted they would fire an employee for an inappropriate social media post [46]. Certainly, the threat of unemployment in a precarious economy can significantly undermine the capability of some to participate in open political discussion.

This is one example of the way that systemic surveillance undermines the free time people have to exercise their political agency because it undermines their ability for political participation in their free time. In this example, even if workers are given formal liberties and the free time to exercise them (e.g., time to vote), their ability for political participation (i.e., engaging in open political discussion) can be undermined when they're subject to systemic surveillance in their free time. Indeed, research shows that even in dictatorships, having increased capacities for surveillance through digital mediums has amplified the repression of citizens by expanding knowledge of organized uprisings as well as the identity of dissenting citizens [51]. Systemic surveillance of the private lives of citizens is anti-democratic, as it can undermine a person's capability for political participation by exacerbating power disparities that enable control over a person's social and political behaviour. Systemic surveillance thus disturbs free time as a resource for democratic equality because it inhibits the time in which people are in fact free to exercise their political agency. Hence, democratic equality requires not just free time but also some protections from systemic surveillance in one's free time. Therefore, a fair distribution of free time must at least include time that is free from systemic surveillance.[1]

4 Epistemic Resources, Epistemic Agency, and Political Agency

Democratic equality also requires a fair distribution of epistemic resources. Notably, the fair distribution of epistemic resources can also be undermined by systemic surveillance, but I'll come back to this point in the next section. For now, it's important to explain the connection between epistemic resources, epistemic agency, and political agency. For my purposes, political agency refers to the capability for full political participation, understood in Anderson's terms of what it means to have this capability. Epistemic agency – at least as defined by Mark Coeckelbergh – means having control over one's belief formation and revision [11]. For Coeckelbergh [11], epistemic agency

[1] I use the phrase 'systemic surveillance' to refer to surveillance that is done by those with the power to consistently surveille (e.g., social media giants, workplaces, governments, etc.) and thus regulate the behaviour of others. This kind of surveillance may be different from being surveilled and regulated by peers and social norms (e.g., cancel culture), so I distinguish systemic surveillance from surveillance more generally.

is critical for political agency because being able to represent oneself politically (e.g., with voting) requires having control over the formation and revision of one's beliefs. If a person has no role in forming the belief that a specific political candidate is the best option – say, if that person was manipulated – then that person's ability for political self-representation is diminished. How one develops or revises a belief affects that person's ability for political participation. In order for people to have the equal capability for full political participation, then, people need to have the equal capability to control their belief formation and revision.

In order for people to have the equal capability to control their belief formation and revision, they need to have a fair share of epistemic resources. Epistemic resources contribute to propositional knowledge (i.e., knowing that things are the case) or knowing how to do something [45].[2] I said earlier that transparency is important in a democratic system because people need to be informed in order to hold representatives accountable or to meaningfully participate in the political sphere. Accordingly, a fair share of epistemic resources requires transparency and public accessibility regarding relevant political information and processes (e.g., recording and publishing the full details of a new federal policy) so that people can exercise their epistemic and political agency accordingly.

Epistemic resources also matter for epistemic and political agency because relations of domination can manifest through the control of epistemic resources. In authoritarian regimes, for instance, access to epistemic resources is often controlled (e.g., certain texts are banned) to deter opposition. By controlling what information is available to the public, authoritarian regimes control the belief formation and revision of citizens. In a democracy, the distribution of epistemic resources should not reflect or enable a relation of domination. Rather, the distribution of epistemic resources should be fair in that it enables each citizen to be equally capable of autonomous belief formation and revision and thus political participation.

5 Surveillance Capitalism

So far, I've argued that democratic equality requires a fair distribution of free time – which entails time that is free from surveillance – and epistemic resources. Here I argue that AI used for surveillance capitalism can undermine democratic equality by facilitating the unfair distribution of both of these resources. I borrow the concept of surveillance capitalism from Shoshana Zuboff [55] who defines it as a new economic order that uses human experience as free raw material, resulting in unprecedented disparities in power, particularly with knowledge production and dissemination. The free raw material of human experience that Zuboff [55] refers to is the behavioural data that is collected through machine learning and algorithmic systems. Since the ability to collect and use behavioural data with AI systems requires costly technological

[2] Note that while there is debate about whether there is knowledge other than propositional knowledge, this debate does not impact my argument. Even if know-how collapses into know-that, we still need a fair share of epistemic resources. That is, even if there is only one *kind* of epistemic resource, it still needs to be fairly distributed for democratic equality.

infrastructure – like physical storage space and powerful machine learning technologies – economic inequalities in the free market have translated into inequalities in technological power that create mass disparities in epistemic wealth and social power [55].

These disparities arise from what Zuboff [55] calls "the privatization of the *division of learning in society*" (p. 45). The division of learning in society is concerned with three things: 1) who has knowledge and controls who is in the circle that can access it 2) who has the authority to decide what's learned, who gets to learn, and what people can do with what they learn, and 3) the power that "undergirds the authority to share or withhold knowledge" (p. 352) [55]. With surveillance capitalism, the division of learning becomes privatized because the production and dissemination of epistemic resources is disproportionately controlled by private tech corporations like Google and Facebook. The dissemination of epistemic resources is dominantly controlled by these corporations because the information that users have access to through digital platforms (i.e., major search engines and social media sites) is privately regulated through each company [5, 27, 29, 30, 52]. Moreover, privately owned AI systems are used to generate a plethora of privatized epistemic resources in the form of behavioral data. Thus, information collection and dissemination via AI systems is controlled by major tech companies that get to determine who knows what, who can learn, who decides who knows and learns, and what people can do with what they know [55]. Thus, as Zuboff [55] notes, the division of learning in society has become privatized.

The privatization of the division of learning in society is partly facilitated by AI's unprecedented capacity for systemic surveillance [47]. While surveillance is not a new problem, AI has pushed the problem to new heights. By consistently and ubiquitously tracking people's behaviour on digital devices, AI systems can collect more information about people than their friends or family have – potentially more information than they even possess about themselves [10, 11]. For instance, some algorithmic systems can even track small, seemingly insignificant things like smartphone typing patterns as an indication of one's mental health [31]. Since digital technology has become a somewhat omnipresent feature in many of our lives and vast technological networks composed of various AI systems constitute superhuman capacities for persistent and meticulously detailed surveillance, the power to surveille has reached a new precipice. Accordingly, not only is there a dominant and pervasive exposure to the will of the algorithms – so to speak – in terms of information distribution, but there is also a dominant and pervasive exposure to the surveilling eye of the algorithms that collect information about users.

When thinking about democratic equality and the relevance of time that is free from systemic surveillance, it's important to note that there is a vast disparity of free time between surveillance capitalists and those that use their algorithmic systems. While users of algorithmic systems are extensively surveilled, algorithms are opaque (e.g., it's unclear what information these systems collect or how this information is used [7, 37]) and the market freedom afforded to surveillance capitalists removes them from public surveillance and regulation [55]. Indeed, this disparity of free time is what underwrites the privatization of the division of learning in society. Surveillance

capitalism is thus marked by minimal public surveillance and regulation alongside an unprecedented power to systemically surveille users.

I previously noted that accountability and transparency are crucial for a democratic system. Full political participation requires transparency (i.e., around political processes) so one can make informed political decisions, and it also requires being able to hold representative bodies and actors accountable. Even though dominant tech corporations can affect significant political change in the broader social landscape, they are exempt from public surveillance/regulation and thus are not required to be transparent – like about whether their algorithms disproportionately deny jobs to disabled applicants [36] – and they are not beholden to norms of accountability that are important for a democracy. To put it simply, these corporate-political actors can affect major change in the political sphere without having to explain these effects or account for the public's political will or interests. This creates a disparity of political power that is antithetical to democratic equality because those with substantial power to affect political change via extensive surveillance power are kept above the reach of public input and regulation. I previously noted that a distribution of free time – which entails time that is free from systemic surveillance – is unfair if it creates inequalities in the capability for full political participation. Surveillance capitalism creates an unfair distribution of free time by facilitating inequalities in political power between those who enact political change and those who are affected by it.

Furthermore, the disparity of surveillance capacities and free time facilitates a disparity in epistemic resources. As previously noted, the production and dissemination of information is largely controlled by surveillance capitalists through AI systems. The stats are revealing: over 80% of Americans use digital devices to get news [10]. The problem with receiving news and information through dominant algorithmic systems – like those used by Facebook and Google – is that these systems are programmed to maximally siphon what Zuboff [55] calls "human experience as free raw material" (p. 9). To collect as much behavioural data as possible, algorithmic systems are fundamentally aimed at increasing the amount of time people spend on a digital device. To do this, algorithms use the behavioural data they collect to individually personalize the online experience. That is, information distribution on these platforms is algorithmically determined by personal preference and what will grip a person's attention, not epistemic standards regarding truth or reliable testimony [5, 27, 29, 30, 52]. This model of information distribution lends to the proliferation of fake news and disinformation, which damages people's ability to obtain positive epistemic status (e.g., knowing, having justified beliefs, etc.) [1, 6, 11, 17, 20, 33].

For instance, an algorithmic system might direct a person down a rabbit hole of COVID conspiracy theories if it detects a susceptibility to or potential interest in a neurotic or paranoid way of thinking [29]. Since algorithmic systems are designed to tailor the online experience to each user, they are effective at influencing the behaviour [10, 20], epistemic habits [6], and psychological states of users, including their emotions and beliefs [32]. This gives those in control of these algorithmic systems disproportionate power to control the belief formation and revision of others, thereby undermining their epistemic agency [20, 41].

Given the interconnected nature of epistemic and political agency, not having control over one's belief formation and revision can harm a person's capability for full political participation. To give a concrete example, consider political micro-targeting: the personalized distribution of political information like campaign ads based on behavioural data [14, 19, 20, 24, 26]. Indeed, it was revealed that Trump's 2016 presidential campaign algorithmically targeted voters based on behavioural data taken from Facebook [38]. With political micro-targeting, algorithms distribute information that is meant to manipulate their behaviour, not to inform them of the facts needed to make an informed political decision [20, 23, 29]. This means that people are not only vulnerable to being politically manipulated but are vulnerable to being manipulated through purely rhetorical or false information.

It's important to note here that regardless of whether micro-targeting influences an election, the problem is that the guiding epistemic principles behind digitally mediated information (or misinformation) distribution are fundamentally flawed. When the guiding principle controlling the flow of information is based on increasing consumer engagement and catering to subjective preferences, factors like truth and reliability are no longer the guiding principles behind the distribution of information [5]. To maintain epistemic agency and prevent the degradation of political agency, information flow should be dictated by epistemic criteria oriented towards obtaining positive epistemic status, not capitalistic criteria oriented towards profit.

The privatized capacity for algorithmic surveillance results in a disproportionate distribution of epistemic resources, and this disproportionate distribution of epistemic resources gives surveillance capitalists the ability to algorithmically manipulate people's psychological states, including their political beliefs. Thus, using AI for surveillance capitalism creates an unfair distribution of epistemic resources because the vast disparity of epistemic wealth gives surveillance capitalists disproportionate power over the belief formation and revision of others, which threatens their capability for full political participation. Thus, AI that is used for surveillance capitalism threatens democratic equality by creating an unfair distribution of free time and epistemic resources.

6 Computational Propaganda

So far, I've argued that AI used for surveillance capitalism can undermine democratic equality by creating unfair distributions of free time and epistemic resources. In this section, I set aside the focus on free time and epistemic resources and argue that AI that's used for computational propaganda can threaten democratic equality by creating relations of domination that undermine the process of collective self-determination. Indeed, democratic equality and collective self-determination requires the equal ability of citizens to express their political interests and views [17]. As noted in Section two, democracy requires that people are positioned in equal relation to each other – that there are no relations of oppression or domination that cause unequal capabilities for full political participation – and that people are obligated to hear each other out respectfully in the process of collective self-determination. But AI used for computational

propaganda can directly suppress the ability for political discussion and undermine the obligation people have to hear each other out.

Samuel Woolley and Philip Howard [25, 50] define computational propaganda as politically motivated digital misinformation and manipulation via AI systems and human interference. Computational propaganda includes generating false political support or dissent through AI bots called amplifiers or dampeners [4, 13, 50]. An amplifier bot can share or like posts, flood comments sections, increase visibility of posts, etc., which can inadvertently minimize opposing voices by drowning them out [50]. Dampener bots, on the other hand, actively suppress information, channels, and viewpoints by shutting down websites, flooding people's tweets or posts with negative responses, or supporting negative responses to messages as a way to manufacture disapproval. For instance, dampener bots were found to have been supporting negative responses to the #GoodRiddanceHarper hashtag on twitter and were also used against Black Lives Matter [50]. Indeed, dampener bots can be used to suppress certain views and movements, sometimes through harassment or bullying tactics.

Of course, propaganda and the way it can undermine democratic processes precedes AI. Nonetheless, it's necessary to recognize the specific ways that AI amplifies this problem and creates new iterations of it. Similar to any propaganda, computational propaganda can undermine people's epistemic agency. The belief formation and revision of some can be controlled by those who artificially manufacture mass consensus or dissent. However, computational propaganda is particularly alarming because it normalizes a political environment of domination and intolerance. Since many people spend a lot of time online, the internet has become a prominent platform for political discussion. But AI used for computational propaganda makes the platform where much political discussion takes place unequal [41]. Amplifiers and dampeners constitute a digitally mediated domination tactic that directly creates inequalities in the capability for open discussion.

The suppression of certain views and voices through computational propaganda also normalizes intolerance and eschews the obligation for collective engagement and action, which can encourage the formation of echo chambers. Suppressing certain views and voices cuts off or limits the ability to foster trusting relationships with those who have different perspectives. An echo chamber can form when people's circle of trust can become narrowly confined to include only those with specific views – even if those views are false or harmful – which makes it hard for them to believe information that is true [6, 36, 44].

The possibility for echo chambers is even further compounded by the fact that algorithmically mediated information distribution is based on personal preference, not epistemic standards, which can narrow a person's epistemic circle to include only those who have the same false and politically harmful beliefs and perspectives [1, 6, 17, 10]. For instance, some experts attribute the attack on Capitol Hill to social media sites like Parler that allow the proliferation of disinformation and encourage the formation of echo chambers [18, 40]. Researchers in political science and communications also found that there was a correlation between getting news off social media and politically polarizing behaviour, like unfriending people or saying harmful things to those with opposing viewpoints [10, 21]. When the environment where people consume belief-

altering content and have political discussions encourages intolerance and hostility, political and social relations get further from the ideal of collective self-determination. Yet, collective self-determination is the defining feature of democracy, and it requires that people hear each other out and engage in productive discussion, not dominate and silence each other. In facilitating a hostile, intolerant, and politically polarizing environment, the use of AI for computational propaganda destabilizes the very foundation of democracy.

7 Conclusion

I've argued that AI can pose a threat to democratic equality, first by undermining the fair distribution of resources that are important for democratic equality, and second by undermining the process of collective self-determination. When used for surveillance capitalism, AI can facilitate the unfair distribution of free time and epistemic resources, resulting in disparities of political power and agency. When used for computational propaganda, AI can facilitate relations of domination that disrupt the equal standing of persons. However, AI is not inherently anti-democratic. Rather, it can be used to enhance our social and political world [9, 10, 28, 29, 43, 46]. Some have even argued that AI can serve democratic aims by increasing political participation [43]. If used appropriately, AI has the potential for positive social and political effects. Identifying the problems AI currently poses for democracy, then, should be seen as a starting point for pinpointing practical and relevant solutions.

One possible way to mitigate the effects AI can have on democratic equality is by increasing access of epistemic resources. One way to do this is to increase transparency around algorithmic systems (e.g., increase information about what information these systems collect and how this info is used) [29, 37]. Another possible solution that researchers have explored involves institutionalizing tech literacy training [10, 29]. Since part of the unfair distribution of epistemic resources stems from the unequal ability to understand and apply these technologies, publicly funded and distributed tech literacy training is one promising way to increase the fair distribution of epistemic resources. Though, it's not enough just to be better informed about how these algorithmic systems work or what they know. It's also vital to maintain human epistemic autonomy and authority over AI systems, especially those used in decision-making procedures [54]. Current AI should be viewed as a tool that can aid the decision-making procedure rather than an agent capable of making properly informed and well-considered decisions.

Another way to make current and emerging AI more compatible with the principles and foundation of democracy is to democratize the design and implementation of AI systems [34, 49]. Indeed, the public should have a say in the algorithmic systems that are increasingly shaping the social and political world. This would require government policies that de-privatize what Zuboff calls the division of learning in society. De-privatization of the division of learning in society would disrupt the unfair distribution of free time by alleviating the radical disparity of surveillance power (e.g., privatized data collection).

It's also worth considering that social systems and institutions themselves may need to change and adapt appropriately to mitigate political problems that arise with big data and AI. As Benn and Lazar [5] suggest, moving towards a systematic procedure of collective action may require institutionalizing epistemic authorities that can control the dissemination and flow of digitally mediated information. In other words, it might be critical to direct power away from surveillance capitalists who determine information flow based on personal preference and instead direct it towards institutionally regulated and instated epistemic authorities who can control the flow of information based on relevant epistemic markers (e.g., what's true or false rather than what will grab someone's attention). Though, I make these suggestions only as a starting point for further investigation, as exploring solutions with due consideration is beyond the scope of this paper. My primary aim here is to explore the ways that AI can threaten democratic equality so that there can be further research on targeted solutions.

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